

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
**ACTIVITY REPORT: On-site Inspection**

N243059462

<b>FACILITY:</b> Great Lakes Composite, LLC		<b>SRN / ID:</b> N2430
<b>LOCATION:</b> 401 S DELANEY RD, OWOSSO		<b>DISTRICT:</b> Lansing
<b>CITY:</b> OWOSSO		<b>COUNTY:</b> SHIAWASSEE
<b>CONTACT:</b> Diane Gagnier , Operations Manager		<b>ACTIVITY DATE:</b> 08/24/2021
<b>STAFF:</b> Michelle Luplow	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Scheduled, unannounced onsite inspection to determine compliance with MI-ROP-N2430-2019a		
<b>RESOLVED COMPLAINTS:</b>		

**Inspected by:** Michelle Luplow

**Personnel Present:** Diane Gagnier, Director of Operations (dgagnier@greatlakescomposite.com)

**Other Personnel:** Lillian Woolley, Consultant (llwoolley@fishbeck.com)

### **Purpose**

Conduct an announced, scheduled, onsite partial compliance evaluation (PCE) inspection of Great Lakes Composite (GLC), as part of a full compliance evaluation (FCE). The inspection was conducted to determine compliance with MI-ROP-N2430-2019a. This is the first time the facility was inspected under the ROP.

### **Facility Background/Regulatory Overview**

Great Lakes Composite manufactures fiberglass paddleboats, fiberglass boat components and other fiberglass components using open and closed molding techniques. They produce traditional paddleboats along with duck-, dragon-, and swan-shaped paddleboats. Boat parts are also produced for other boat manufacturers such as Crest Marine Pontoons in Owosso, and fiberglass parts for John Deere.

The company previously would coat fan blade wheels with resin for a local air pollution control company under emission unit, EUBLADE; however, D. Gagnier confirmed during the inspection that these activities were transferred in February 2020 to GLC's sister company, Excel Pattern & Tool, a synthetic minor/opt-out facility located at 1655 Industrial Drive, Owosso (a National Composites brand), SRN N5716. Lillian Woolley, consultant, said that they wish to keep EUBLADE in the ROP in the event that the EUBLADE work gets transferred back to GLC. She said that they still have equipment at GLC to conduct the EUBLADE work. At this time, AQD finds it acceptable to leave EUBLADE in the ROP because the equipment used to conduct EUBLADE work is still present onsite.

GLC was permitted for 4 gelcoat booths with EUGELCOAT3 and EUGELCOAT4 permitted under PTI 129-16C (May 27, 2020); however, EUGELCOAT4 has not yet be constructed because D. Gagnier said they cannot find anyone to hire to construct the booths. GLC has 18 months from the date of permit issuance (November 27, 2021) to install EUGELCOAT4. If the booth does not begin construction by this date, GLC will have to reapply for and receive a permit to install from the AQD before installation can begin.

Owosso Composites, previously located at 403 South State Street (SRN N0598), moved to and purchased Wausaukee Composite's building (GLC's current location, 401 S. Delaney Rd) and assets. An inspection by Dan McGeen conducted in 2018 for N0598 confirmed that Owosso Composites/Paddlewheeler is no longer located at 403 South State Street. Owosso Composites became Great Lakes Composites February 2020.

The facility is located in an industrial park on the west side of Owosso, ~ a half mile south of M-21. The closest residences are located ~500' east of the property line; agricultural land is located to the west (across the street).

### *Permitting History*

GLC is a major source of hazardous air pollutants (HAPs) with the issuance of PTI 129-16A and a minor source of criteria air pollutants. PTI 129-16A contained equipment from PTI 55-07A, PTI 352-95, and new equipment for the expansion in manufacturing capacity. PTI 129-16B was issued to resolve compliance issues and was then incorporated into the initial ROP; PTI 129-16C was issued to include 2 new gelcoat booths; and PTI 129-16D was issued December 9, 2020 to modify FGOPENMOLDING and FGELCOAT by adding EUOPENMOLDING4 and 3 new gelcoat booths (EUGELCOAT3, EUGELCOAT4, and EUEXTRABOOTH). EURTM is now in the flexible group FGPRESS/OVEN which also contains EUPRESS and EUOVEN. FGPRESS/OVEN has been removed.

An application to modify PTI 129-16D is currently in-house: GLC is in the process of purchasing another building – possibly at 1894 Dowling Dr., adjacent to their current facility, to expand their processes and permit additional gel coat, open molding and resin transfer molding equipment (EU2GELCOAT, EU2OPENMOLDING, and EU2RTM), but they are also looking into another location for operations instead, which does not sound like it is adjacent or contiguous to their current site, and therefore may be considered a separate stationary source. D. Gagnier said they have not installed any equipment at this new building, but they are in the process of purchasing this equipment.

The initial ROP was issued July 1, 2019.

As a major source of HAPs, GLC is subject to the following National Emission Standards for Hazardous Air Pollutants (NESHAP):

- 40 CFR 63, Subpart VVVV, National Emission Standard for Hazardous Air Pollutants for Boat Manufacturing – The facility falls under this subpart as it is a major HAP source that is a boat manufacturing facility (40 CFR 63.5683 (a)). The requirements of this subpart are included in FGMACTVVVV of the permit.
- 40 CFR 63, Subpart WWWW, National Emission Standard for Hazardous Air Pollutants for Reinforced Plastic Composites Production - The facility falls under this subpart as it is a major HAP source that is a reinforced plastic composites production facility (40 CFR 63.5785(a)). The requirements of this subpart are included in FGMACTWWWW of the permit.

GLC was subject to 40 CFR 63, Subpart PPPP, National Emission Standard for Hazardous Air Pollutants for Surface Coating of Plastic Parts for a coating line; however based on the evaluation of PTI 129-16C, the coating line was removed and FGMACTPPPP was removed from the ROP.

## Inspection

At approximately 8:30 a.m. on August 24, 2021 I met with Diane Gagnier (pronounced Gahn-yay), Director of Operations, to conduct an inspection of the facility. Upon arrival at the facility, winds were out calm to out of the southwest at 7 mph. I did not detect any odors on the north side of the building where visitor parking is located.

D. Gagnier said GLC currently operates 8 hours per day, 6 a.m. – 2:30 p.m., including 8-hr days on Saturdays. She said that there is a high demand for labor at this facility, but no one to fill the positions; however, she said that if and when they can get a full labor force they will go back to operating 10-hr shifts (6 a.m. – 4:30 p.m.).

Table 1 contains a list of all equipment present onsite, based on my inspection of the facility. D. Gagnier confirmed that there are no emergency generators, boilers, or parts washers located at the facility at this time. She said GLC has not been building boats since March of 2021.

**Table 1. Great Lakes Composite Equipment**

<b>Emission Unit</b>	<b>Process Description</b>	<b>Control</b>	<b>PTI/Exemption</b>	<b>Federal Regs</b>
EUOPENMOLDING1	Open molding spray layup booth. Handheld mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUOPENMOLDING2	Open molding spray layup booth. Handheld mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUOPENMOLDING3	Open molding spray layup booth. Handheld mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUOPENMOLDING4	Open molding spray layup booth. Handheld mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUEXTRABOOTH	Multipurpose booth used for spray layup, application of gelcoat	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW

	materials, and associated with a dryer.			
EUGELCOAT1	Gelcoat spray booth using handheld, mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUGELCOAT2	Gelcoat spray booth using handheld, mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUGELCOAT3	Gelcoat spray booth using handheld, mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUGELCOAT4	Gelcoat spray booth using handheld, mechanical applicators.	Dry Filters	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUBLADE	Spray booth with spray applicator for coating metal and plastic fan blades with resin and catalyst materials.	Dry Filters	MI-ROP-N2430-2019a	MACT WWWW
EURTM	Resin Transfer Molding to manufacture boats and boat parts – closed mold process (resin & catalyst)	NA	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
EUPRESS	Compression molding to manufacture thermoset parts.	NA	MI-ROP-N2430-2019a	MACT WWWW
EUOVEN	Electric oven used to soften fiberglass sheets (fiberglass preform)	NA	MI-ROP-N2430-2019a	MACT WWWW

EUADHESIVEDISPING	Glue adhesive filling station. Manual application of methyl methacrylate (MMA) & styrene adhesives	NA	MI-ROP-N2430-2019a	NA
EUFOAM	Polyurethane foam production	NA	MI-ROP-N2430-2019a	MACT VVVV
EUCLEANUP	Cleanup activities + 2 acetone recycle systems  A 3 <sup>rd</sup> , unpermitted acetone recycle system is also installed.	NA	MI-ROP-N2430-2019a	MACT VVVV MACT WWWW
“Cold Cleaner”	Parts washer that uses aqueous an aqueous mixture of detergent.	NA	TBD	NA

### **EUADHESIVEDISPING**

EUADHESIVEDISPING is a piece of equipment used to manually apply methyl methacrylate (MMA) and styrene-based adhesives. It is not associated with any flexible group in the ROP, but stands as its own emission unit. Two components are mixed together in a mixing tube applicator (10 parts one component to 1 part of the other component) and applied to various parts. This unit was not operating during the inspection.

There are no Material Limits or Testing/Sampling requirements for this emission unit at this time.

#### **Emission Limits & Monitoring/Recordkeeping**

VOC's (including styrene) from this emission unit are limited to 1.0 tpy on a 12-month rolling time period, as determined at the end of each calendar month. To determine compliance with this limit, GLC is required to keep a current listing from the manufacturer of the chemical composition of each material, including the weight percent of each component, and the following records on a monthly basis: identity and amount (in pounds) of each material used; the VOC content (including styrene) of each material used; the appropriate emission factors for each raw material used (from UEF Table 1 for Open Molding of Composites from the American Composites Manufacturers Association) or other emission factor approved by the AQD District Supervisor; and the VOC mass emission calculations to determine the VOC monthly and 12-month rolling emission rates in tons.

Per discussions with GLC consultants (Fishbeck) they confirmed that the UEF table does not apply to this emission unit. I will follow up with the company to ensure that they submit a permit modification to remove the UEF emission factor requirement. Currently GLC uses a 0.5% emission factor for VOCs from the application of adhesives. They provided a "Thermwood" news article which explains that MMA adhesives will have no more than 0.5% of VOC released. I verified with SDS that the 2 adhesives used are MMA adhesives. Fishbeck further explained that the Thermwood article was shared during the permitting process and was used in the permitting process for emissions evaluations. At this time the AQD Lansing District will accept this article for use as a VOC emission factor, but further evaluations into how this was used in permitting may be necessary.

According to the 2019 – 2021 records, there are 2 adhesives and 1 catalyst that are used in this emission unit: SCIGRIP SG300-05-OW – Off White Adhesive, SCIGRIP SG605B-B Activator (catalyst), and SCIGRIP SG306A Adhesive. The VOC content reported in the recordkeeping is 0.4% by weight. This VOC content is not listed in the SDS. Fishbeck explained that the 0.4% is a calculated value based on the VOC components listed in the SDS. For example, from SCIGRIP SG300-05-OW, the highest total percentage of VOC is 79%. Fishbeck multiplies this weight percent by 0.5% (Thermwood VOC emission factor) to get the 0.4% VOC emission rate for these two adhesives.

L. Woolley provided me with electronic records for the monthly and 12-month rolling VOC emissions from January 2019 – June 2021. The 12-month period with the highest VOC emissions was February 2019 – January 2020 at 0.00693 tons, well below the 1.0 ton per year limit.

#### Process/Operational Restrictions & Design/Equipment Parameters

All waste materials are required to be stored in closed containers and disposed of in a manner in compliance with all state rules and federal regulations. Additionally, EUADHESIVEDISPING is permitted to be equipped with mechanical gun, non-atomizing applicators or comparable technology with equivalent transfer efficiency. D. Gagnier showed me that the only waste from this emission unit is in the glue tip of the mixing tube applicators (see photos). The applicators are then disposed of in a waste bucket. It is my professional judgment that the waste is enclosed within the applicator tubes and as such there are no fugitive emissions from the waste. The adhesive is applied using these applicators, similar to a caulking gun, thus there is 100% transfer efficiency. GLC is meeting the requirements of this condition at this time.

#### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

#### Stack/Vent Restrictions

The ROP lists stack dimension requirements for "SVRTM." EUADHESIVEDISPING does not have an associated stack onsite. Follow up will be had with the company to address this inconsistency.

#### **EUFOAM**

EUFOAM is associated with polyurethane foam production for boat floatation applications. EUFOAM is subject to the MACT Subpart VVVV, and therefore is part of flexible group FGMACTVVVV. Beginning in 2019, L. Woolley said GLC uses a BASF two-part system (ELASTOPOR P18820 R Resin/ELASTOPOR P 1001 U Isocyanate).

This emission unit was not being operated during the inspection. D. Gagnier said GLC has not produced boats since March 2021, and therefore there has not been a need in recent months to produce polyurethane foam.

There are no Emission Limits, Design/Equipment Parameters, or Testing/Sampling requirements at this time.

#### Material Limits & Monitoring/Recordkeeping

GLC is limited to 8,000 lbs of mixed polyol/isocyanate resin two-part foam per 12-month rolling time period for EUFOAM. Records of the monthly and 12-month rolling lbs of mixed polyol/isocyanate resin two-part foam used are required to be kept. Records were provided for the 12-month rolling periods from January 2019 – June 2021; L. Woolley stated that records are kept based on the total used of both components combined. The 12-month rolling period with the highest usage rate was June 2020 – May 2021 at 5,831 lbs.

#### Process/Operational Restrictions

All waste materials are required to be stored in closed containers and disposed of in a manner in compliance with all state rules and federal regulations. During the inspection, D. Gagnier explained that any residual waste from this process has already been reacted, and therefore is an inert solid. I did not ask to see the waste containers for this emission unit during the inspection as the equipment hasn't been operated since May 2021.

#### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

-

#### Stack/Vent Restrictions

The ROP lists stack dimension requirements for "SVRTM." EUFOAM does not have an associated stack onsite. Follow up will be had with the company to address this inconsistency.

#### **EUCLEANUP**

EUCLEANUP includes the permitting of two acetone recycle systems. EUCLEANUP is subject to the MACT Subparts VVVV and WWWW, and therefore is part of flexible groups FGMACTVVVV and FGMACTWWWW.

During the inspection D. Gagnier confirmed that only acetone is being recycled in these units, and acetone is the only solvent/cleaning material used for clean-up activities. I noted during the inspection that there are 3 acetone recycle systems, instead of the permitted 2 systems. D. Gagnier said this third system was installed over a year ago. Based on the original installation date of 5/2017, it appears this unit may be part of the entire project, as permitted under the 129-16 series permits. Ongoing discussions will be had with the company to ensure the 3rd unit is properly permitted or that a Rule 278a exemption demonstration is submitted as appropriate.

There are no Material Limits, Design/Equipment Parameters, Testing/Sampling, or Stack/Vent Restriction for EUCLEANUP at this time.

### Emission Limits & Monitoring/Recordkeeping

GLC is limited to 13.0 tons of Acetone (CAS# 67-64-1) and 1.0 tons of VOC, both per 12-month rolling time period from EUCLEANUP and is required to keep records on a monthly basis for the following: identity of each clean-up solvent used, the amount (in gals or lbs) of each clean-up solvent used, recovered and reclaimed. Monthly and 12-month rolling basis emissions for acetone and VOC are required to be kept.

Fishbeck and D. Gagnier explained that an inventory of purchased acetone and recycled acetone is taken weekly in order to create the emission records.

L. Woolley confirmed, during records requests, what D. Gagnier had said during the inspection: GLC only uses acetone as their clean-up solvent, and as such there are no VOCs to report (acetone is not considered a VOC because it is not chemically-reactive in the atmosphere). Records were provided for January 2019 – June 2021 of acetone used and acetone reclaimed (the difference of which is lbs of acetone emitted). The 12-month rolling period with the highest acetone emissions was July 2020 – June 2021 at 11.74 tons.

### Process/Operational Restrictions

All waste materials are required to be stored in closed containers and disposed of in a manner in compliance with all state rules and federal regulations. Based on my observations during the inspection, all containers poured into the acetone recyclers are kept closed, and the acetone recyclers themselves are closed-loop systems that do not emit to ambient air.

### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

## **FGOPENMOLDING**

This flexible group covers four open molding spray layup booths (EUOPENMOLDING1 – EUOPENMOLDING4) and one multi-purpose booth (EUEXTRABOOTH) with handheld mechanical applicators for the production of fiberglass boats and other plastic parts. Particulate is controlled by dry filters. The emission units contained in this flexible group are also subject to the MACT Subparts VVVV and WWWW (thus FGMACTVVVV and FGMACTWWWW flexible groups apply).

D. Gagnier explained that these booths are used to spray fiberglass, resin, and catalyst mixture (mixed together before spraying) on parts. This sprayed compound is then rolled out on the parts.

Three (3) of the 4 open molding booths were operating during the inspection. EUEXTRABOOTH was being used for repairs.

There are no Testing/Sampling requirements for FGOPENMOLDING at this time.

### Emission Limits & Monitoring/Recordkeeping



GLC is limited to 29.0 tons of VOC (including styrene) per 12-month rolling time period from all open molding booths, including the extra booth. The following records are required to be kept: identity and amount of each material used (lbs); the styrene content (wt%) of each material; the appropriate emission factor for each raw material from the October 2009 Unified Emission Factors (UEF) Table 1 (styrene and MMA only) or mass balance for non-styrene VOC emissions; and VOC mass emission calculations on a monthly and 12-month rolling basis.

VOC contents and styrene contents were verified using the SDS provided and comparing to the spreadsheets provided to demonstrate the calculations used for FGOPENMOLDING emissions. According to January 2019 – June 2021 records, there have been no materials used containing MMA. Dion FR 7704-00, PolyLite TLP 33234-24 (pcu 33234), Norox MCP-75 FRED, and H884-IVA-20 are the 4 materials that have been used during this time frame. A quantity of 200 lbs of Dion FR 7704-00 was used in April 2020, but has not been used before or after that time. Table 2 contains a list of the 4 materials, their styrene contents, and the associated UEF styrene emission factors, which are based on the quantity of styrene in each material. The entire UEF Table 1 is found in the attachments which were provided by the company. These styrene emission factors are specific to mechanical, non-atomized application, which the company confirmed is the type of application that is currently used in the open molding booths.

**Table 2. FGOPENMOLDING Materials and Associated Styrene Emission Factors**

Material	Resin Styrene Content (wt%)	UEF Equation <33% styrene	UEF Emission factor at 33%	UEF Emission Factor (lb/ton)
Dion FR 7704-00	31.5	$0.107 \times \% \text{ styrene} \times 2000$	NA	67.41
PolyLite TLP 33234-24	33	NA	71	71
Norox MCP-FRED	0	NA	NA	NA
H884-IVA_20	32.0	$0.107 \times \% \text{ styrene} \times 2000$	NA	68.48

The highest VOC (including styrene) emissions during the period of January 2019 – June 2021, was 4.7 tons for the 12-month rolling period of May 2018 - April 2019.

#### Material Limits & Monitoring/Recordkeeping

The styrene content of Flame Resistant Resins is limited to a maximum of 42.0 wt% and all other resins are limited to a maximum styrene content of 33.5 wt%. I discussed with Fishbeck how they determine which materials are Flame Resistant Resins and which ones are not. Flame Resistant Resins are identified as such in the SDS title of the material or within the description and will either label it as “FR” or “Flame Resistant.” They stated they

would begin including a column in the records to clearly document which materials are Flame Resistant and which ones are not. Flame Resistant resins are used for products used in healthcare applications.

Per evaluation of the 4 SDS, Dion FR 7704-00 is the only material that has styrene that is classified as a Flame Resistant Resin, at 31.5 wt% styrene. The remaining 2 non-Flame Resistant Resins that contain styrene are below the limit at 33 wt% and 32 wt%, in compliance with the Material Limits.

### Process/Operational Restrictions

All waste materials are required to be stored in closed containers and disposed of in a manner in compliance with all state rules and federal regulations. I observed the lamination overspray on the floors that cures almost instantly. The lamination overspray is picked up in large chunks and disposed of in the waste gondola. I noted at the waste gondola that residual cured lamination overspray (consisting of fiberglass) was scattered around the gondola and I requested that GLC increase housekeeping activities at this area to ensure that all waste is disposed of properly. Effectively minimizing entraining of these materials into the environment. D. Gagnier acknowledged this recommendation.

Additionally, GLC installed a parts washer approximately a month ago that employees use to wash their laminate rollers. D. Gagnier said this was implemented to reduce the amount of acetone that GLC is using. L. Woolley said this unit uses an aqueous-based, non-VOC containing detergent. I will request that an exemption demonstration be submitted for this unit to ensure its exempt status.

Rollers are also cleaned in buckets containing acetone. I did not inspect these waste buckets during the inspection.

Spent filters are required to be disposed of in a manner that minimizes introduction of air contaminants to the outer air. D. Gagnier said that the spent filters from the open molding operations and the extra booth are placed into garbage bags and into a dolly dumpster and then disposed of into the large gondola dumpster. I did not see any signs of spent filter dust around the gondola dumpster, and the process by which D. Gagnier described the filters are disposed appears to be acceptable for ensuring particulate is not getting into the outer air.

### Design/Equipment Parameters

All exhaust filters for the 4 open molding booths and the extra booth are required to be installed, maintained and operated in a satisfactory manner. The filters in the open molding booth are used to prevent fiberglass particles from exiting the stack. During inspection of the open molding booths, D. Gagnier pointed out that the exhaust filters are located near the ceiling. From my vantage point, it appeared that there were no gaps around the sides of the filters that would allow particulate to escape around the filter. The exhaust filters in EUEXTRABOOTH are in the floor panels. I observed that there were a few filters that had slight gaps and pointed these out to D. Gagnier, stressing the importance that there should be no gaps between the filter and the exhaust opening. She acknowledged this and said they would ensure there is excess filter to cover the sides completely.

Mechanical, non-atomized applicators (or applicators that would result in a lower styrene emission factor per the UEF Table) are required to be used. L. Woolley confirmed that only mechanical, non-atomized applicators are used at this time for FGOPENMOLDING.

-

### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

-

### Stack/Vent Restrictions

There are 5 stacks associated with FGOPENMOLDING. It may be of benefit at a future inspection to verify the stack heights using the AQD's Nikon rangefinder to ensure compliance with the permitted heights of the stacks.

### **FGGELCOAT**

This unit represents EUGELCOAT1 – EUGELCOAT4 and EUEXTRABOOTH for the application of gelcoat materials with a shared drying area. The emission units contained in this flexible group are also subject to the MACT Subparts VVVV and WWWW (thus FGMACTVVVV and FGMACTWWWW flexible groups apply). EUGELCOAT4 has not yet been installed.

There are no Testing/Sampling requirements for FGGELCOAT at this time.

### Emission Limits & Monitoring/Recordkeeping

GLC is limited to 29.0 tons of VOC (including styrene) per 12-month rolling time period from all gel coat booths, including the extra booth. The following records are required to be kept: the amount and identity of each material used (lbs); the styrene content (wt%) of each gelcoat used; the MMA content (wt%) of each gelcoat used; the appropriate emission factor for each raw material from the October 2009 Unified Emission Factors (UEF) Table 1 (styrene and MMA only) and mass balance for non-styrene, non-MMA VOC emissions; and the VOC mass emission calculations on a monthly and 12-month rolling basis.

GLC uses over 25 different gelcoats. According to 2021 records, these are the 5 most-used gelcoats: Maxguard CG-SG-0010 Spray Granite, Polycor Off-White 944WP506, Polycor HAP37 Tan 964NP451, Polycor HAP37 Light Gray 964AP416, and Polycor HAP37 Oxford Gray-BC 964AP620. These SDS were reviewed in detail to ensure compliance. All other gelcoats were reviewed based solely on the datasheet entry provided by the company. Table 3 contains a list of the top 5 materials, their styrene contents, and the associated UEF styrene emission factors, which are based on the quantity of styrene in each material. Table 4 contains a list of the top 5 materials, their MMA contents, and the associated UEF MMA emission factor based on MMA content. The entire UEF Table 1 is found in the attachments which were provided by the company. These styrene emission factors are specific to mechanical, non-atomized application. L. Woolley explained that the gelcoat applicators are air-assisted with tips retrofitted on the applicators to ensure a lower pressure, thus non-atomized, mechanical application.

The company's Excel spreadsheet equations used in calculating the VOC content for FGGELCOAT includes the UEF Equation  $0.185 \times \% \text{styrene} \times 2000$ , which differs from the equation required, as defined in the UEF Table 1  $((0.4505 \times \% \text{styrene}) - 0.0505) \times 2000$ ) for styrene contents less than 33%. I discussed this discrepancy with Fishbeck. They explained that the 0.185 equation is referenced in the MACT Subpart WWWW and they had used this equation for calculating VOC content specific to FGGELCOAT emissions reporting. S. Kueick did some recalculations while on our Teams call and showed that the change in the equation (from  $0.185 \times \% \text{styrene} \times 2000$  to  $(0.4505 \times \% \text{styrene}) - 0.0505$ ) would not result in large differences of emissions, since styrene is only a fraction of total VOC emissions and there only a small amount of materials that fall below 33% styrene. Fishbeck said they would correct the VOC emission calculations in columns AC-AE to ensure calculations reflect the appropriate UEF styrene emission factor equation.

**Table 3. FGELCOAT Materials and Associated Styrene Emission Factors**

<b>Material</b>	<b>Gelcoat Styrene Content (wt%)</b>	<b>UEF Equation</b> <b>19% &lt; styrene &lt;32%</b>	<b>UEF Emission Factor</b> <b>(lb/ton)</b>
Maxguard CG-SG-0010 Spray Granite	31.1	$((0.4506 \times \% \text{ styrene}) - 0.0505) \times 2000$	179.3
Polycor Off-white 944WP506	30.4	$((0.4506 \times \% \text{ styrene}) - 0.0505) \times 2000$	173.0
Polycor HAP37 Tan 964NP451	30.8	$((0.4506 \times \% \text{ styrene}) - 0.0505) \times 2000$	176.6
Polycor HAP37 Light Gray 964AP416	30.1	$((0.4506 \times \% \text{ styrene}) - 0.0505) \times 2000$	170.3
Polycor HAP37 Oxford Gray-BC 964AP620	31.8	$((0.4506 \times \% \text{ styrene}) - 0.0505) \times 2000$	185.6

**Table 4. FGELCOAT Materials & Associated MMA Emission Factors**

<b>Material</b>	<b>Gelcoat MMA Content (wt%)</b>	<b>UEF Emission Factor</b> <b>(lb/ton)</b>
Maxguard CG-SG-0010 Spray Granite	10.0	150
Polycor Off-white 944WP506	5.0	75
Polycor HAP37 Tan 964NP451	5.0	75
Polycor HAP37 Light Gray 964AP416	5.0	75

Polycor HAP37 Oxford Gray-BC 964AP620	5.0	75
------------------------------------------	-----	----

The highest VOC (including styrene) emissions during the period of January 2019 – June 2021, was 10.2 tons for the 12-month rolling period of March 2018 - February 2019.

#### Material Limits & Monitoring/Recordkeeping

Gelcoats have maximum styrene and MMA contents as specified in Table 5, per “color” of gelcoat. Table 5 also includes the highest styrene and MMA contents among all the gelcoat materials used. There are no Tooling Gelcoats used at GLC at this time. Tooling gelcoats are used to make molds, and this part of GLC’s business is being conducted at Excel Pattern & Tool at this time. Fishbeck consultants stated that the SDS typically will make it clear whether the gelcoat is clear or pigmented (white or other colors). The records indicate compliance with the Material Limits at this time.

**Table 5. Material Content Limits**

<b>Material</b>	<b>Max Styrene Content Limit (wt%)</b>	<b>Highest Styrene Content (wt%)</b>	<b>Max MMA Content Limit (wt%)</b>	<b>Highest MMA Content (wt%)</b>
White Gelcoats	31.0	30.4 (Polycor Off-White 944WP506 & Vanilla)	5.0	5.0 (Vanilla & Polycor Base White)
Clear Gelcoats	32.0	31.1 (Maxguard CG-SG-0010 Spray Granite)	10.0	10.0 (Maxguard CG-SG-0010 Spray Granite)
All Other Pigmented Gelcoats	40.0	40.0 (Platinum Tan Low VOC N-1404-LNHN)	10.0	10.0 (Armorcoat green 961GJ117, HAP33 Charcoal Armorcote 991AP633, A-Gray Low VOC B-1536-LNHN)
Tooling Gelcoats	43.0	NA	5.0	NA

#### Process/Operational Restrictions

All waste materials are required to be stored in closed containers and disposed of in a manner in compliance with all state rules and federal regulations. I observed all 3 gelcoat booths and noted the following: Each gelcoat booth has 1 – 2 5-gallon waste pails used for waste acetone collection. There were multiple acetone waste buckets in these booths that were not closed (no lid on them). I brought this to the attention of D. Gagnier and expressed the importance of ensuring the lids were on all waste buckets when not in use to prevent fugitive emissions of acetone. See attached photos. She stated she would get lids put on these waste buckets. Failure to do so in the future could result in a violation notice.

Spent filters are required to be disposed of in a manner that minimizes introduction of air contaminants to the outer air. D. Gagnier said that the spent filters from the gelcoat operations are rolled up and placed into a dolly dumpster to transport the filters to the large gondola dumpster. D. Gagnier showed me that gelcoat on the filters appears not to create particulate like a paint coating would. The gelcoat hardens on the filters and it is my professional judgment that any air contaminants associated with these waste filters would be in the form of hard, plastic-like pieces that are too heavy to get re-entrained into the outer air. I did not see any signs of gelcoat around the gondola dumpster, and the process by which D. Gagnier described the filters are disposed appears to be acceptable.

#### Design/Equipment Parameters & Monitoring/Recordkeeping

All exhaust filters for the gelcoat booths are required to be installed, maintained and operated in a satisfactory manner. I inspected the installation of the filters in the 3 booths. EUGELCOAT1: all filters were installed properly. EUGELCOAT2: 2 of the 4 panel filters need to be reinstalled to ensure there are no gaps between the exhaust opening and the wall. EUGELCOAT3: small gaps noticed around one of the filters. See attached photos.

I brought these filter installation deficiencies to D. Gagnier's attention, who said that it is better to have too much filter than too little. I agreed with her statement and she said they would work to get the filters reinstalled properly. Failure to do so could result in a violation in the future.

Mechanical, non-atomized applicators (or applicators that would result in a lower styrene emission factor per the UEF Table) are required to be used. L. Woolley confirmed that only mechanical, non-atomized applicators are used at this time for FGOPENMOLDING.

#### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

#### Stack/Vent Restrictions

There is a stack associated with each gelcoat booth, and there is a stack associated with the extra booth. Future inspections may involve verifying these stack heights against the permitted stack heights with the Nikon rangefinder in order to determine compliance.

#### **FGRTM/PRESS**

This flexible group covers Resin Transfer Molding (RTM) (EURTM), an electric pre-form oven (EUOVEN) and compression molding operations (EUPRESS) used to manufacture boats and boat parts in a closed-mold process. EURTM in this flexible group is subject to the MACT Subpart VVVV, and all emission units in this flexible group are subject to the MACT Subpart WWWW (thus FGMACTVVVV and FGMACTWWWW flexible groups apply).

EURTM was operating during the inspection, EUPRESS and EUOVEN were not.

There are no Design/Equipment Parameters or Testing/Sampling requirements for FGRTM/PRESS at this time.

#### Emission Limits & Monitoring/Recordkeeping

FGRTM/PRESS was created upon issuance of PTI 129-16D, December 9, 2020. EURTM was inadvertently left in the ROP when PTI 129-16 was rolled in. As such, an ROP minor modification will be submitted by GLC to ensure EURTM is removed, now that it is covered under FGRTM/PRESS. The EURTM emission limit of 300 lb/year on a 12-month rolling time period basis will be evaluated for compliance from January 2019 – December 9, 2020. From December 10, 2020 – June 2021, VOC emissions will be evaluated based on the FGRTM/PRESS VOC limit of 3.0 tons/year 12-month rolling totals.

The following records are required to be kept to demonstrate compliance with the VOC limits: the identity and amount of each material (lbs) used; the styrene content (wt%) of each resin used; the VOC content (including styrene) of each material used; the styrene emission factor of 1% by weight from AP-42 Section 4.4 for Polyester Resin Plastics Production Fabrication for closed-molding processes; and VOC mass emission calculations on a monthly and 12-month rolling basis.

According to 2021 records, Norox MCP-75 FRED, Luperox DDM-9, Stypol 040-8086 Unsaturated Polyester Resin, and 136-7977 UP Resin 767 Type RTM Resin are the top 4 materials that have been used in EURTM and EUPRESS during this time frame. The SDS for these 4 materials were reviewed in detail with the company's calculation spreadsheet to ensure compliance. All other materials were reviewed based solely on the spreadsheet entry provided by the company. Table 2 contains a list of the 4 materials, and their styrene contents as listed in their SDS, unless noted otherwise in the table.

**Table 6.** FGRTM/Press Materials and Associated Styrene Contents

Material	Resin Styrene Content (wt%)
Norox MCP-75 FRED (used in EURTM and EUPRESS)	0
Luperox DDM-9 (used in EURTM only)	0
Stypol 040-8086	40

(used in EURTM only)	
136-7977 UP Resin 767 Type RTM Resin (used in EURTM only)	43.46 (per EDS)

Records were reviewed for the period of January 2019 – December 2020 to determine compliance with the EURTM 300 lb/year VOC limit. The 12-month rolling period with the highest VOC emission rate during this timeframe was January 2020 – December 2020 at 186 lbs of VOC. January 2021 – June 2021 total VOC for FGRTM/PRESS is 0.2 tons, in compliance with the 3.0 ton limit per 12-month rolling period.

#### Material Limits & Monitoring/Recordkeeping

The styrene content of all resins used in FGRTMPRESS shall not exceed 44.5% by weight. Review of the records shows that the highest styrene content is 43.5% by weight in the 136-7977 UP Resin. All other materials have a styrene content below this weight %.

#### Process/Operational Restrictions

All waste materials are required to be stored in closed containers and disposed of in a manner in compliance with all state rules and federal regulations. I observed one 5-gallon waste pail being used for acetone waste while operating EURTM (see attached photo). The pail was uncovered and I brought this to D. Gagnier's attention. She said that the pail is left uncovered at all times, including when it's being used to clean the transfer molds. We discussed options to ensure the waste pail stays covered, particularly when it is not in use and she mentioned that a lid with a hole cut in it for the waste tube may work. I will work with the company to ensure we have a fix to ensure the EURTM waste pails are covered. Failure to get the waste containers covered could result in a violation notice.

The acetone waste in these EURTM pails is disposed of in GLC's acetone recyclers under EUCLEANUP.

There are 2 waste buckets used at EUPRESS and EUOVEN. D. Gagnier said that the waste in the buckets has already been catalyzed (thus any emissions have already been released and accounted for in the emission spreadsheets), and therefore the result is a hardened mass in the bucket, which I observed is the case during the inspection. Both waste containers were covered.

#### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

#### Stack/Vent Restrictions

There is a stack associated with FGRTM/PRESS. Future inspections may involve verifying these stack heights against the permitted stack heights with the Nikon rangefinder in order to determine compliance.



**FGMACTVVVV**

This flexible group encompasses EUOPENMOLDING1-EUOPENMOLDING4, EURTM, EUGELCOAT1-EUGELCOAT4, EUEXTRABOOTH, EUFOAM, and EUCLEANUP for each new or reconstructed affected source at boat manufacturing facilities (40 CFR 63.5683 and 40 CFR 63.5689). Affected sources include the following open molding resin and gelcoat operations: production resin; tooling resin; pigmented gelcoat; clear gelcoat; tooling gelcoat; closed mold resin operations, resin and gelcoat mixing operations; resin and gelcoat application equipment cleaning operations; and carpet and fabric adhesive operations.

There are no Process/Operational Restrictions, Design/Equipment Parameters, Testing/Sampling, or Stack/Vent Restriction requirements for FGMACTVVVV at this time.

**Emission Limits & Monitoring/Recordkeeping**

GLC has chosen to comply with the Emissions Averaging (weighted average) Compliance Option, which requires that a facility-specific emission limit for Total Organic HAP be calculated based on the amount of each material (Production Resin, Pigmented Gelcoat, Clear Gelcoat, Tooling Resin and Tooling Gelcoat) used and its styrene content for the most recent 12-month period. For GLC, these emission limits change every month. Emissions are calculated on a 12-month rolling average using Equation 1 from 40 CFR 63.5710. Weighted-average MACT model point values for each open molding resin and gel coat operation are calculated monthly. Attached to this report are the records of the calculated emission limits (Excel spreadsheet column "VVVV HAP Limit (kg)") and the 12-month rolling average emissions (Excel spreadsheet column "VVVV Eq. 1 HAP Emissions (kg/12-mo rolling)") review of the records from January 2019 – June 2021 indicate compliance with the Total Organic HAP Emission Limits at this time.

**Material Limits**

Material Limits do not apply at this time. Material Limits only apply when using the Compliant Materials Option.

**Monitoring/Recordkeeping**

GLC is required to prepare an implementation plan, as specified in 40 CFR 63.5707, because they use the Emissions Averaging compliance option. The implementation plan is included in the attached PDF and describes all items listed in (b)(1)-(3) of the aforementioned section. Initially GLC had planned to use the simpler Compliant Materials Option; however, most of the materials used did not meet the limits, and therefore Emissions Averaging was instituted in order to comply with the limit.

**Reporting**

All required reporting has been submitted by the timelines specified in the ROP.

**FGMACTWWWW**

This flexible group encompasses EUOPENMOLDING1-EUOPENMOLDING4, EUGELCOAT1-EUGELCOAT4, EUEXTRABOOTH, EURTM, EUPRESS, EUOVEN, and EUCLEANUP for each new or reconstructed affected source

at reinforced plastic composites production facilities (defined in 63.5785). Reinforced plastic composites production includes cleaning, mixing, HAP-containing materials storage, and repair operations associated with the production of plastic composites.

There are no Material Limits, Design/Equipment Parameters, or Stack/Vent Restrictions at this time.

**Emission Limits, Testing/Sampling & Monitoring/Recordkeeping**

Organic HAP Emission Limits are based on the type of resins, gelcoats, and applicator style that is used in open molding applications. The limits are based on 12-month rolling averages, as determined at the end of each calendar month. GLC has chosen to use the compliance option specified in 40 CFR 63.5810(c) (SC I.12c), which uses those Emission Limits to calculate a weighted average emission limit. The weighted average emission limit will change each month depending on quantity and type of materials used.

I requested the facility to fill out the following table (Table 7) that I created to get a sense for which emission units use which type of material/applicator style. "CR/HS" is defined as Corrosion Resistant and/or High Strength. "NA" indicates not applicable based on current operations. "TBD" means data is still needed. The materials listed in Table 7 are not used in EURTM, EUPRESS, EUOVEN, and EUCLEANUP operations. Low-flame spread/low-smoke and shrinkage-controlled resins are currently not used in any of the emission units.

**Table 7. Materials Used per Emission Unit**

EU	CR/HS Resin, Mechanical App	Non- CR/HS Resin, Mechanical App	Tooling Resin, Mechanical App	Tooling gel coat	White/off white pigmented gelcoat	Pigmented gelcoat	CR/HS or high performance gelcoat	Fire retardant gel coat	Clear productic gel coat
EUOPENMOLDING1	Yes	Yes	Yes	No	No	No	TBD	No	No
EUOPENMOLDING2	Yes	Yes	Yes	No	No	No	TBD	No	No
EUOPENMOLDING3	Yes	Yes	Yes	No	No	No	TBD	No	No
EUOPENMOLDING4	Yes	Yes	Yes	No	No	No	TBD	No	No
EUBLADE	NA	NA	NA	NA	NA	NA	NA	NA	NA

EUGELCOAT1	No	No	No	Yes	Yes	Yes	TBD	Not currently	Yes
EUGELCOAT2	No	No	No	Yes	Yes	Yes	TBD	Not currently	Yes
EUGELCOAT3	No	No	No	Yes	Yes	Yes	TBD	Not currently	Yes
EUGELCOAT4	NA	NA	NA	NA	NA	NA	NA	NA	NA
EUEXTRABOOTH	Yes	Yes	Yes	Yes	Yes	Yes	TBD	Not currently	Yes

The “Weighted Average Organic HAP Open Molding Emission Limit (lb/ton)” and “Weighted Average Open Molding Emission Actual HAP Emission Factor (lb/ton)” columns in the attached “MACT Subpart WWWW” spreadsheet were reviewed for compliance. All emission factors are in compliance with the Emission Factor Limits from January 2019 – June 2021.

#### Process/Operational Restrictions & Other Requirements

GLC shall not use cleaning solvents that contain HAP, except that styrene may be used as a cleaner in closed systems, and organic HAP-containing cleaners may be used to clean cured resin from application equipment. At this time GLC does not use any HAP-containing cleaners. Acetone is a non-HAP and is the only solvent used for cleaning purposes.

HAP-containing materials storage operations are required to have all containers closed or covered except during the addition or removal of materials. I inspected the material storage areas throughout GLC and verified that all material storage containers are closed.

I did not observe any mixing operations occurring during the inspection. Future inspections would benefit from review of mixing operations to ensure compliance with covers on the mixers.

#### Reporting

All required reporting has been submitted by the timelines specified in the ROP.

**Compliance Statement**

At this time Great Lakes Composite appears to be in compliance with MI-ROP-N2430-2019a, with the caveat that GLC will address improper installation of filters and open acetone waste containers.



**Image 1(EUADHESIVEDISPING)** : applicators used for EUADHESIVEDISPING



**Image 2(Acetone Recycling)** : 3 acetone recyclers used for waste acetone.



**Image 3(EURTM)** : Area where EURTM operations are conducted. Closed-mold process.



**Image 4(EURTM Waste)** : EURTM acetone waste bucket - open. No lid.



**Image 5(EUADHESIVEDISPING)** : EUADHESIVEDISPING emission unit. closed-loop system.



**Image 6(FGELCOAT)** : Open acetone waste bucket in FGELCOAT booth.



**Image 7(Waste close-up)** : Acetone waste bucket close-up - waste present in open container.



**Image 8(Gelcoat Filters)** : Filters installed in a gelcoat booth





**Image 9(Gelcoat Filters)** : Note gap at bottom of filter - improper installation.



**Image 10(Open mold filter)** : Exhaust filters for FGOPENMOLDING, located on ceiling of FGOPENMOLDING area.



**Image 11(Waste Gondola)** : Note fiberglass waste on floor.



**Image 12(EUEXTRABOOTH)** : EUEXTRABOOTH with exhaust filters under floor panels.



**Image 13(EUEXTRABOOTH panel)** : Gaps between exhaust outlet and filter media. No coating operations conducted at the time.

NAME Michelle Luplow

DATE 9/27/21

SUPERVISOR B.M.

# Technical Memo

**SUBJECT:** Response to Request for Information (RFI) Associated with August 24, 2021, EGLE Inspection  
Great Lakes Composite, LLC (N2430)

**DATE:** September 9, 2021

**PROJECT NO.:** 200395

## Table of Contents

Introduction .....	1
FGMACTWWWW .....	2
FGRTM/PRESS .....	5
EUADHESIVEDISPING .....	5
FGOPENMOLDING .....	5
FGGELCOAT.....	6
Record Keeping.....	6
EUBLADE .....	7
EURTM .....	7
EUADHESIVEDISPING .....	7
EUFOAM.....	8
EUCLEANUP .....	8
FGOPENMOLDING .....	8
FGGELCOAT.....	9
FGMACTVVVV .....	9
FGMACTWWWW.....	10
List of Attachments.....	10
List of Abbreviations/Acronyms .....	10

## Introduction

On August 24, 2021, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) conducted an inspection at the Great Lakes Composite, LLC (GLC) facility at 401 South Delaney Road, Owosso, Michigan. After the inspection, EGLE requested additional information to demonstrate GLC’s compliance with Title V Renewable Operating Permit (ROP) MI-ROP-N2430-2019a. This information is provided in the responses that follow and the attached tables.

For your convenience, the EGLE questions are provided in ***bold italics*** with our response following.

## FGMACTWWWW

***Does Great Lakes Composites switch between the different compliance options, as specified in FGMACTWWWW Emissions Limits Condition I.12a – 12d? Which compliance options from these 4 has Great Lakes Composites used thus far?***

GLC has primarily used the compliance Option 1.12c. (yellow highlighted below), although the facility retains the option to use any of the four options to demonstrate compliance with 40 CFR Part 63 Subpart WWWW (4W). The options are listed below:

12. *The permittee shall use one or a combination of the following methods to meet the standards for open molding operations in Table 3 of Subpart WWWW of Part 63. (40 CFR 63.5810)*
  - a. *Demonstrate that an individual resin or gel coat, as applied, meets the applicable emission limit in Table 3 of Subpart WWWW of Part 63. (40 CFR 63.5810(a))*
  - b. *Demonstrate that, on average, the facility meets the individual organic HAP emissions limits for each unique combination of operation type and resin application method or gel coat type shown in Table 3 to this subpart that applies to the facility. (40 CFR 63.5810(b))*
  - c. *Demonstrate compliance with a weighted average emission limit. Demonstrate each month that the permittee meets each weighted average of the organic HAP emissions limits in Table 3 to this subpart that apply the weighted average organic HAP emissions limit for all open molding operations. (40 CFR 63.5810(c))*
  - d. *Meet the organic HAP emissions limit for one application method and use the same resin(s) for all application methods of that resin type. This option is limited to resins of the same type. The resin types for which this option may be used are non-corrosion-resistant, corrosion-resistant and/or high strength, and tooling. (40 CFR 63.5810(d))*
13. *The permittee may switch between the compliance options in SC I.12.a through 12.d. When changing to an option based on a 12-month rolling average, the facility must base the average on the previous 12 months of data calculated using the compliance option the facility is changing to, unless the facility previously used an option that did not require the facility to maintain records of resin or gel coat. In this case, the facility must immediately begin collecting resin and gel coat and demonstrate compliance 12 months after changing options. (40 CFR 63.5810)*

A majority of materials used by GLC could comply with Subpart 4W using Option I.12a. Only the white/off-white pigmented gel coats do not conform to the requirements of Subpart 4W as outlined in Condition 1.12a (green highlighted above). GLC is working with suppliers to determine if there are replacement materials that comply with the Subpart 4W limits that would work for their process. If GLC finds compliant materials that work for their operation, they intend to switch to the compliance method outlined in option I.12a. Should there be any changes in compliance method, GLC will detail the changes in their semiannual report.

***Only mechanical application methods are used for the emission units subject to the MACT WWWW, correct?***

GLC uses mechanical spray guns that operate as *non-atomizing*. When calculating emissions, if it is an option for each material type, the factors for mechanical, non-atomizing spray guns are used.

***For Open Molding: which emission units use each type of resin/gel coat?***

The table on the following page is an excerpt from Subpart 4W and provides information on the various resins and gel coats used at GLC, as well as in which emission units each may be used. In addition, most of the molds and tools currently in use at GLC are produced at Excel Pattern & Tool,<sup>1</sup> which explains the low usage of tooling resins and tooling gel coats at GLC. In the event this changes, the necessary tooling resins and gel coats (currently used at Excel Pattern and Tool) can be used at GLC, provided compliance with the applicable National Emissions Standard for Hazardous Air Pollutants (NESHAP) limits are demonstrated.

The EURTM and EUPRESS are closed molding processes – which do not involve use of mechanical applicators. Currently, resin transfer molding (RTM) at GLC uses a resin that can be classified as *high strength* and *corrosion resistant*, other resins can also be used in EURTM as well as in EUPRESS. Emissions from closed molding operations are much lower than from open molding and gel coat operations; as a result, the PTI/ROP is less specific about the types of resins that can be used for closed molding. In addition, there are no emission limits for closed molding in either Subpart VVVV (4V) or Subpart 4W; simply *work practice standards*. EURTM is sometimes used in conjunction with EUPRESS, which is why they are included in a single flexible group. Emissions are associated with the original emission unit in our record keeping spread sheet, as the oven itself has no additional emissions it just speeds up the curing that would take place in the original emission unit.

For EUCLEANUP, it should be noted that both Subparts 4V and 4W only reference work practice standards and a restriction on specific clean-up solvents used. Acetone is used for clean-up, which contains no hazardous air pollutants (HAPs). In addition, GLC recently purchased a cold cleaner that uses an aqueous mixture including a detergent that contains no volatile organic compounds (VOCs) to further reduce emissions at the facility.

---

<sup>1</sup> Excel Pattern and Tool is a sister company to GLC



## FGRTM/PRESS

**Are emissions expected from the compression molding on EUPRESS and from softening of the fiberglass sheets in EUOVEN? What emission factors are used for these 2 processes?**

EUPRESS is a large machine used for compression molding, which is a type of closed molding that uses fiberglass and has emissions very similar to RTM. Compression molding is used in manufacturing thermoset plastic parts; the raw materials are usually granules, putty-like masses, or preforms. At GLC, fiberglass is placed in a 2-piece heated mold, which is then closed and pressure is applied to fill all the cavities within the mold. A hydraulic ram is used to produce force needed during the molding process. Heat and pressure are maintained until the plastic material is cured.

To simplify record keeping, emissions from EUPRESS (which is now a part of FGRTMPRESS) are estimated in the same work book and using the same emission factors as RTM. The emission factor is 1% of the styrene in the monomer and is listed in Table 4.4-2 in the *Compilation of Air Pollutant Emission Factors (AP-42)*.

The oven is not used often. While developing the Permit to Install (PTI), it was agreed that the emissions would be associated with the emission unit rather than with the oven, as the oven itself does not generate any additional emissions. Emission estimates are the same whether the emission unit goes through the oven or not.

## EUADHESIVEDISPING

**Are the applicators used here non-atomizing? What kind of transfer efficiency do these applicators have?**

As required by the ROP, the adhesives are applied using mechanical, non-atomizing guns whenever the adhesive is sprayed. In most cases, the adhesive is not sprayed, rather, a bead of adhesive is applied (like one would have from a caulking applicator); the transfer efficiency in that case is 100%. In some cases, the adhesive is applied by hand; the transfer efficiency in that case is also 100%.

## FGOPENMOLDING

**What types of applicators are used in the open molding booths – what type of styrene emission rates do these applicators afford? (see [Special Condition] SC IV.2 for the basis of this question)**

Mechanical, non-atomizing applicators are used in FGOPENMOLDING. The styrene emission rate for complying with the VOC limit for FGOPENMOLDING for mechanical, non-atomizing applicators can be found in EF Table I Unified Emission Factors (UEF) for Open Molding of Composites (Attachment 1).

Styrene content in resin/gel coat, % <sup>(a)</sup>	<33 <sup>(b)</sup>	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	>50 <sup>(b)</sup>
Mechanical Non-Atomized	$0.107 \times \% \text{ styrene} \times 2000$	71	74	77	80	83	86	89	93	96	99	102	105	108	111	115	118	121	124	$((0.157 \times \% \text{ styrene}) - 0.0165) \times 2000$

In the excerpt from the table (presented above), the first column is used for resins/gel coats with a styrene content less than 33%, while the last column is used if the styrene content is greater than 50%. For example, when the styrene content is 35%, the emission factor is 77 pounds per ton (lb/ton) of monomer.

For Subpart 4W, the HAP emissions are estimated using the equations presented in Table 1 of the rule. For Subpart 4V, the HAP emissions are estimated using the equations in Table 3 of the rule.



## FGGELCOAT

**What types of applicators are used in these booths? Are test caps available to ensure the pressure out of the applicators is not greater than 10 [pounds per square in gauge] psig?**

The applicators used in FGGELCOAT are also considered *mechanical, non-atomizing*. The applicators purchased are actually *hydraulic atomization, air assisted*; however, they were retrofitted with tips to ensure that the application pressure is kept low. The transfer efficiency of these applicators<sup>2</sup> is greater than conventional high volume low pressure (HVLP) applicators, required in the permit.



Graphic 1. Applicator Transfer Efficiency

Test caps are available to test operating pressure; however, because the pressure is restricted by the tips and is not adjustable, it is unnecessary to test the pressure.

## Record Keeping

**For each emission unit in the ROP, I'd like a list of the coatings used in that emission unit from January 2019 – June 2021. Please ensure that the list identifies which emission unit each coating is associated with.**

**Provide the manufacturer's chemical composition of each material used for all emission units ([Safety Data Sheets] SDS or manufacturer's formulation data) – this should be the data sheet that you used for the emissions calculations (via VOC content, styrene content, etc.)**

**Please provide Excel spreadsheets to show how calculations were done.**

In each MS Excel® record keeping workbook, the tab *Material HAP* lists materials in use at the facility and classifies it as gel coat, adhesive, etc. While the workbook does not specifically reference the emission unit in which a material is used, the gel coats are used in FGGELCOAT, the adhesives are used in EUADHESIVEDISPING, etc. On the tab for each individual emission unit, the spreadsheet lists the materials in use in that emission unit or flexible group and amounts used for each month. In some cases, there may be materials listed on the *Material HAP* spreadsheet that were previously used at the facility but are not currently being used. For example, coatings associated with a painting line that has been removed are still included on the spreadsheet. Because the facility could begin coating again –even just under a Rule 287(c) exemption – GLC has elected to keep all the raw materials in its record keeping workbook and simply add new materials.

The chemical composition of the materials in use were determined using a combination of SDS and formulation data. This information, along with all the formulation data and the SDS for materials currently in use at GLC, have been included in the associated PTI applications. Some example SDS for comparison to our chemical composition information can be provided upon request as an example.

One unprotected 2020 workbook is included in this submittal and can be used to double-check emission calculations.

<sup>2</sup> <https://www.graco.com/us/en/in-plant-manufacturing/solutions/articles/tips-for-improving-transfer-efficiency.html>

## EUBLADE

*EUBLADE records should include the following monthly records for the period May 2019 - June 2021:*

- *The identity and quantity, in pounds, of each material used in EUBLADE.*
- *The styrene wt% content of each resin used.*
- *The VOC (including styrene) content of each material used.*
- *The emission factors for each raw material used (and the origin of where those factors came from)*
- *Styrene and VOC (including styrene) mass emission rates in lb/calendar month and 12-month rolling time periods.*

EUBLADE is has not operated since February 2020. EUBLADE records from 2019-2020 are presented in Attachment 2. The EUBLADE tab of the workbook lists the raw materials used in EUBLADE and is linked to the *Material HAP* tab, which lists the composition. For example, the 2020 EUBLADE tab lists Hetron 197P, Hetron FR 992, and Luperox DDM-9 CLEAR (catalyst). In the *Material HAP* tab, the styrene content for Hetron 197P is listed as 42% and for Hetron FR 992 as 40%; styrene is the only VOC in these two resins and the VOC content is also 42% and 40%, respectively. The emission factor for each resin is listed in the EUBLADE tab as 233.7 lb VOCs/ton resin for the Hetron 197P and 210.48 lb VOCs/ton for the Hetron FR 992. The catalyst contains no styrene. While the catalyst likely has no emissions because the components react, it was assumed that the 2% VOC content is emitted resulting in an emission factor of 40 lb VOCs/ton catalyst.

## EURTM

*EURTM records should include the following monthly records for the period of January 2019 – June 2021:*

- *The identity and quantity, in pounds, of each material used in EURTM.*
- *The VOC (including styrene) content of each material used.*
- *The emission factors for each raw material used (and the origin of where those factors came from)*
- *VOC (including styrene) mass emission rates in lb/calendar month and 12-month rolling time periods.*

EURTM is now included in FG RTM/PRESS. Emissions for the entire flexible group are provided in Attachment 3. The EURTM tab of the workbook lists the materials used in EURTM; one of the resins (Bulk Resin 136-7977 and Stypol 040-0806 Unsaturated Polyester Resin) listed contains only 40% styrene. The VOC content is also 40%. The emission factor is 1% of the styrene in the monomer and can be used to estimate both styrene and VOC. The Bulk Resin 136-7977 has a styrene and VOC content of 40% and uses an emission factor of 800 lb/ton. The catalyst (Luperox DDM-9 CLEAR) contains no styrene. While the catalyst likely has no emissions, it was assumed that the 2% VOC content is emitted resulting in an emission factor of 40 lb VOCs/ton catalyst.

## EUADHESIVEDISPING

*EUADHESIVEDISPING records should include the following monthly records for the period of January 2019 – June 2021:*

- *The identity and quantity, in pounds, of each material used in EUADHESIVEDISPING.*
- *The VOC (including styrene) content of each material used.*
- *The emission factors for each raw material used (and the origin of where those factors came from)*
- *VOC (including styrene) mass emission rates in lb/calendar month and 12-month rolling time periods.*

EUADHESIVEDISPING emissions are provided in Attachment 4. The EUADHESIVEDISPING tab of the workbook lists the materials used in EUADHESIVEDISPING; the two adhesives contain 0.395% VOCs. The emission factor is 0.5% of the total VOCs, as explained in Attachment 5, and results in an emission factor of 7.9 lb VOCs/ton adhesive. No emissions are included from the catalyst.

## EUFOAM

*EUFOAM records should include the following monthly records for the period of January 2019 – June 2021:*

- *Quantity of polyol/isocyanate resin two-part foam used on a monthly and 12-month rolling basis.*

Emissions estimates for EUFOAM are presented in Attachment 6. Beginning in 2019, GLC used a BASF two-part system (ELASTOPOR® P 18820 R Resin/ELASTOPOR P 1001 U Isocyanate) and reported the total of both materials together. The highest usage during that time was 169.5 pounds per month (lb/mo) (March 2020); Fishbeck estimated emissions based on VOC content which was a large overestimate. While developing a new PTI, emission estimates were discussed with the EGLE Permit Engineer and it was agreed to use the methodology referenced in Attachment 7 from *MDI/Polymeric MDI Emissions Reporting Guidelines for the Polyurethane Industry*. Emissions from the process are routinely less than 1 pound of VOCs per year.

## EUCLEANUP

*EUCLEANUP records should include the following monthly records for the period of January 2019 – June 2021:*

- *Identity of each cleanup solvent used in EUCLEANUP*
- *The quantity of each clean-up solvent used, recovered, and reclaimed.*
- *Acetone monthly and 12-month rolling emission calculations*
- *VOC monthly and 12-month rolling emission calculations*

EUCLEANUP emissions are provided in Attachment 8. The only cleanup solvent currently in use is acetone. For each month in Attachment 8 the amount of acetone used and then recovered is reported. Because acetone is not a VOC, no VOCs are reported from EUCLEANUP.

## FGOPENMOLDING

Flexible Group comprised of EUOPENMOLDING1, EUOPENMOLDING2, EUOPENMOLDING3, EUOPENMOLDING4, and EUEXTRABOOTH

*FGOPENMOLDING records should include the following monthly records for the period of January 2019 – June 2021:*

- *The identity and quantity, in pounds, of each material used in all EU's in FGOPENMOLDING.*
- *The wt% styrene content of each resin used.*
- *The VOC (including styrene) content of each material used.*
- *The emission factors for each raw material used (and the origin of where those factors came from – UEF or mass balance)*
- *VOC (including styrene) mass emission rates in tons/calendar month and 12-month rolling time periods.*

FGOPENMOLDING emissions are presented in Attachment 9. The FGOPENMOLDING tab of the workbook lists the materials used in FGOPENMOLDING along with their individual styrene and VOC contents. There are both resins and catalysts listed. VOC emissions from use of the resins are calculated using the appropriate UEF factors and the methodology outlined in Attachment 1. Emissions from the catalysts were estimated based on individual VOC content and assuming that all the VOCs in the catalyst are emitted, which is an overestimate. For Subpart 4W, the HAP emissions are estimated using the equations presented in Table 1 of the rule. For Subpart 4V, the HAP emissions are estimated using the equations in Table 3 of the rule.

## FGGELCOAT

Flexible Group comprised of EUGELCOAT1, EUGELCOAT2, EUGELCOAT3, EUGELCOAT4, and EUEXTRABOOTH  
***FGGELCOAT records should include the following monthly records for the period of January 2019 – June 2021:***

- ***The identity and quantity, in pounds, of each material used in all EU's in FGGELCOAT.***
- ***The wt% styrene content of each gel coat used.***
- ***The wt% methylmethacrylate content of each gelcoat used***
- ***The VOC (including styrene and methyl methacrylate) content of each material used.***
- ***The emission factors for each raw material used (and the origin of where those factors came from)***
- ***VOC (including styrene) mass emission rates in tons/calendar month and 12-month rolling time periods.***

FGGELCOAT emissions are provided in Attachment 10. The FGGELCOAT tab of the workbook lists the materials used in FGGELCOAT along with their individual styrene and VOC contents. There are both gelcoats and catalysts listed. VOC emissions from use of the gelcoats are calculated using the appropriate UEF factors and the methodology outlined in Attachment 1. Emissions from the catalysts were estimated based on individual VOC content and assuming that all the VOCs in the catalyst are emitted, which is an overestimate. For Subpart 4W, the HAP emissions are estimated using the equations presented in Table 1 of the rule. For Subpart 4V, the HAP emissions are estimated using the equations in Table 3 of the rule.

## FGMACTVVVV

***Implementation Plan as described in 63.5707***

***HAP Monthly (weighted-average model point value) and 12-month rolling emissions from January 2020 – June 2021 (Equation 1 and Equation 2 from 63.5710).***

***What are your limits for 1) Production resin, 2) pigmented gel coat 3) clear gel coat 4) tooling resin 5) tooling gel coat per equation 1 of 63.5698?***

***HAP content for all resin and gel coat used (SDS, etc) (received and as applied Jan 2020 – June 2021)***

A copy of the Implementation Plan is presented as Attachment 11. Attachment 12 includes emissions information demonstrating compliance with Subpart 4V in 2019, 2020, and for the first six months of 2021. The actual calculated Equation 1 value is listed in the column labeled VVVV Eq.1 HAP Emissions and are compared to the limit calculated in the column labeled VVVV HAP Limit (both of these columns are on page 6 of Attachment 12). Total 12-month rolling HAP emissions are included in the column labeled 12 mo rolling HAP Emissions (also on page 6 of Attachment 12).

The facility is not using the *compliant materials option*; rather, the *weighted average compliance option* methodology is being used, in which a facility-specific emissions limit is calculated based on the amount of each material and its styrene content for the most recent 12-month period. It changes each month as demonstrated in the attached records. Fishbeck would be happy to participate in a Teams Meeting to walk you through the calculation methodology used for the averaging.

Information on each of the raw materials used in each emission unit is discussed previously.

## FGMACTWWWW

*HAP content of resins received and as applied – SDS or manufacturer’s formulation data (and specify which was used).*

*Emissions calculation records to demonstrate compliance with the compliance option you’ve chosen, for the emission limits specified in Table 3 of the MACT WWWWW.*

As previously described, GLC is utilizing the compliance option in I.12.c to comply with the emission limitations in Subpart 4W. This methodology involves calculating a weighted average emission limitation each month utilizing the individual emission limitations for each type of material and the quantity of each type of material used over the most recent 12 month time period employing the methodology described in Equation 3 of Subpart 4W. Information on the comparison for each category is provided in Attachment 13, though GLC defers to the weighted average when compliance cannot be demonstrated for the individual resins and gelcoats. The weighted average compliance option also requires that the weighted average HAP emission factor be calculated for the materials used over the most recent 12 month time period. Therefore, both the emission factor and the emission limit change monthly for the facility. Fishbeck would be happy to participate in a Teams Meeting to walk you through the calculation methodology used for the averaging. Attachment 13 also includes emissions information demonstrating compliance with Subpart 4W in 2019, 2020, and for the first six months of 2021.

### List of Attachments

- Attachment 1 – UEF Emission Factor Table
- Attachment 2 – EUBLADE Emissions Information
- Attachment 3 – EURTM and FGRTM/PRESS Emissions Information
- Attachment 4 – ADHESIVEDISPING Emissions Information
- Attachment 5 – Adhesives Article including Emission Factor
- Attachment 6 – EUFOAM Emissions Information
- Attachment 7 – Excerpt from MDI/PMDI Reporting Guidelines
- Attachment 8 – EUCLEANUP Emissions Information
- Attachment 9 – FGOPENMOLDING Emissions Information
- Attachment 10 – FGGELCOAT Emissions Information
- Attachment 11 – Implementation Plan
- Attachment 12 – VVVV Emissions Information
- Attachment 13 – WWWWW Emissions Information

### List of Abbreviations/Acronyms

4V	40 CFR Part 63, Subpart VVVVV – NESHAP for Boat Manufacturing
4W	40 CFR Part 63, Subpart WWWWW – NESHAP for Reinforced Plastic Composites Production
CFR	Code of Federal Regulations
EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	emission unit
FG	flexible group
GLC	Great Lakes Composites, LLC
HAP	hazardous air pollutant
HVLP	high-volume low pressure
lb	pound(s)
lb/mo	pound(s) per month
lb/ton	pound(s) per ton
MACT	Maximum Achievable Control Technology

NESHAP	National Emissions Standard for Hazardous Air Pollutants
psig	pound(s) per square inch in gauge
PTI	Permit to Install
RFI	Request for Information
ROP	Renewable Operating Permit
RTM	resin transfer molding
SC	Special Condition
SDS	Safety Data Sheet(s)
UEF	Unified Emission Factor
VOC	volatile organic compound

## EF Table I: Unified Emission Factors for Open Molding of Composites

Revised and Approved: 10/13/2009

Emission Rate in Pounds of Styrene Emitted per Ton of Resin or Gel Coat Processed

Styrene content in resin/gel coat, % <sup>(1)</sup>	<33 <sup>(2)</sup>	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	>50 <sup>(2)</sup>
Manual	0.126 x % styrene x 2000	83	89	94	100	106	112	117	123	129	134	140	146	152	157	163	169	174	180	((0.286 x % styrene) - 0.0529) x 2000
Manual w/ Vapor Suppressed Resin VSR <sup>(11)</sup>	Manual emission factor (listed above) x (1 - (0.50 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Atomized	0.169 x % styrene x 2000	111	126	140	154	168	183	197	211	225	240	264	268	283	297	311	325	340	354	((0.714 x % styrene) - 0.18) x 2000
Mechanical atomized with VSR <sup>(11)</sup>	Mechanical Atomized emission factor (listed above) x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Atomized Controlled Spray <sup>(9)</sup>	0.130 x % styrene x 2000	86	97	108	119	130	141	152	163	174	185	196	207	218	229	240	251	262	273	0.77 x ((0.714 x % styrene) - 0.18) x 2000
Mechanical Atomized Controlled Spray with VSR	Mechanical Atomized Controlled Spray emission factor (listed above) x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Non-Atomized	0.107 x % styrene x 2000	71	74	77	80	83	86	89	93	96	99	102	105	108	111	115	118	121	124	((0.157 x % styrene) - 0.0165) x 2000
Mechanical Non-Atomized with VSR <sup>(11)</sup>	Mechanical Non-Atomized emission factor (listed above) x (1 - (0.45 x specific VSR reduction factor for each resin/suppressant formulation))																			
Mechanical Non-Atomized application of resins that contain Methyl Styrene monomer <sup>(10)</sup>	Mechanical Non-Atomized Styrene monomer emission factor (listed above) x .55																			
Mechanical Non-Atomized Filled DCPD resins <sup>(11)</sup>	0.144 x % styrene x 2000	95	98	101	104	108	111	114	117	120	124	127	130	133	136	140	143	146	149	((0.1603 x % styrene) - 0.0055) x 2000
Filament application	0.184 x % styrene x 2000	122	127	133	138	144	149	155	160	166	171	177	182	188	193	199	204	210	215	((0.2746 x % styrene) - 0.0298) x 2000
Filament application with VSR <sup>(11)</sup>	0.120 x % styrene x 2000	79	83	86	90	93	97	100	104	108	111	115	118	122	125	129	133	136	140	0.65 x ((0.2746 x % styrene) - 0.0298) x 2000
Gel coat Application	0.445 x % styrene x 2000	294	315	336	358	377	398	418	439	460	481	501	522	543	564	584	605	628	646	((1.03646 x % styrene) - 0.195) x 2000
Gel coat Controlled Spray Application <sup>(4)</sup>	0.325 x % styrene x 2000	215	230	245	260	275	290	305	321	336	351	366	381	396	411	427	442	457	472	0.73 x ((1.03646 x % styrene) - 0.195) x 2000
Gel coat Non-Atomized Application <sup>(6)</sup>	SEE Note 9 below	196	205	214	223	232	241	250	259	268	278	287	296	305	314	323	332	341	350	((0.4506 x % styrene) - 0.0505) x 2000
Lesser Atomized Gel coat Application <sup>(11)(12)</sup>	for < 30: 0.323 x % styrene x 2000	229	241	252	264	276	287	299	311	322	334	346	357	369	381	392	404	416	428	((0.5842 x % styrene) - 0.07825) x 2000
Covered-Cure after Roll-Out	Non-VSR process emission factor (listed above) x (0.80 for Manual <or> 0.85 for Mechanical)																			
Covered-Cure without Roll-Out	Non-VSR process emission factor (listed above) x (0.50 for Manual <or> 0.55 for Mechanical)																			

### Emission Rate in Pounds of Methyl Methacrylate Emitted per Ton of Gel Coat Processed

MMA content in gel coat, % <sup>(6)</sup>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	≥20
Gel coat application <sup>(7)</sup>	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	0.75 x % MMA x 2000

**Notes**

- 1 Including styrene monomer content as supplied, plus any extra styrene monomer added by the molder, but before addition of other additives such as powders, fillers, glass, etc.
- 2 Formulas for materials with styrene content <33% are based on the emission rate at 33% (constant emission factor expressed as percent of available styrene), and for styrene content >50% on the emission rate based on the extrapolated factor equations, these are not based on test data but are believed to be conservative estimates. The value for "% styrene" in the formulas should be input as a fraction. For example, use the input value 0.30 for 30% styrene content by weight.
- 3 The VSR reduction factor is determined by testing each resin/suppressant formulation according to the procedures detailed in the CFA Vapor-suppressant Effectiveness Test.
- 4 SEE the CFA Controlled Spray Handbook for a detailed description of the controlled spray procedures.
- 5 The effect of vapor-suppressants on emissions from filament winding operations is based on the Dow Filament Winding Emissions Study.
- 6 Including MMA monomer content as supplied, plus any extra MMA monomer added by the molder, but before addition of other additives such as powders, fillers, glasses, etc.
- 7 Based on the gel coat data from NEMA Emission Study.
- 8 SEE the July 17, 2001 EECs report Emission Factors for Non-Atomized Application on Gel Coats used in the Open Molding of Composites for a detailed description of the non-atomized gel coat testing.
- 9 Use the equation ((0.4506 x % styrene) - 0.0505) x 2000 for gel coats with styrene contents between 19% and 32% by wt; use the equation 0.185 x % styrene x 2000 for gel coats with less than 19% styrene content by wt.
- 10 Refer to Section 3.0. Instructions and Examples for the Emission Factor table, 3.2 Calculation of the methylstyrene factor.
- 11 Use this factor for the non-atomized application of DCPD or DCPD-blend resin, when filled to 30% or more by weight.
- 12

Table from 30% to 32% styrene content:	30	31	32
	194	206	217

**EUBLADES**

**Owosso Composite, LLC, Owosso, MI**

**YEAR**

**2019**

	January-19	February-19	March-19	April-19
<b>VOC Emissions (lb)</b>	<b>38.69</b>	<b>27.63</b>	<b>12.30</b>	<b>38.09</b>
<b>Styrene Emissions (lb)</b>	<b>37.65</b>	<b>26.87</b>	<b>11.99</b>	<b>37.04</b>

Product Number	Product Name	Type	Resin Type	On Material Summ	Units	January-19	February-19	March-19	April-19
38101	Hetron 197 P Resin	Resin	Low-flame spread/low-smoke	YES	lb	51.99	32.34	21.95	42.74
38307	Hetron FR 992	Resin	Low-flame spread/low-smoke	YES	lb	308.86	225.88	92.20	313.48
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	0	YES	lb	5.41	3.87	1.71	5.34





**EUBLADES**

**Owosso Composite, LLC, Owosso, MI**

**YEAR**

**2019**

May-19	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total
14.70	9.57	15.30	6.38	20.40	19.95	18.98	9.21	231.20
13.94	9.29	14.88	6.20	19.85	19.40	18.45	8.96	224.53

**SC VI.3.a**

Product Number	Product Name	May-19	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total Usage 2019
38101	Hetron 197 P Resin	18.48	6.93	18.48	4.62	24.64	20.79	20.79	16.17	279.92
38307	Hetron FR 992	115.24	82.98	124.46	55.32	165.96	165.96	156.74	69.14	1,876.22
23172	Luperox DDM-9 CLEAR 1536#/PLT	20.78	1.35	2.14	0.90	2.85	2.80	2.66	2.00	51.81



EUBLADES  
 Owosso Composite, LLC, Owosso, MI  
 YEAR  
 2019

Product Number	Product Name	Density (lb/gal)	42		SC VI.3.b		atomized		SC VI.3.c	
			Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	HAP Emission Factor (lb/ton)	Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to ton
38101	Hetron 197 P Resin	9.50	41.6%	0	41.6%	41.6%	233.70	233.70	233.70	0.0005
38307	Hetron FR 992	9.68	39.5%	0	39.8%	39.5%	204.48	204.48	210.48	0.0005
23172	Luperox DDM-9 CLEAR 1536#/PLT	8.41	0	0	2.0%	0	--	--	40.00	0.0005



2

3

5

6

7

8

9

10

11

12

EUBLADES

Owosso Composite, LLC, Owosso, MI

YEAR

2020

	January-20	February-20	March-20	April-20	May-20	June-20
VOC Emissions (lb)	33.10	14.96	0	0	0	0
Styrene Emissions (lb)	32.20	14.55	0	0	0	0

Product Number	Product Name	Type	Resin Type	On Material Summ	Units	January-20	February-20	March-20	April-20	May-20	June-20
38101	Hetron 197 P Resin	Resin	Low-flame spread/low-smoke	YES	lb	49.68	19.64				
38307	Hetron FR 992	Resin	Low-flame spread/low-smoke	YES	lb	258.16	119.86				
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	0	YES	lb	6.16	2.40				



13 14 15 16 17 18 19 *References*

July-20	August-20	September-20	October-20	November-20	December-20	Total
0	0	0	0	0	0	48.05
0	0	0	0	0	0	46.75

**SC VI.3.a**

July-20	August-20	September-20	October-20	November-20	December-20	Total Usage 2020
						69.32
						378.02
						8.56

42 SC VI.3.b atomized SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	HAP Emission Factor (lb/ton)	Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to ton
9.50	41.6%	0	41.6%	41.6%	233.70	233.70	233.70	0.0005
9.68	39.5%	0	39.8%	39.5%	204.48	204.48	210.48	0.0005
8.41	0	0	2.0%	0	--	--	40.00	0.0005

EURTM

Owosso Composite, LLC, Owosso, MI

YEAR

2019

	January-19	February-19
<b>VOC Emissions (lb)</b>	<b>13.25</b>	<b>9.71</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (lb)</b>	<b>13.25</b>	<b>9.71</b>
<b>HAP Emissions Boats (VVVV) (kg)</b>	<b>0</b>	<b>0</b>
<b>HAP Emissions (lb)</b>	<b>36.21</b>	<b>26.54</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>	<b>0.21</b>	<b>0.15</b>
<b>Styrene Emissions Boats (VVVV) (ton)</b>	<b>0</b>	<b>0</b>

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units	January-19	February-19
539089	Norox MCP-75 FRED	Catalyst		0	YES	lb		
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst		0	YES	lb		
205702	Norox MEKP-9H	Catalyst		0	YES	lb		
562196	Norox Azox Fred - Acetyl Acetone Peroxide	Catalyst	Parts	0	YES	lb	181.07	132.70
505853	Stypol 040-8086 Unsaturated Polyester Resin	Resin	Parts	0	YES	lb	9,053.00	6,635.00



March-19	April-19	May-19	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total
12.52	8.05	6.89	5.45	4.27	4.44	4.55	3.62	2.06	2.90	77.70
12.52	8.05	6.89	5.45	4.27	4.44	4.55	3.62	2.06	2.90	77.70
0	0	0	0	0	0	0	0	0	0	0
34.23	22.02	18.84	14.91	11.68	12.14	12.44	9.89	5.62	7.93	212.44
0.20	0.13	0.11	0.09	0.07	0.07	0.07	0.06	0.03	0.05	1.23
0	0	0	0	0	0	0	0	0	0	0

SC VI.3.a

March-19	April-19	May-19	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total Usage 2019
										-
										-
										-
171.14	110.08	94.18	74.54	58.38	60.72	62.19	49.44	28.11	39.66	1,062.21
8,557.00	5,504.00	4,709.00	3,727.00	2,919.00	3,036.00	3,109.50	2,472.00	1,405.50	1,983.00	53,110.00



40%

SC II.1

SC VI.3.b

SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (%)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
8.35	0	0	10.0%	10.0%	--	--	--	--	1.00	200.00	0.00	0.0005
8.41	0	0	2.0%	0	--	--	--	--	1.00	40.00	0.00	0.0005
9.18	0	0	5.0%	0.0%	--	--	--	--	1.00	100.00	0.00	0.0005
9.17	0	0	5.0%	0	--	--	--	--	1.00	100.00	0.00	0.0005
9.09	40.0%	0	40.0%	40.0%	61.78	61.78	92.60	92.60	0.01	92.60	0.00	0.0005



FGPRESS/OVEN  
 Owosso Composite, LLC, Owosso, MI  
 YEAR

	January-19	February-19	March-19	April-19	May-19
VOC Emissions	0	0	0	0	0
VOC Emissions PARTS & Catalyst (WWWW)	0	0	0	0	0
VOC Emissions Boats (VVVV)	0	0	0	0	0
Styrene Emissions (ton)	0	0	0	0	0
Styrene Emissions PARTS (WWWW) (ton)	0	0	0	0	0
Styrene Emissions Boats (VVVV) (ton)	0	0	0	0	0

2019

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units	January-19	February-19	March-19	April-19	May-19
615965	AOC H884-IVA-20	Resin	Parts	Non CR/HS Resin	YES	lb					
615965	AOC H884-IVA-20	Resin	Boats	Non CR/HS Resin	YES	lb					
539089	Norox MCP-75 FRED	Catalyst	Parts	0	YES	lb					
539089	Norox MCP-75 FRED	Catalyst	Boats	0	YES	lb					





FGPRESS/OVEN  
 Owosso Composite, LLC, Owosso, MI  
 YEAR

June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

2019

SC VI.3.a

Product Name	Product Name	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total Usage 2019
615965	AOC H884-IVA-20								-
615965	AOC H884-IVA-20								-
539089	Norox MCP-75 FRED								-
539089	Norox MCP-75 FRED								-

SC II.1

32%

SC VI.3.b

SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)
9.17	32.0%	0	32.0%
9.17	32.0%	0	32.0%
8.35	0	0	10.0%
8.35	0	0	10.0%



FGPRESS/OVEN  
 Owosso Composite, LLC, Owosso, MI  
 YEAR

2019

SC VI.3.d SC VI.3.d

Product Name	Product Name	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
615965	AOC H884-IVA-20	32.0%	37.18	37.18	68.48	68.48	68.48	4.54E-04	0.0005
615965	AOC H884-IVA-20	32.0%	37.18	37.18	68.48	68.48	68.48	4.54E-04	0.0005
539089	Norox MCP-75 FRED	10.0%	--	--	--	--	200.00	4.54E-04	0.0005
539089	Norox MCP-75 FRED	10.0%	--	--	--	--	200.00	4.54E-04	0.0005



EURTM  
 Owosso Composite, LLC, Owosso, MI  
 YEAR

2020

VOC Emissions (lb)
VOC Emissions PARTS & Catalyst (WWWW) (lb)
HAP Emissions Boats (VVVV) (kg)
HAP Emissions (lb)
Styrene Emissions PARTS (WWWW) (ton)
Styrene Emissions Boats (VVVV) (ton)

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units
539089	Norox MCP-75 FRED	Catalyst		0	YES	lb
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst		0	YES	lb
205702	Norox MEKP-9H	Catalyst		0	YES	lb
562196	Norox Azox Fred - Acetyl Acetone Peroxide	Catalyst	Parts	0	YES	lb
505853	Stypol 040-8086 Unsaturated Polyester Resin	Resin	Parts	CR/HS Resin	YES	lb
651875	Bulk Resin 136-7977	Resin	Parts	CR/HS Resin	YES	lb
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Parts		YES	lb



EURTM

Owosso Co	January-20	February-20	March-20	April-20	May-20	June-20	July-20	August-20	September-20	October-20	November-20	December-20	Total
YEAR	3.75	2.91	1.10	0	21.27	32.96	19.28	20.49	26.66	21.05	20.35	16.26	186.06
	3.75	2.91	1.10	0	21.27	32.96	19.28	20.49	26.66	21.05	20.35	16.26	186.06
	0	0	0	0	0	0	0	0	0	0	0	0	0
2020	3.74	2.90	1.10	0	21.24	32.92	19.25	20.47	26.63	21.02	20.33	16.24	185.84
	0.02	0.02	0.01	0	0.13	0.20	0.11	0.12	0.16	0.12	0.12	0.10	1.10
	0	0	0	0	0	0	0	0	0	0	0	0	0

SC VI.3.a

Product Name	January-20	February-20	March-20	April-20	May-20	June-20	July-20	August-20	September-20	October-20	November-20	December-20	Total Usage 2020
539089													-
23172													-
205702													-
562196	18.68	14.50	5.50		6.48	15.66	17.50	19.60	20.20	18.46	15.00	17.90	169.48
505853	934.00	725.00	275.00	-	324.00	783.00	875.00	980.00	1,010.00	923.00	750.00	895.00	8,474.00
651875					4,590.00	6,855.00	3,625.00	3,808.00	5,196.80	3,987.20	3,987.00	2,912.00	34,961.00
23172					91.80	137.10	72.50	76.16	103.94	79.94	79.94	58.24	699.62



EURTM  
Owosso Co  
YEAR

Boats gal

white 33%  
Pigmented 33%  
Clear 48%

2020

44.5%

SC II.1

SC VI.3.b

SC VI.3.c

Product Name	Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (%)	VOC emission factor (lb/ton)	Conversion n lb to Mg	Conversion lb to ton
	539089	8.35	0	0	10.0%	10.0%	--	--	--	--	0.01	200.00	0.00
23172	8.41	0	0	2.0%	0	--	--	--	--	0.01	40.00	0.00	0.0005
205702	9.18	0	0	5.0%	0	--	--	--	--	0.01	100.00	0.00	0.0005
562196	9.17	0	0	5.0%	0	--	--	--	--	0.01	100.00	0.00	0.0005
505853	9.09	40.0%	0	40.0%	40.0%	61.78	61.78	92.60	92.60	0.01	800.00	0.00	0.0005
651875	9.07	43.5%	0	43.5%	43.5%	74.61	74.61	103.46	103.46	0.01	869.20	0.00	0.0005
23172	8.41	0	0	2.0%	0	--	--	--	--	0.01	40.00	0.00	0.0005



EURTM

Owosso Composite, LLC, Owosso, MI

YEAR

2021

	January-21	February-21	March-21
<b>VOC Emissions (lb)</b>	<b>77.11</b>	<b>26.57</b>	<b>23.23</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (lb)</b>	<b>73.13</b>	<b>25.29</b>	<b>19.20</b>
<b>HAP Emissions Boats (VVVV) (kg)</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>HAP Emissions (lb)</b>	<b>76.97</b>	<b>26.45</b>	<b>23.09</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>	<b>0.43</b>	<b>0.15</b>	<b>0.11</b>
<b>Styrene Emissions Boats (VVVV) (ton)</b>	<b>0</b>	<b>0</b>	<b>0</b>

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units	January-21	February-21	March-21
539089	Norox MCP-75 FRED	Catalyst		0	YES	lb	320.00	192.00	416.00
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst		0	YES	lb	400.00	352.00	416.00
205702	Norox MEKP-9H	Catalyst		0	YES	lb	-	-	-
562196	Norox Azox Fred - Acetyl Acetone Peroxide	Catalyst	Parts	0	YES	lb	56.00	80.00	64.00
505853	Stypol 040-8086 Unsaturated Polyester Resin	Resin	Parts	CR/HS Resin	YES	lb	3,625.00	4,334.00	4,666.00
651875	Bulk Resin 136-7977	Resin	Parts	CR/HS Resin	YES	lb	13,391.00	1,761.40	-
38101	Hetron 197 P Resin	Resin			YES	lb	-	-	-
38307	Hetron FR 992	Resin			YES	lb	1,000.00	320.00	1,014.00



April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total
79.57	39.00	118.68	0	0	0	0	0	0	364.16
79.21	39.00	117.45	0	0	0	0	0	0	353.27
0	0	0	0	0	0	0	0	0	0
79.48	38.95	118.53	0	0	0	0	0	0	363.47
0.47	0.23	0.70	0	0	0	0	0	0	2.08
0	0	0	0	0	0	0	0	0	0

SC VI.3.a

April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total Usage 2021
288.00	256.00	240.00							1,712.00
288.00	136.00	456.00							2,048.00
-	-	64.00							64.00
64.00	32.00	32.00							328.00
1,750.00	3,250.00	834.00							18,459.00
16,527.60	5,913.00	26,170.85							63,763.85
-	-	-							-
92.00	-	307.00							2,733.00



44.5%

SC II.1

SC VI.3.b

SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (%)	VOC emission factor (lb/ton)	Conversion n lb to Mg	Conversion lb to ton
8.35	0	0	10.0%	10.0%	--	--	--	--	0.01	200.00	0.00	0.0005
8.41	0	0	2.0%	0	--	--	--	--	0.01	40.00	0.00	0.0005
9.18	0	0	5.0%	0	--	--	--	--	0.01	100.00	0.00	0.0005
9.17	0	0	5.0%	0	--	--	--	--	0.01	100.00	0.00	0.0005
9.09	40.0%	0	40.0%	40.0%	61.78	61.78	92.60	92.60	0.01	800.00	0.00	0.0005
9.07	43.5%	0	43.5%	43.5%	74.61	74.61	103.46	103.46	0.01	869.20	0.00	0.0005
9.50	41.6%	0	41.6%	41.6%	6745.2%	6745.2%	9754.8%	9754.8%	0.01	831.52	0.00	0.0005
9.68	39.5%	0	39.8%	39.5%	6013.4%	6013.4%	9112.2%	9112.2%	0.01	796.59	0.00	0.0005





**EUADHESIVEDISPING**

Owosso Composite, LLC, Owosso, MI

YEAR

2019

	January-19	February-19	March-19	April-19	May-19	June-19
VOC Emissions (lb)	0	1.24	1.42	1.24	1.24	1.24
VOC Emissions (ton)	-	0.00	0.00	0.00	0.00	0.00

Product Name	Product Name	Type	On Material Summ	Units	January-19	February-19	March-19	April-19	May-19	June-19
630852	SCIGrip SG300-05-OW - Off White Adhesive	Adhesive	YES	lb						
628769	SCIGRIP SG605B-B Activator	Catalyst	YES	lb		31.50	36.00	45.00	45.00	45.00
655932	SCIGRIP SG305A Adhesive	Adhesive	YES	lb		315.00	360.00	315.00	315.00	315.00



gal

July-19	August-19	September-19	October-19	November-19	December-19	Total
1.24	1.07	1.42	1.60	1.07	0.89	13.69
0.00	0.00	0.00	0.00	0.00	0.00	0.01

SC VI.3.a

July-19	August-19	September-19	October-19	November-19	December-19	Total Usage 2019
						-
	45.00	45.00	45.00	45.00		382.50
315.00	270.00	360.00	405.00	270.00	225.00	3,465.00

Adhesive Dispensing assumes 0.5% of VOCs are emitted from MMA Adhe

SC VI.3.b

SC VI.3.c

Density (lb/gal)	VOC Content (wt%)	Organic HAP Content (wt%)	HAP Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to ton
8.42	0.4%	0.3%	--	7.90	0.0005
9.42	0	0	--	0	0.0005
8.42	0.4%	0.3%	--	7.90	0.0005



**EUADHESIVEDISPING**

Owosso Composite, LLC, Owosso, MI

YEAR

2020

	January-20	February-20	March-20	April-20	May-20	June-20	July-20
<b>VOC Emissions (lb)</b>	<b>0.18</b>	<b>0.53</b>	<b>0.71</b>	<b>0</b>	<b>0.32</b>	<b>0.71</b>	<b>0.18</b>
<b>VOC Emissions (ton)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>-</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Product Name	Product Name	Type	On Material Summ	Units	January-20	February-20	March-20	April-20	May-20	June-20	July-20
630852	SCIGrip SG300-05-OW - Off White Adhesive	Adhesive	YES	lb	-						
628769	SCIGRIP SG605B-B Activator	Catalyst	YES	lb	-	-	-	-	45.00		90.00
655932	SCIGRIP SG305A Adhesive	Adhesive	YES	lb	45.00	135.00	180.00	-	80.00	180.00	45.00



**EUADHESI**

Owosso Cd	August-20	September-20	October-20	November-20	December-20	Total
<b>YEAR</b>	<b>1.07</b>	<b>1.24</b>	<b>1.60</b>	<b>0</b>	<b>0</b>	<b>6.54</b>
<b>2020</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>-</b>	<b>-</b>	<b>0.00</b>

**SC VI.3.a**

Product Name	August-20	September-20	October-20	November-20	December-20	Total Usage 2020
630852						-
628769	45.00	45.00	45.00			270.00
655932	270.00	315.00	405.00			1,655.00

gal

Adhesive Dispensing assumes 0.5% of VOCs are emitted from MMA Adh

	SC VI.3.b	5%	SC VI.3.c		
Density (lb/gal)	VOC Content (wt%)	Organic HAP Content (wt%)	HAP Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to ton
8.42	0.4%	0.3%	--	7.90	0.0005
9.42	0	0	--	0	0.0005
8.42	0.4%	0.3%	--	7.90	0.0005



**EUADHESIVEDISPING**

Owosso Composite, LLC, Owosso, MI

YEAR  
2021

	January-21	February-21	March-21	April-21	May-21
VOC Emissions (lb)	0.02	0.03	0.02	0.07	0
VOC Emissions (ton)	0.00	0.00	0.00	0.00	-

Product Name	Product Name	Type	On Material Summ	Units	January-21	February-21	March-21	April-21	May-21
630852	SCIGrip SG300-05-OW - Off White Adhesive	Adhesive	YES	lb	-	-	-	-	-
628769	SCIGRIP SG605B-B Activator	Catalyst	YES	lb	-	-	-	-	-
655932	SCIGRIP SG305A Adhesive	Adhesive	YES	lb	6.00	7.00	4.00	17.00	-



June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total
0.03	0	0	0	0	0	0	0.17
0.00	-	-	-	-	-	-	0.00

SC VI.3.a

June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total Usage 2021
-							-
-							-
8.00							42.00

Adhesive Dispensing assumes 0.5% of VOCs are emitted from MMA Adhesives

	SC VI.3.b	5%		SC VI.3.c	
Density (lb/gal)	VOC Content (wt%)	Organic HAP Content (wt%)	HAP Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to ton
8.42	0.4%	0.3%	--	7.90	0.0005
9.42	0	0	--	0	0.0005
8.42	0.4%	0.3%	--	7.90	0.0005





# How adhesives reduce emissions, minimize waste and improve recycling

23 FEB 2011



Environmental conditions and anything that can affect issues such as global warming and heavy metals are gaining considerable attention from both consumers and regulatory agencies. The more governments and consumers become educated and aware, the more demanding they become for materials and processes that will address their environmental concerns. As a result, we see increased demands from these groups for improved technologies that will help reduce hazardous air and ground pollutants, whilst affording some level of reusability without sacrificing performance.

SALLY SINAI TECHNICAL MANAGER, ITW PLEXUS

Ultimately, it is up to both manufacturers and suppliers to develop and implement products that meet new criteria imposed on all industries, while helping to come up with more green products. Reactive structural adhesives such as methylmethacrylate-based systems help composite structure manufacturers and assemblers reduce their emissions to negligible levels when compared with other traditional joining methods, while providing a degree of regrindability for recycling. This paper compares various joining methods, showing their ability to provide a greener solution for the environment while still providing end users with efficient and durable structural joints.

Thank you for accepting cookies

You can now hide this message or find out more about cookies.

Hide

More

## E-LETTERS

Subscribe for free to the **JEC Newsletter**

Newsletter (En)

Newsletter (Fr)

 ARCHIVES

## KEY DATA

**11,278** [news](#) published

**37** [features](#) published

## LATEST FEATURE

### Wind Energy

In value, the wind energy industry makes up 8% of the



## Introduction

As the trend in the market place is green, green, green, manufacturers are looking for new and innovative ways to reduce emissions and volatile organic compounds (VOCs). The automotive market is without exception.

Since 1990, some reports suggest that the replacement of automotive steel has avoided burning more than 22.2 billion gallons of fuel globally - an astonishing figure by any measure. Furthermore, it has been estimated that this ongoing move to lighter materials by the automotive industry will cut the world's greenhouse gas emissions by 20%.

In order to facilitate this growing move away to lighter materials, designers had to identify an appropriate method of joining new and dissimilar materials. It was essential that the new joining method would be fast and easy to achieve. The resultant joints had to be strong and durable – at least on a par with the performance of welding and other traditional methods of joining steel components. This is where structural adhesives are helping make a big difference (Figure 1).



Fig.1 : Structural bonding for light weight and durable components © iStock

## The use of structurally green adhesives

The different joining methods currently used on these alternative materials are glass tabbing, putties, bolts, rivets and structural adhesives.

total  
composites  
market in 2016.  
In 2016...

[View all the features](#)

Thank you for accepting cookies

Hide

More info

adhesives. The latter are used either as single part moisture cure systems or as two-part reactive cure systems.

The benefits of using a structural adhesive are many for the customer. They offer continued advances in technology, cost savings in labour and capital investment – and they distribute stress and load over a wider area. The correct adhesive choice is critical and factors which should be considered include VOC content, surface preparation, working and fixture times, requirements of the application and dynamic fatigue resistance.

### **Adding value**

Examples of where a structural adhesive can add value include applications such as metal bonding where an aesthetic appearance is important and bond strength is critical, e.g. locker doors on coaches and rub rails on buses. Structural integrity is vital in the marine industry; by using bonding in systems such as stringer grids, the overall weight of the boat can be reduced together with the VOC emissions.

Structural adhesives can also add value by allowing the joining of dissimilar materials, again opening up design options for customers, which can result in reducing the overall weight of the final component.

Today's new engineered composites provide the designer with a wealth of options and challenges. Again, weight can be reduced and VOC emissions significantly decreased by using a structural adhesive.

### **What is a "green" structural adhesive?**

A green adhesive is one which will eliminate toxins to the greatest extent possible. This means developing products which focus as much on human health as on performance. This can be done by reducing "off-gassing" to almost no detectable levels and therefore producing a product that will prevent problems with indoor and outdoor air quality.

Thank you for accepting cookies

You can now hide this message or find out more about cookies.

Hide

More info

Another part of being green is to enable the product to be recycled and/or reground.

ITW Plexus believes the adhesive manufacturer has an obligation to develop products which focus on human health and recyclability. The customer who is using the product must determine which product provides the 'safest' option for their operators whilst providing the best performance for their product.

Green issues are constantly being monitored by independent organisations and industry bodies which look at current and future legislation. For example, government agencies such as the HSE (UK) or AFSSET in France and industry groups like BASA in the UK and FEICA in Europe.

There is a wide variety of structural adhesives in the market today and each one offers the user different levels of 'greenness'. Let's compare three of the main types with more traditional joining methods:

### *Epoxies*

Reactive two component epoxies are typically 100% solids with little or no VOC emissions. Some activator systems can contain, for example, butyl acetate which would release less than 25g/l of VOC. Other things to consider with these products are the amine content and the sensitivity of being mixed off ratio which can then increase the possibility of off-gassing.

### *Urethanes*

One and two component urethane systems are typically 100% solids with little or no VOC emissions. However, solvents can sometimes be used as carriers in non structural versions which would release VOC's at around

**Thank you for accepting cookies**

**Hide**

**More info**

You can now hide this message or find out more about cookies.

### *Methyl methacrylates*

Two part reactive methyl methacrylate adhesives (MMA's) vary depending on formulation but typically have between 40-60% reactive VOC components which results in greater than 99.5% conversion and therefore typically VOC emissions are less than 0.5%. The products are off ratio tolerant compared to other systems and there are no off-gassing issues. These products do have a distinct odour.

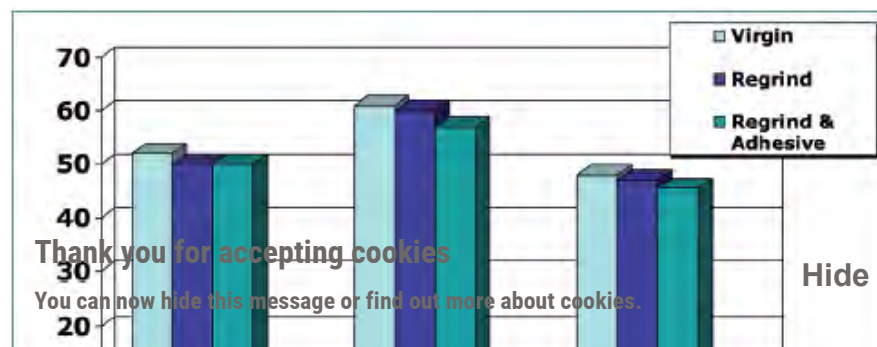
### **Other joining methods**

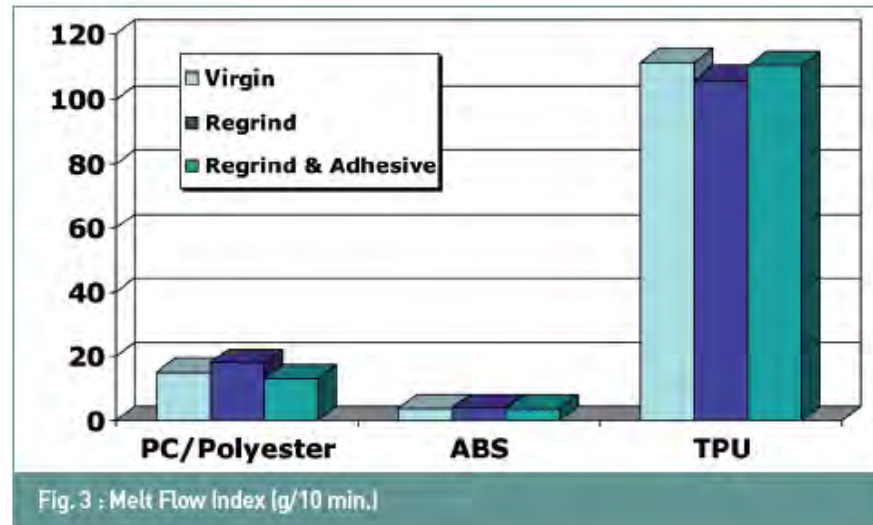
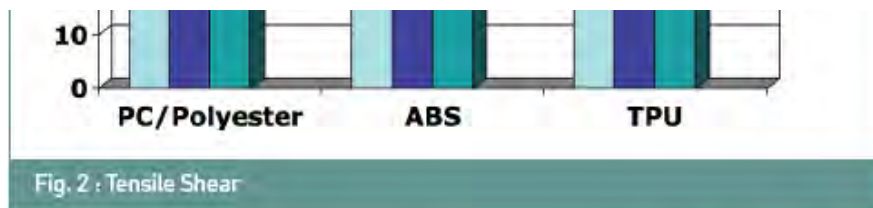
The more traditional ways of joining composite materials include the use of glass tabbing or polyester putties and there are drawbacks associated with both of these technologies.

The application method used for glass tabbing can greatly effect the VOC emissions. If the application is a closed mould this will suppress the emissions given off. Older technology can be 40-50% styrene with new technology reducing this to

Polyester putty emissions are again application and techniquerelated. They are typically very high in VOC's, around 224 g/l. New lower VOC technologies are available but the levels are not reduced considerably. The use of these materials is very application dependent and once again off-gassing is a matter of concern.

### **Green case study**





There follows an example of how a structurally green adhesive recently resolved a recycling issue for a major automotive OEM.

Within the automotive industry there is a huge commitment to plastic recovery and re-use programmes. A problem often arises concerning the incompatibility of the structural adhesive with the plastic recycle recovery process. It is the intrinsic nature of most structural adhesives which poses a serious regrind problem, and therefore the adhesive must be cut out of parts and disposed of in a non recyclable waste stream. This process is not just labourintensive but is wasteful for the recycling program since a large portion of plastic is often cut out with the adhesive.

In this case study, the application was a thermoplastic bumper which needed to be structurally joined. The main challenge was the customer's need to regrind and recycle waste material which arose during the production process. Adhesive would therefore remain both on the bonded part and cut offs.

Thank you for accepting cookies

You can now hide this message or find out more about cookies.

Hide

More info

A Plexus two component reactive MMA adhesive system was able to resolve the problem for the OEM. The nature of the MMA adhesive means it is compatible with many types of thermoplastic regrind materials, and there is no need to cut the adhesive from the bonded part. Test data clearly showed that there were minimal effects on the injection moulding parameters of the plastic and that there was minimal loss of properties when compared to the virgin material (figure 2 & 3).

## Conclusion

In conclusion I believe I have shown that structural adhesives can provide an excellent alternative to traditional assembly methods. Various structural systems can offer low VOC emissions which in turn can reduce the overall emissions for the customer. Many products can offer little or no off-gassing which makes them safer to use in both indoor and closed environments. The choice of adhesive is critical and a balance between performance and human health will often be determined by the customer. Adhesive manufacturers are looking to develop products which can address this balance and enable the choice for the customer to be an easy one with no compromise on product performance or welfare of their workers.

ITW Plexus specialises in the design and manufacture of sophisticated structural adhesives for the bonding of materials used in such diverse markets as transportation, marine, wind energy, automotive, engineering and construction and the company is a division of Performance Polymers Europe (PPE), headquartered in Rushden England.

## More information:

**MORE INFORMATION: [WWW.ITWPLEXUS.EU](http://WWW.ITWPLEXUS.EU)**



Additives & Modifiers Other Processing Method Features

— Thank you for accepting cookies —

Hide

More info

You can now hide this message or find out more about cookies.

 **SHARE**       **PRINT**

 **ADD TO MY CONTENT**



**Thank you for accepting cookies**

You can now hide this message or find out more about cookies.

[Hide](#)

[More info](#)

# < August 2018 >

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

3D Printed Composites

CFRP

LFI

LFT

MRO

RIM

RTM

Biocomposites

Epoxy Resin

Fire-Resistant

Lightweight Composites

Moulding Applications

Prepreg

Recyclability

Reinforcements

Textiles


Thermoplastic

## What we say on Twitter



\*Market news\* New fiber pat concepts for aerospace [#con](#) <https://bit.ly/2NePYZ6> @Cev

August 22



**ALTAIR  
TECHNOLOGY  
CONFERENCE**

## 2018 Global ATC

World's leading digital design event from the makers of HyperWorks & solidThinking

Paris, France  
Oct. 16-18

REGISTER NOW

**Thank you for accepting cookies**

You can now hide this message or find out more about cookies.

Hide

More info



[Contact](#)

[Sitemap](#)

[Advertise](#)

[Privacy policy](#)

[Legal notice](#)

Copyright © 1996-2018 JEC Group. All rights reserved.



**Thank you for accepting cookies**

You can now hide this message or find out more about cookies.

**Hide**

**More info**

EUFOAM  
 Owosso Composite, LLC, Owosso, MI  
 YEAR

	January-19	February-19	March-19	April-19
HAP Emissions (ton)	0	0	0	0
HAP Emissions Boats (VVVV) (ton)	0	0	0	0
VOC Emissions (lb)	1.17	6.67	10.18	5.81
VOC Emissions Boats (VVVV) (lb)	1.17	6.67	10.18	5.81
Styrene Emissions (ton)	0	0	0	0
Styrene Emissions Boats (VVVV) (ton)	0	0	0	0

2019

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units	January-19	February-19	March-19	April-19
27299	Elastopor P1001U Isocyanate - Paddle Boats 100%	Catalyst	Boats	0	YES	lb	19.50	111.00	169.50	96.75

EUFOAM  
Owosso Composite, LLC, Owosso, MI  
YEAR

May-19	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
4.10	6.74	3.66	5.26	2.97	2.15	2.26	2.27	53.24
4.10	6.74	3.66	5.26	2.97	2.15	2.26	2.27	53.24
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

2019

SC VI.3.a

Product Name	Product Name	May-19	June-19	July-19	August-19	September-19	October-19	November-19	December-19	Total Usage 2019
27299	Elastopor P1001U Isocyanate - Paddle Boats 100%	68.25	112.25	61.00	87.50	49.50	35.75	37.55	37.75	886.30

SC II.1  
32%  
SC VI.3.b

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)
10.18	0	0



EUFOAM  
 Owosso Composite, LLC, Owosso, MI  
 YEAR

2019

Product Name	Product Name	SC VI.3.c		SC VI.3.d				SC VI.3.d		
		VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion n lb to Mg	Conversion lb to ton
27299	Elastopor P1001U Isocyanate - Paddle Boats 100%	6.0%	0.5%	--	--	--	--	120.14	4.54E-04	0.0005



**EUFOAM**  
**Owosso Composite, LLC, Owosso, MI**  
**YEAR**

**2020**

<b>HAP Emissions (ton)</b>
<b>HAP Emissions Boats (VVVV) (ton)</b>
<b>VOC Emissions (lb)</b>
<b>VOC Emissions Boats (VVVV) (lb)</b>
<b>Styrene Emissions (ton)</b>
<b>Styrene Emissions Boats (VVVV) (ton)</b>

<b>Product Name</b>	<b>Product Name</b>	<b>Type</b>	<b>Boats/Parts</b>	<b>Resin Type</b>	<b>On Material Summ</b>	<b>Units</b>
27299	Elastopor P1001U Isocyanate - Paddle Boats 100%	Catalyst	Boats	0	YES	lb
E13	Foam a	0	Boats	0	YES	lb
E13.1	Foam b	0	Boats	0	YES	lb

**EUFOAM**

Owosso Co	January-20	February-20	March-20	April-20	May-20	June-20	July-20	August-20	September-20	October-20
<b>YEAR</b>	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	3.00	6.97	2.40	0.60	1.80	1.68	42.36	39.78	39.78	39.75
	3.00	6.97	2.40	0.60	1.80	1.68	42.36	39.78	39.78	39.75
<b>2020</b>	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0

Product Name	January-20	February-20	March-20	April-20	May-20	June-20	July-20	August-20	September-20	October-20
27299	50.00	116.00	40.00	10.00	30.00	28.00	43.00			
E13							462.50	462.50	462.50	462.25
E13.1							462.50	462.50	462.50	462.25

**EUFOAM**

Owosso Co	November-20	December-20	Total
YEAR	0	0	0
	0	0	0
	39.75	39.75	257.63
	39.75	39.75	257.63
2020	0	0	0
	0	0	0

SC VI.3.a

Product Name	November-20	December-20	Total Usage 2020
27299			317.00
E13	462.25	462.25	2,774.25
E13.1	462.25	462.25	2,774.25

Parts gal

- 0

SC II.1

32%

SC VI.3.b

SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVV HAP Emission Factor PVi (kg/Mg)
10.18	0	0	6.0%	0	--
10.26	0	0	1.6%	60.0%	--
9.17	0	0	7.0%	0	--



EUFOAM  
 Owosso Co  
 YEAR

C  
 Non C  
 Tc  
 Low-flame spread/l

2020

Shrinkage cont

SC VI.3.d SC VI.3.d

Product Name	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
27299	--	--	--	120.14	4.54E-04	0.0005
E13	--	--	--	6.47E-06	4.54E-04	0.0005
E13.1	--	--	--	9.99E-07	4.54E-04	0.0005



**EUFOAM**  
**Owosso Composite, LLC, Owosso, MI**  
**YEAR**

2021

	January-21	February-21	March-21
<b>HAP Emissions (ton)</b>	0	0	0
<b>HAP Emissions Boats (VVVV) (ton)</b>	0	0	0
<b>VOC Emissions (lb)</b>	177.21	0	45.65
<b>VOC Emissions Boats (VVVV) (lb)</b>	177.21	0	45.65
<b>Styrene Emissions (ton)</b>	0	0	0
<b>Styrene Emissions Boats (VVVV) (ton)</b>	0	0	0

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units	January-21	February-21	March-21
27299	Elastopor P1001U Isocyanate - Paddle Boats 100%	Catalyst	Boats	0	YES	lb	2,950.00	-	760.00
E13	Foam a	0	Boats	0	YES	lb	-	-	-
E13.1	Foam b	0	Boats	0	YES	lb	-	-	-

April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0
0	123.14	0	0	0	0	0	0	0	346.00
0	123.14	0	0	0	0	0	0	0	346.00
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0

SC VI.3.a

April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total Usage 2021
-	2,050.00	-	-	-	-	-	-	-	5,760.00
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-

Density (lb/gal)
10.18
10.26
9.17



SC II.1

32%

SC VI.3.b

SC VI.3.c

SC VI.3.d

SC VI.3.d

Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
0	0	6.0%	0	--	--	--	--	120.14	4.54E-04	0.0005
0	0	1.6%	60.0%	--	--	--	--	6.47E-06	4.54E-04	0.0005
0	0	7.0%	0	--	--	--	--	9.99E-07	4.54E-04	0.0005



Therefore:

$$W = 25.4 * VP_{mdi} * (M_w / T_{proc}) * (u)^{0.78} * S_A * t_{TF} * K_{mdi}$$

$$W = (25.4) (5.74 \times 10^{-6} \text{ atm.}) (250.26/355.4 \text{ } ^\circ\text{K}) (5\text{m/sec})^{0.78} (4013\text{M}^2)(5 \text{ sec}) (0.62)$$

$$W = 4.5 \text{ grms./day} \times 1 \text{ lb/454 grms.} \times 250 \text{ days/year}$$

$$W = 2.3 \text{ lbs/year}$$

## 8.0 Boats

Releases of MDI/PMDI will be calculated for a boat assembly that injects, through a static mixing nozzle, a mixture of resin, PMDI, MDI, and blowing agent into the space between the inner and outer hulls by way of a hull-stiffening form. This produces rigid urethane foam that provides buoyancy and insulation for the craft. The foam mixture is supplied to the boat manufactures via 2500-pound totes and these totes are stored in-doors where the temperature remains constant. The foam mixture is injected at a “tack free” or “string” time temperature of 160°F (70°C). There are 18 different boat models manufactured ranging from 12-16ft. runabouts to 100-150ft. yachts. The majority of boat manufactures produce boats ranging from 25-30 ft. in length and anywhere from 25-30 boats per day. The typical production is a boat 25ft in length, 27 boats per day operating 24 hours a day, 250 days a year. The foam is 2 inches thick, has an average density of 1.8 lbs./cu.ft., and the surface area of the hull is 350 ft.<sup>2</sup>. Fresh air is pulled across the work area and exhausted through hull-stiffening stack. The operation is performed in an area that is 100ft. by 100 ft. by 40 ft. and has a MDI concentration of 0.001 PPM. Calculate the stack emissions.

### Calculating Stack Emissions

Estimating the emissions from closed processes, when the volume of the mold is known or can be determined by calculating the total volume of air displaced from the operations at the temperature of the process. A reasonable worst-case estimate of emissions can be made based on the volume, number of pieces produced per year and the maximum temperature.

The enclosed process losses can be estimated from the following expression:

$$L_c = V_{air} * (1 / 359) * (273.15 / T_{proc}) * (VP_{MDI} / 760) * M_w * K_{MDI}$$

Where:

$$L_c = \text{emissions lb./year.}$$

$$V_{air} = \text{annual volume of displaced air in ft}^3\text{/year.}$$

$$T_{proc} = \text{process temperature in } ^\circ\text{K. (maximum temperature of the MDI).}$$

$$VP_{MDI} = \text{vapor pressure of MDI in mm Hg at process temperature.}$$

$$M_w = 250.26 \text{ (this is the molecular weight of MDI).}$$

$$K_{MDI} = \text{adjustment factor to the vapor pressure that is a function of MDI concentration in the feedstock and the temperature.}$$

$$359 = \text{the molar volume of an ideal gas in ft}^3\text{/lb-mole @ } 0^\circ\text{C and 1-atmosphere.}$$

### Step I: Calculate Annual Volume of Displaced Air (V<sub>air</sub>)

$$V_{air} = (\text{Area/piece})(\text{No. Pieces/year})(\text{Thickness})$$

$$V_{\text{air}} = (350 \text{ ft}^2)(27 \text{ pieces/day})(250 \text{ days/yr.})(2/12)\text{ft}$$

$$V_{\text{air}} = 3.94 \times 10^5 \text{ ft}^3/\text{yr.}$$

**Step II: Calculate Maximum Process Temperature in<sup>o</sup>K**

The maximum temperature is the oven temperature of 70 °C or;

$$T_{\text{proc}} = (273.15 + 70^{\circ}\text{C})^{\circ}\text{K}$$

$$T_{\text{proc}} = 343.15 \text{ }^{\circ}\text{K}$$

**Step III: Determine Vapor Pressure of MDI @ 341.15 °K (VP<sub>MDI</sub>)**

The vapor pressure @ 343.15 °K is  $1.340 \times 10^{-3}$  mm

**Step IV: Determine Adjustment factor (K<sub>MDI</sub>)**

Adjustment factor @ 343.15°K and 50% MDI is 0.61

Therefore:

$$L_c = V_{\text{air}} * (1 / 359) * (273.15 / T_{\text{proc}}) * (VP_{\text{MDI}} / 760) * M_w * K_{\text{MDI}}$$

$$L_c = (3.94 \times 10^5 \text{ ft}^3/\text{yr.})(1/359)(273.15^{\circ}\text{K} / 343.15^{\circ}\text{K})(1.340 \times 10^{-3}\text{mm}/760) (250.26)(0.61)$$

$$L_c = 0.2375 \text{ lbs. / year.}$$

**9.0 Carpet & Rug Underlay**

The Carpet and Rug Industry incorporates isocyanate into the production process to enhance the quality and performance of the final product. The isocyanate feed, consisting of methylenebis (phenyl Isocyanate) (MDI) and polymeric diphenylmethane diisocyanate (PMDI), is reacted with a blend of polyol and inorganic filler. This formulation is continuously applied to the carpet substrate on a moving conveyer belt. Upon curing, the polyurethane that is formed imparts elasticity, strength, and resistance to the carpet.

There are two basic process configurations for coating carpets with polyurethane formulations. The flow-on method is generally used to apply laminate adhesives or cushion formulations to carpet floor coverings and reactively binding yarn and fabric. The process consists of pre-mixing a polyol and inorganic filler and delivering it as a liquid stream to a mixing and frothing device where it is combined with MDI/PMDI. The formed polyurethane is distributed across the width of the backside of the textile fabric by a traversing positioning device. A reservoir of the mixture is maintained in contact with the backside of the fabric and a “doctoring” blade scrapes onto the fabric the desired amount of the polymerizing mixture. The “doctoring” blade also gauges and controls the gap of the desired thickness of the laminating layer. Once applied, the carpet is then passed through a heated oven for curing, cooled and collected on take-up rolls for storage.

The second method takes the pre-mixed polyol/filler and mixes it with MDI in a specially designed low-pressure mixing head. A reservoir of the mixture is maintained on the belt and the newly formed polyurethane is spread

EUCLEANUP

Owosso Composite, LLC, Owosso, MI

YEAR

2019

	January-19	February-19	March-19	April-19	May-19	June-19
VOC Emissions (ton)	0	0	0	0	0	0
Acetone Emissions (ton)	0.52	0.00	0.16	0.75	0.15	0.65
HAP Emissions (ton)	0	0	0	0	0	0

Product Name	Product Name	Type	Boats/Parts	On Material Summ	Units	January-19	February-19	March-19	April-19	May-19	June-19
40001	Acetone	Purge & Cleanup		YES	lb	3,285.00	2,190.00	2,555.00	2,920.00	1,825.00	2,920.00
40001REC	Acetone Recyled	Purge & Cleanup		YES	lb	(2,240.60)	(2,180.00)	(2,240.60)	(1,416.85)	(1,515.70)	(1,621.50)



EUCLEANUP

Owosso Composite, LLC, Owosso, MI

YEAR

2019

July-19	August-19	September-19	October-19	November-19	December-19	Total
0	0	0	0	0	0	0
0.59	0.18	0.43	0.37	0.18	0.43	4.42
0	0	0	0	0	0	0

SC VI.3.b

Product Name	Product Name	July-19	August-19	September-19	October-19	November-19	December-19	Total Usage 2019
40001	Acetone	2,910.00	2,190.00	2,555.00	3,650.00	1,825.00	1,825.00	30,650.00
40001REC	Acetone Recyled	(1,726.00)	(1,826.00)	(1,693.00)	(2,919.00)	(1,460.00)	(962.00)	(21,801.25)

SC VI.3.b

Density (lb/gal)	Acetone Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	Conversion lb to ton
6.59	100.0%	0	0.0%	0.0005
6.59	100.0%	0	0.0%	0.0005



EUCLEANUP

Owosso Composite, LLC, Owosso, MI

YEAR

2020

	January-20	February-20	March-20	April-20	May-20
VOC Emissions (ton)	0	0	0	0	0
Acetone Emissions (ton)	0.29	0.58	0.61	(0.07)	0.47
HAP Emissions (ton)	0	0	0	0	0

Product Name	Product Name	Type	Boats/Parts	On Material Summ	Units	January-20	February-20	March-20	April-20	May-20
40001	Acetone	Purge & Cleanup		YES	lb	2,190.00	2,920.00	2,555.00	365.00	2,190.00
40001REC	Acetone Recyled	Purge & Cleanup		YES	lb	(1,620.00)	(1,770.00)	(1,344.00)	(512.00)	(1,248.00)





Boats gal aning Solvents

EUCLEANU

Owosso Cd	June-20	July-20	August-20	September-20	October-20	November-20	December-20	Total
YEAR	0	0	0	0	0	0	0	0
2020	0.95	0.97	0.96	2.16	1.20	0.44	0.18	8.71
	0	0	0	0	0	0	0	0

SC VI.3.b

Product Name	June-20	July-20	August-20	September-20	October-20	November-20	December-20	Total Usage 2020
40001	4,015.00	4,015.00	3,650.00	5,840.00	4,380.00	2,190.00	365.00	34,675.00
40001REC	(2,112.00)	(2,080.00)	(1,740.00)	(1,530.00)	(1,980.00)	(1,320.00)		(17,256.00)

SC VI.3.b

Density (lb/gal)	Acetone Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	Conversion lb to ton
6.59	100.0%	0	0.0%	0.0005
6.59	100.0%	0	0.0%	0.0005



**EUCLEANUP**

Owosso Composite, LLC, Owosso, MI

YEAR

2021

	January-21	February-21	March-21	April-21
VOC Emissions (ton)	0	0	0	0
Acetone Emissions (ton)	0.59	0.59	1.43	0.91
HAP Emissions (ton)	0	0	0	0

Product Name	Product Name	Type	Boats/Parts	On Material Summ	Units	January-21	February-21	March-21	April-21
40001	Acetone	Purge & Cleanup		YES	lb	3,525.00	3,245.00	5,110.00	3,970.00
40001REC	Acetone Recyled	Purge & Cleanup		YES	lb	(2,340.00)	(2,070.00)	(2,250.00)	(2,160.00)



May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total
0	0	0	0	0	0	0	0	0
0.12	2.21	0	0	0	0	0	0	5.84
0	0	0	0	0	0	0	0	0

SC VI.3.b

May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total Usage 2021
2,400.00	6,570.00							24,820.00
(2,160.00)	(2,160.00)							(13,140.00)

SC VI.3.b

Density (lb/gal)	Acetone Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	Conversion lb to ton
6.59	100.0%	0	0.0%	0.0005
6.59	100.0%	0	0.0%	0.0005

**FGOPENMOLDING**

Owosso Composite, LLC, Owosso, MI

YEAR

2019

<b>VOC Emissions (ton)</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (ton)</b>
<b>VOC Emissions Boats (VVVV) (ton)</b>
<b>Styrene Emissions (ton)</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>
<b>Styrene Emissions Boats (VVVV) (ton)</b>

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units
615965	AOC H884-IVA-20	Resin	Parts	Non CR/HS Resin	YES	lb
615965	AOC H884-IVA-20	Resin	Boats	Non CR/HS Resin	YES	lb
539089	Norox MCP-75 FRED	Catalyst	Parts	0	YES	lb
539089	Norox MCP-75 FRED	Catalyst	Boats	0	YES	lb



**FGOPENMOLDING**

Owosso Composite, LLC, Owosso, MI

YEAR

2019

January-19	February-19	March-19	April-19	May-19	June-19	July-19	August-19	September-19
0.39	0.43	0.42	0.42	0.33	0.36	0.37	0.32	0.35
0.35	0.29	0.26	0.35	0.26	0.20	0.27	0.26	0.29
38.21	0.16	0.17	0.08	0.08	0.17	0.11	0.07	0.07
0.37	0.42	0.41	0.41	0.32	0.36	0.36	0.31	0.33
0.33	0.26	0.24	0.32	0.24	0.18	0.25	0.25	0.27
0.04	0.16	0.17	0.08	0.08	0.17	0.11	0.07	0.07

Product Name	Product Name	January-19	February-19	March-19	April-19	May-19	June-19	July-19	August-19	September-19
615965	AOC H884-IVA-20	19,202.87	15,273.92	14,001.03	18,883.10	14,186.69	10,754.73	14,822.40	14,392.76	15,531.12
615965	AOC H884-IVA-20	2,265.60	8,451.60	9,079.40	4,458.00	4,209.90	9,366.30	5,700.70	3,536.00	3,652.20
539089	Norox MCP-75 FRED	349.60	314.65	280.03	377.66	283.73	215.09	296.45	287.85	310.62
539089	Norox MCP-75 FRED	26.88	169.02	181.58	89.16	84.19	187.33	114.00	70.72	73.04



**FGOPENMOLDING**

Owosso Composite, LLC, Owosso, MI  
YEAR

October-19	November-19	December-19	Total
0.23	0.20	0.29	4.11
0.20	0.17	0.24	3.15
0.02	0.02	0.05	39.21
0.22	0.19	0.27	3.97
0.19	0.16	0.23	2.93
0.02	0.02	0.05	1.04

2019

SC VI.3.a

Product Name	Product Name	October-19	November-19	December-19	Total Usage 2019
615965	AOC H884-IVA-20	11,215.57	9,541.74	13,326.32	171,132.25
615965	AOC H884-IVA-20	1,305.70	1,305.00	2,468.20	55,798.60
539089	Norox MCP-75 FRED	224.31	190.83	266.53	3,397.35
539089	Norox MCP-75 FRED	26.11	26.10	49.36	1,097.49

SC II.1

32%

SC VI.3.b

SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)
9.17	32.0%	0	32.0%
9.17	32.0%	0	32.0%
8.35	0	0	10.0%
8.35	0	0	10.0%



**FGOPENMOLDING**  
**Owosso Composite, LLC, Owosso, MI**  
**YEAR**

**2019**

Product Name	Product Name	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	SC VI.3.d	SC VI.3.d	Conversion n lb to Mg	Conversion lb to ton
						WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)		
615965	AOC H884-IVA-20	32.0%	37.18	37.18	68.48	68.48	68.48	4.54E-04	0.0005
615965	AOC H884-IVA-20	32.0%	37.18	37.18	68.48	68.48	68.48	4.54E-04	0.0005
539089	Norox MCP-75 FRED	10.0%	--	--	--	--	200.00	4.54E-04	0.0005
539089	Norox MCP-75 FRED	10.0%	--	--	--	--	200.00	4.54E-04	0.0005





**FGOPENMOLDING**

Owosso Composite, LLC, Owosso, MI

YEAR

	January-20	February-20	March-20	April-20	May-20	June-20	July-20	August-20
<b>VOC Emissions (ton)</b>	<b>0.34</b>	<b>0.45</b>	<b>0.34</b>	<b>0.03</b>	<b>0.28</b>	<b>0.33</b>	<b>0.52</b>	<b>0.29</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (ton)</b>	<b>0.25</b>	<b>0.25</b>	<b>0.27</b>	<b>0.03</b>	<b>0.23</b>	<b>0.27</b>	<b>0.45</b>	<b>0.28</b>
<b>VOC Emissions Boats (VVVV) (ton)</b>	<b>0.10</b>	<b>0.22</b>	<b>0.08</b>	<b>0</b>	<b>0.05</b>	<b>0.06</b>	<b>0.07</b>	<b>0.01</b>
<b>Styrene Emissions (ton)</b>	<b>0.33</b>	<b>0.45</b>	<b>0.31</b>	<b>0.02</b>	<b>0.25</b>	<b>0.29</b>	<b>0.47</b>	<b>0.25</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>	<b>0.23</b>	<b>0.23</b>	<b>0.23</b>	<b>0.02</b>	<b>0.20</b>	<b>0.23</b>	<b>0.40</b>	<b>0.25</b>
<b>Styrene Emissions Boats (VVVV) (ton)</b>	<b>0.10</b>	<b>0.22</b>	<b>0.08</b>	<b>0</b>	<b>0.05</b>	<b>0.06</b>	<b>0.07</b>	<b>0.01</b>

2020

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units	January-20	February-20	March-20	April-20	May-20	June-20	July-20	August-20
615965	AOC H884-IVA-20	Resin	Parts	Non CR/HS Resin	YES	lb	13,463.86	13,478.42	12,865.70		10,949.42	11,785.87	21,563.35	12,642.66
615965	AOC H884-IVA-20	Resin	Boats	Non CR/HS Resin	YES	lb	5,216.10	11,775.60	4,239.20		2,572.90	3,319.21	3,947.00	468.00
539089	Norox MCP-75 FRED	Catalyst	Parts	0	YES	lb	235.62	235.88	253.71	-	218.99	235.72	377.30	221.25
539089	Norox MCP-75 FRED	Catalyst	Boats	0	YES	lb	91.29	206.00	84.78		51.46	66.38	69.07	8.19
A	pcu 33234-24 low styrene resin	Resin		CR/HS Resin	YES	lb			825.80	750.00	925.00	1,653.00	1,653.00	1,632.00
B	Dion FR 7704-00 poly-resin- tubs	Resin	Parts	CR/HS Resin	YES	lb				200.00				
539089	Norox MCP-75 FRED	Catalyst	Parts	0	YES	lb			12.39	11.25	13.88	24.80	33.06	28.56



Parts gal

September-20	October-20	November-20	December-20	Total
0.39	0.28	0.30	0.40	3.94
0.38	0.27	0.26	0.36	3.30
0.01	0.01	0.04	0.04	0.69
0.35	0.26	0.27	0.36	3.61
0.33	0.25	0.23	0.32	2.92
0.01	0.01	0.04	0.04	0.69

###

SC II.1  
33.5%  
SC VI.3.b

SC VI.3.c

SC VI.3.d

SC VI.3.d

September-20	October-20	November-20	December-20	Total Usage 2020
17,785.54	13,735.61	13,110.66	17,412.04	158,793.13
643.20	537.60	2,214.40	2,265.30	37,198.51
311.25	274.71	229.44	348.20	2,942.07
11.26	9.41	229.44	45.31	872.59
1,632.00	616.00	300.80	1,152.00	11,139.60
				200.00
28.56	10.78	5.26	20.16	188.70

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
9.17	32.0%	0	32.0%	32.0%	37.18	37.18	68.48	68.48	68.48	4.54E-04	0.0005
9.17	32.0%	0	32.0%	32.0%	37.18	37.18	68.48	68.48	68.48	4.54E-04	0.0005
8.35	0	0	10.0%	10.0%	--	--	--	--	200.00	4.54E-04	0.0005
8.35	0	0	10.0%	10.0%	--	--	--	--	200.00	4.54E-04	0.0005
9.34	33.0%	0	36.3%	33.0%	39.88	39.88	70.62	70.62	135.62	4.54E-04	0.0005
10.51	31.5%	0	32.0%	31.5%	35.87	35.87	67.41	67.41	77.41	4.54E-04	0.0005
8.35	0	0	10.0%	10.0%	--	--	--	--	200.00	4.54E-04	0.0005

C  
Non C  
To  
Low-flame spread/li  
Shrinkage contr

2021

<b>Styrene Emissions (ton)</b>
<b>Styrene Emissions PARTS (WWW) (ton)</b>
<b>Styrene Emissions Boats (VVV) (ton)</b>

Product Name	Product Name	Type	Boats/Parts	Resin Type	On Material Summ	Units
647570	AOC H884-IVA-20	Resin	Boats	Production Resin	YES	lb
539089	Norox MCP-75 FRED	Catalyst	Parts	0	YES	lb
A	pcu 33234-24 low styrene resin	Resin	Parts	CR/HS Resin	YES	lb
B	Dion FR 7704-00 poly-resin- tubs	Resin	Parts	CR/HS Resin	YES	lb
585624	Armorstar VSXH-2210 Blended Vinyl Ester Resin	Resin		CR/HS Resin	YES	lb
671003	Aropol L 67341 T-20 LSE	Resin		CR/HS Resin	YES	lb
0504_001	COR61-AA-545s DCPD Laminating Resin	Resin		CR/HS Resin	YES	lb
596288	Derakane 510 B-400	Resin		CR/HS Resin	YES	lb
539089	Norox MCP-75 FRED	Catalyst	Boats	0	YES	lb
647570	AOC H884-IVA-20	Resin	Parts	Non CR/HS Resin	YES	lb
	--	--		--		--



0.30	0.45	0.68	0.25	0.42	0.29	0	0	0	0	0
0.26	0.42	0.59	0.25	0.38	0.25	0	0	0	0	0
0.04	0.03	0.09	0.00	0.04	0.05	0	0	0	0	0

January-21	February-21	March-21	April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21
1,986.00	1,386.00	4,680.00	198.00	2,250.00	2,592.00					
320.00	192.00	416.00	288.00	256.00	240.00					
954.00	330.00	1,118.00	-	-	-					
-	-	-	-	-	-					
-	-	-	-	-	-					
-	-	-	-	-	-					
-	-	-	-	-	-					
-	-	-	-	-	-					
10.78	4.90	24.64	0.70	11.34	14.56					
14,228.00	24,380.00	33,314.00	14,575.00	22,050.00	14,398.00					

0	2.39
0	2.15
0	0.24

SC VI.3.a

December-21	Total Usage 2021
	13,092.00
	1,712.00
	2,402.00
	-
	-
	-
	-
	-
	66.92
	122,945.00
	-

SC II.1

33.5%

SC VI.3.b

SC VI.3.c

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)
9.17	32.0%	0	32.0%	32.0%	37.18	37.18	68.48
8.35	0	0	10.0%	10.0%	--	--	--
9.34	33.0%	0	36.3%	33.0%	39.88	39.88	70.62
10.51	31.5%	0	32.0%	31.5%	35.87	35.87	67.41
9.14	34.6%	0	36.2%	34.6%	44.53	44.53	75.77
9.00	32.6%	0	32.6%	32.6%	38.73	38.73	69.72
10.84	31.0%	2.0%	33.0%	33.0%	39.88	34.59	70.62
9.00	39.4%	0	39.4%	39.4%	59.63	59.63	90.66
8.35	0	0	10.0%	10.0%	--	--	--
9.17	32.0%	0	32.0%	32.0%	37.18	37.18	68.48
--	--	--	--	--	--	--	--



SC VI.3.d SC VI.3.d

WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
68.48	68.48	4.54E-04	0.0005
--	200.00	4.54E-04	0.0005
70.62	135.62	4.54E-04	0.0005
67.41	77.41	4.54E-04	0.0005
75.77	107.77	4.54E-04	0.0005
69.72	69.72	4.54E-04	0.0005
64.34	94.34	4.54E-04	0.0005
90.66	90.66	4.54E-04	0.0005
--	200.00	4.54E-04	0.0005
68.48	68.48	4.54E-04	0.0005
--	--	4.54E-04	0.0005

## FGGELCOAT

Owosso Composite, LLC, Owosso, MI

YEAR

2019

	January-19	February-19
<b>TOTAL VOC Emissions (ton)</b>	<b>0.68</b>	<b>0.88</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (ton)</b>	<b>0.56</b>	<b>0.78</b>
<b>HAP Emissions Boats (VVVV) (kg)</b>	<b>154.71</b>	<b>122.02</b>
<b>Styrene Emissions (ton)</b>	<b>0.50</b>	<b>0.63</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>	<b>0.37</b>	<b>0.54</b>
<b>Styrene Emissions Boats (VVVV) (ton)</b>	<b>0.13</b>	<b>0.10</b>

Product Name	Product Name	Type	Boats/Parts	Gelcoat Type	On Material Summ	Units	January-19	February-19
645283	Polycor HAP37 Tan 964NP451	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	1,673.92	1,136.03
645286	Polycor Hap37 Light Gray 964AP416	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	2,874.12	2,833.39
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	Gelcoat	Parts	Clear production gelcoat	YES	lb	1,621.63	2,611.06
623680	Polycor 944WP506 Off White	Gelcoat	Boats	White/off white Gelcoat	YES	lb	1,263.25	490.55
622891	Polycor HAP37 Duck Yellow 964YP359	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		
37166	Polycor Black 944B025	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		144.00
634516	Maxguard IG-LEI-J148A Gelcoat (Light Purple)	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		
640894	A-Gray Low VOC Gel Coat B-1536-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	184.00	2.00
640895	Platinum Tan Low VOC Gel Coat N-1404-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	120.00	
538937	Polycor Base White 944WJ480	Gelcoat	Parts	White/off white Gelcoat	YES	lb		
671487	Polycor HAP37 CONCH SHELL 964NP555	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	195.00	39.00
655100	Polycor HAP33 IMPULSE TORRED RED 996RP240	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	Gelcoat	Boats	Clear production gelcoat	YES	lb		276.00
617369	LHB-3815 Black VE Barrier Coat	Gelcoat	Parts	Pigmented Gelcoat	YES	lb		1,980.43
205702	Norox MEKP-9H	Catalyst	Parts	0	YES	lb		
205702	Norox MEKP-9H	Catalyst	Boats	0	YES	lb		
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Parts	0	YES	lb		
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Boats	0	YES	lb		
538937	Polycor Base White 944WJ480	Gelcoat	Boats	White/off white Gelcoat	YES	lb	663.00	
37166	Polycor Black 944B025	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	1,532.93	2,428.87
653519	HAP33 Off White ArmorFlex 99FWP506	Gelcoat	Boats	White/off white Gelcoat	YES	lb		549.00
671486	Polycor HAP37 Buckskin 964NP553	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	1,487.00
659637	Silverado Low VOC Gel Coat B-1679-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb		8.00
106387	Armorcote Green 961GJ117	Gelcoat	Parts	Pigmented Gelcoat	YES	lb		23.01
683927	HAP33 Charcoal Armorcote 991AP633	Gelcoat	Parts	Pigmented Gelcoat	YES	lb		
683929	HAP33 Browncrest Armorcote 991NP599	Gelcoat	Parts	Pigmented Gelcoat	YES	lb		
681060	HAP37 Beige-BC Polycor 964NP589	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		
681121	HAP37 Oxford Gray-BC	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		
681120	HAP37 French Gray-BC Polycor 964NP590	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		
681409	HAP37 DK GRAY 2020	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		



**FGGELCOAT**

Owosso Composite, LLC, Owosso, MI

YEAR

2019

March-19	April-19	May-19	June-19	July-19	August-19	September-19	October-19
0.70	0.66	0.56	0.48	0.47	0.63	0.36	0.71
0.58	0.59	0.44	0.33	0.27	0.41	0.22	0.62
147.84	81.04	160.10	197.59	256.25	292.48	186.63	124.64
0.51	0.47	0.42	0.38	0.37	0.51	0.29	0.48
0.39	0.40	0.29	0.22	0.15	0.26	0.13	0.38
0.12	0.06	0.13	0.16	0.21	0.25	0.16	0.10

Product Name	Product Name	March-19	April-19	May-19	June-19	July-19	August-19	September-19	October-19
645283	Polycor HAP37 Tan 964NP451	1,645.34	1,381.25	1,362.52	825.50	611.12	1,181.50	780.11	1,048.00
645286	Polycor Hap37 Light Gray 964AP416	2,211.02	4,434.79	2,762.98	2,161.40	1,269.00	2,581.00	1,377.00	1,416.00
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	1,731.80	1,077.58	1,260.09	978.26	1,314.70	1,411.39		1,927.00
623680	Polycor 944WP506 Off White	1,224.00	366.00	624.09	1,445.50	1,220.00	1,432.00	808.00	352.00
622891	Polycor HAP37 Duck Yellow 964YP359	211.50	-	-	221.00		70.50	-	
37166	Polycor Black 944B025		180.00	216.00		937.00	1,248.60	881.01	132.00
634516	Maxguard IG-LEI-J148A Gelcoat (Light Purple)		-	-	231.00				
640894	A-Gray Low VOC Gel Coat B-1536-LNHN	136.00	168.00	429.00	90.00	56.00	104.00	158.00	-
640895	Platinum Tan Low VOC Gel Coat N-1404-LNHN	104.00	144.00	460.00	80.00	56.00	96.00	128.00	-
538937	Polycor Base White 944WJ480	576.50	840.00		430.85		15.00	32.00	1,411.00
671487	Polycor HAP37 CONCH SHELL 964NP555	24.00	571.00	-					
655100	Polycor HAP33 IMPULSE TORRED RED 996RP240		-	-					
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	322.00	340.00	414.00	483.00	366.00		30.50	253.00
617369	LHB-3815 Black VE Barrier Coat	477.79	966.44	216.00	842.87				
205702	Norox MEKP-9H		161.50			798.77			
205702	Norox MEKP-9H		10.40			11.77	16.16	18.55	
23172	Luperox DDM-9 CLEAR 1536#/PLT			2.01		4.42	12.23	15.38	1,555.78
23172	Luperox DDM-9 CLEAR 1536#/PLT			-		6.58	11.73	7.52	18.79
538937	Polycor Base White 944WJ480			576.00					-
37166	Polycor Black 944B025	1,761.87							1,827.00
653519	HAP33 Off White ArmorFlex 99FWP506								
671486	Polycor HAP37 Buckskin 964NP553	66.00							24.00
659637	Silverado Low VOC Gel Coat B-1679-LNHN	8.00		-					
106387	Armorcote Green 961GJ117	23.01							
683927	HAP33 Charcoal Armorcote 991AP633					153.00	552.00	556.48	552.00
683929	HAP33 Browncrest Armorcote 991NP599					68.00	59.68	212.27	437.00
681060	HAP37 Beige-BC Polycor 964NP589					47.00	117.00	70.50	141.00
681121	HAP37 Oxford Gray-BC					47.00	211.50	305.50	329.00
681120	HAP37 French Gray-BC Polycor 964NP590					235.00	258.00		117.00
681409	HAP37 DK GRAY 2020					45.00	30.00	30.00	105.00





FGGELCOAT

Owosso Composite, LLC, Owosso, MI

YEAR

2019

November-19	December-19	Total
0.44	0.48	7.05
0.42	0.38	
31.58	135.28	
0.27	0.32	5.15
0.24	0.21	
0.03	0.11	

SC VI.3.a

Product Name	Product Name	November-19	December-19	Total Usage 2019
645283	Polycor HAP37 Tan 964NP451	457.00	291.00	12,393.29
645286	Polycor Hap37 Light Gray 964AP416	925.09	981.00	25,826.79
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	951.76	850.03	15,735.30
623680	Polycor 944WP506 Off White		448.00	9,673.39
622891	Polycor HAP37 Duck Yellow 964YP359		-	503.00
37166	Polycor Black 944B025		168.00	3,906.61
634516	Maxguard IG-LEI-J148A Gelcoat (Light Purple)		-	231.00
640894	A-Gray Low VOC Gel Coat B-1536-LNHN	80.00	120.00	1,527.00
640895	Platinum Tan Low VOC Gel Coat N-1404-LNHN	50.00	210.00	1,448.00
538937	Polycor Base White 944WJ480	196.80	821.85	4,324.00
671487	Polycor HAP37 CONCH SHELL 964NP555		-	829.00
655100	Polycor HAP33 IMPULSE TORRED RED 996RP240		-	-
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat		322.00	2,806.50
617369	LHB-3815 Black VE Barrier Coat		-	4,483.53
205702	Norox MEKP-9H		-	960.27
205702	Norox MEKP-9H		-	56.88
23172	Luperox DDM-9 CLEAR 1536#/PLT	39.50	104.88	1,734.20
23172	Luperox DDM-9 CLEAR 1536#/PLT	7.50	8.91	61.03
538937	Polycor Base White 944WJ480		9.80	1,248.80
37166	Polycor Black 944B025	925.00		8,475.67
653519	HAP33 Off White ArmorFlex 99FWP506			549.00
671486	Polycor HAP37 Buckskin 964NP553	258.00		1,835.00
659637	Silverado Low VOC Gel Coat B-1679-LNHN			16.00
106387	Armorcote Green 961GJ117			46.02
683927	HAP33 Charcoal Armorcote 991AP633	1,516.33	1,344.15	4,673.96
683929	HAP33 Browncrest Armorcote 991NP599	458.71	625.73	1,861.39
681060	HAP37 Beige-BC Polycor 964NP589	117.00	164.00	656.50
681121	HAP37 Oxford Gray-BC	211.00	164.50	1,268.50
681120	HAP37 French Gray-BC Polycor 964NP590	47.00	117.00	774.00
681409	HAP37 DK GRAY 2020	-	150.00	360.00

SC VI.3.b

SC VI.3.c

SC VI.3.d

Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)
10.27	30.8%	5.0%	36.8%
10.71	30.1%	5.0%	36.1%
9.00	31.1%	10.0%	41.1%
10.93	30.4%	5.0%	35.4%
10.37	31.2%	5.0%	37.2%
10.16	33.9%	5.0%	39.9%
9.00	28.7%	2.8%	31.4%
10.51	30.3%	10.0%	40.0%
11.68	40.0%	5.0%	45.0%
10.93	30.3%	5.0%	36.3%
10.54	31.3%	5.0%	36.3%
10.41	29.7%	5.0%	35.7%
9.00	31.1%	10.0%	41.1%
10.09	29.0%	0	29.0%
9.18	0	0	5.0%
9.18	0	0	5.0%
8.41	0	0	2.0%
8.41	0	0	2.0%
10.93	30.3%	5.0%	36.3%
10.16	33.9%	5.0%	39.9%
11.27	28.2%	5.0%	35.2%
10.51	31.7%	5.0%	36.7%
10.51	29.0%	5.0%	34.4%
10.43	24.1%	10.0%	35.1%
10.32	25.7%	10.0%	36.7%
10.32	25.7%	10.0%	36.7%
10.53	31.4%	5.0%	36.4%
10.49	31.8%	5.0%	36.8%
10.48	31.9%	5.0%	36.9%
10.44	31.4%	5.0%	36.4%



FGGELCOAT  
 Owosso Composite, LLC, Owosso, MI  
 YEAR  
 2019

SC VI.3.e SC VI.3.e

Product Name	Product Name	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion lb to Mg	Conversion lb to ton
645283	Polycor HAP37 Tan 964NP451	36.8%	186.70	138.57	230.64	176.57	251.57	4.54E-04	0.0005
645286	Polycor Hap37 Light Gray 964AP416	36.1%	181.13	133.64	224.69	170.62	245.62	4.54E-04	0.0005
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	41.1%	224.61	140.79	269.34	179.22	329.22	4.54E-04	0.0005
623680	Polycor 944WP506 Off White	35.3%	174.32	135.27	217.33	172.60	247.79	4.54E-04	0.0005
622891	Polycor HAP37 Duck Yellow 964YP359	37.2%	190.20	141.68	234.34	180.26	255.26	4.54E-04	0.0005
37166	Polycor Black 944B025	39.9%	213.79	162.72	258.58	204.51	279.51	4.54E-04	0.0005
634516	Maxguard IG-LEI-J148A Gelcoat (Light Purple)	31.4%	143.35	122.83	116.29	106.04	147.59	4.54E-04	0.0005
640894	A-Gray Low VOC Gel Coat B-1536-LNHN	40.3%	217.66	135.05	262.45	172.33	315.73	4.54E-04	0.0005
640895	Platinum Tan Low VOC Gel Coat N-1404-LNHN	45.0%	261.51	214.69	304.54	259.48	334.48	4.54E-04	0.0005
538937	Polycor Base White 944WJ480	36.3%	182.31	134.68	225.96	171.88	246.88	4.54E-04	0.0005
671487	Polycor HAP37 CONCH SHELL 964NP555	36.3%	182.56	142.44	226.23	181.17	256.17	4.54E-04	0.0005
655100	Polycor HAP33 IMPULSE TORRED RED 996RP240	34.7%	169.53	130.68	212.08	167.02	262.02	4.54E-04	0.0005
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	41.1%	224.61	140.79	269.34	179.22	329.22	4.54E-04	0.0005
617369	LHB-3815 Black VE Barrier Coat	29.0%	125.28	125.28	107.30	107.30	107.30	4.54E-04	0.0005
205702	Norox MEKP-9H	0.0%	--	--	--	--	100.00	4.54E-04	0.0005
205702	Norox MEKP-9H	0.0%	--	--	--	--	100.00	4.54E-04	0.0005
23172	Luperox DDM-9 CLEAR 1536#/PLT	0	--	--	--	--	40.00	4.54E-04	0.0005
23172	Luperox DDM-9 CLEAR 1536#/PLT	0	--	--	--	--	40.00	4.54E-04	0.0005
538937	Polycor Base White 944WJ480	36.3%	182.31	134.68	225.96	171.88	246.88	4.54E-04	0.0005
37166	Polycor Black 944B025	39.9%	213.79	162.72	258.58	204.51	279.51	4.54E-04	0.0005
653519	HAP33 Off White ArmorFlex 99FWP506	34.2%	165.22	119.61	207.30	153.23	248.23	4.54E-04	0.0005
671486	Polycor HAP37 Buckskin 964NP553	36.7%	185.52	145.12	229.38	184.32	259.32	4.54E-04	0.0005
659637	Silverado Low VOC Gel Coat B-1679-LNHN	34.0%	163.53	125.28	205.41	160.35	243.35	4.54E-04	0.0005
106387	Armorcote Green 961GJ117	34.1%	164.41	91.95	206.40	116.28	286.28	4.54E-04	0.0005
683927	HAP33 Charcoal Armorcote 991AP633	35.7%	177.20	102.13	220.46	130.34	300.34	4.54E-04	0.0005
683929	HAP33 Browncrest Armorcote 991NP599	35.7%	177.37	102.26	220.64	130.52	300.52	4.54E-04	0.0005
681060	HAP37 Beige-BC Polycor 964NP589	36.4%	182.98	142.82	226.68	181.62	256.62	4.54E-04	0.0005
681121	HAP37 Oxford Gray-BC	36.8%	186.62	146.12	230.55	185.49	260.49	4.54E-04	0.0005
681120	HAP37 French Gray-BC Polycor 964NP590	36.9%	187.81	147.20	231.81	186.75	261.75	4.54E-04	0.0005
681409	HAP37 DK GRAY 2020	36.4%	182.90	142.74	226.59	181.53	256.53	4.54E-04	0.0005

FGGELCOAT

Owosso Composite, LLC, Owosso, MI

YEAR

2020

	January-20	February-20	March-20	April-20
<b>TOTAL VOC Emissions (ton)</b>	<b>0.87</b>	<b>1.53</b>	<b>0.58</b>	<b>0.04</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (ton)</b>	<b>0.77</b>	<b>1.10</b>	<b>0.42</b>	<b>0.04</b>
<b>HAP Emissions Boats (VWVV) (kg)</b>	<b>130.81</b>	<b>550.10</b>	<b>205.09</b>	<b>0</b>
<b>Styrene Emissions (ton)</b>	<b>0.57</b>	<b>1.15</b>	<b>0.41</b>	<b>0.03</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>	<b>0.46</b>	<b>0.69</b>	<b>0.26</b>	<b>0.03</b>
<b>Styrene Emissions Boats (VWVV) (ton)</b>	<b>0.11</b>	<b>0.46</b>	<b>0.15</b>	<b>0</b>

Product Name	Product Name	Type	Boats/Parts	Gelcoat Type	On Material Summ	Units	January-20	February-20	March-20	April-20
645283	Polycor HAP37 Tan 964NP451	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	591.50	2,261.88	410.00	
645286	Polycor Hap37 Light Gray 964AP416	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	2,588.09	4,231.03	2,544.27	
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	Gelcoat	Parts	Clear production gelcoat	YES	lb	5,139.11	5,228.37	1,282.44	
623680	Polycor 944WP506 Off White	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	1,052.00	5,068.00	439.00	
622891	Polycor HAP37 Duck Yellow 964YP359	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	110.50	300.80	-	
37166	Polycor Black 944B025	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	132.00	240.00	-	
634516	Maxguard IG-LEI-J148A Gelcoat (Light Purple)	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	-			
640894	A-Gray Low VOC Gel Coat B-1536-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	40.00	120.00	120.00	
640895	Platinum Tan Low VOC Gel Coat N-1404-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	120.00	129.00	
538937	Polycor Base White 944WJ480	Gelcoat	Parts	White/off white Gelcoat	YES	lb	886.57	914.91	302.68	
671487	Polycor HAP37 CONCH SHELL 964NP555	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	15.00	-		
655100	Polycor HAP33 IMPULSE TORRED RED 996RP240	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	-	-		
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	Gelcoat	Boats	Clear production gelcoat	YES	lb	253.00	549.00	1,282.44	
617369	LHB-3815 Black VE Barrier Coat	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-		
205702	Norox MEKP-9H	Catalyst	Parts	0	YES	lb	-	-		
205702	Norox MEKP-9H	Catalyst	Boats	0	YES	lb	-	-		
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Parts	0	YES	lb	210.97	311.44		
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Boats	0	YES	lb	54.71	117.00		
538937	Polycor Base White 944WJ480	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		549.00	480.00	
37166	Polycor Black 944B025	Gelcoat	Parts	Pigmented Gelcoat	YES	lb		1,492.00		
653519	HAP33 Off White ArmorFlex 99FWP506	Gelcoat	Boats	Pigmented Gelcoat	YES	lb		-		
671486	Polycor HAP37 Buckskin 964NP553	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	84.00	60.00	72.00	
659637	Silverado Low VOC Gel Coat B-1679-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-		
106387	Armorcote Green 961GJ117	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-		
683927	HAP33 Charcoal Armorcote 991AP633	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	544.13	546.84	794.02	
683929	HAP33 Browncrest Armorcote 991NP599	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	69.52	247.15		
681060	HAP37 Beige-BC Polycor 964NP589	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	115.20	75.00	47.00	
681121	HAP37 Oxford Gray-BC	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	244.80	75.00	117.50	
681120	HAP37 French Gray-BC Polycor 964NP590	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	230.40	200.00	188.00	
681409	HAP37 DK GRAY 2020	Gelcoat	Parts	Pigmented Gelcoat	YES	lb				
557967	Int w419-Luu/CSA White- Tub	Gelcoat	Parts	Pigmented Gelcoat	YES	lb			200.00	275.00
691773	Vanilla- seats	Gelcoat	Parts	Pigmented Gelcoat	YES	lb				582.00
--	--	--	--	--	--	--	--	--	--	--



gal Parts

May-20	June-20	July-20	August-20	September-20	October-20	November-20	December-20	Total
0.28	0.49	0.55	0.57	0.57	0.45	0.42	0.67	7.02
0.24	0.40	0.44	0.49	0.48	0.44	0.36	0.52	
47.80	117.70	144.38	104.03	113.90	12.35	68.85	219.72	
0.19	0.37	0.41	0.41	0.44	0.31	0.33	0.52	5.14
0.15	0.27	0.29	0.32	0.34	0.30	0.27	0.34	
0.04	0.10	0.12	0.09	0.10	0.01	0.06	0.19	

14,042.13

SC VI.3.a

May-20	June-20	July-20	August-20	September-20	October-20	November-20	December-20	Total Usage 2020
445.50	445.50	849.00	755.90	836.00	769.23	755.90	917.00	9,037.41
901.48	2,089.61	4,289.60	2,724.00	3,475.96	2,817.45	2,724.40	3,010.30	31,396.19
903.09	903.09	1,041.16	2,168.46	-	931.88	-	1,997.20	19,594.80
122.00	418.03	512.00	344.50	1,439.30	156.00	612.00	-	10,162.83
-	-	377.60	-	-	-	70.50	-	859.40
96.00	96.00	368.00	110.50	-	-	70.50	1,781.67	2,894.67
-	-	-	-	-	-	40.00	-	40.00
83.00	83.00	78.00	-	177.00	173.00	-	60.00	934.00
46.00	46.00	68.00	160.00	224.00	198.00	64.00	96.00	1,151.00
418.03	418.03	377.80	162.00	203.00	503.22	446.51	437.76	5,070.51
-	-	24.32	181.53	24.32	-	446.51	437.60	1,129.28
-	-	-	32.00	-	-	-	15.00	47.00
184.00	184.00	368.00	138.00	-	-	-	-	2,958.44
-	-	-	-	-	-	1,351.74	-	1,351.74
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	159.69	166.25	184.00	133.74	267.48	170.74	1,604.31
-	-	32.51	9.19	28.79	-	17.38	35.63	295.21
122.00	684.00	-	4.35	-	-	-	-	1,839.35
96.00	1,151.71	-	-	1,480.86	918.23	144.00	-	5,282.80
-	-	-	712.00	-	-	76.00	663.00	1,451.00
24.00	24.00	-	120.00	-	-	-	183.00	567.00
-	-	-	-	120.00	-	-	60.00	180.00
-	-	-	-	-	-	-	-	-
281.87	281.87	-	-	-	-	-	-	2,448.73
170.28	170.28	-	165.40	-	-	-	-	822.63
-	-	-	70.50	-	-	-	-	307.70
-	-	127.50	-	164.50	-	100.00	25.00	854.30
-	-	-	70.50	-	-	150.00	25.00	863.90
-	-	-	117.50	-	-	-	75.00	192.50
367.00	917.00	-	408.00	408.00	-	220.00	288.00	3,083.00
-	-	-	387.20	387.20	220.00	284.00	153.00	2,013.40
-	-	-	-	-	-	-	-	-

51.67

SC VI.3.b SC VI.3.c SC VI.3.d

	Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)	VOC Content (wt%)	Organic HAP Content (wt%)
35.5%	10.27	31.0%	4.5%	36.8%	35.6%
34.7%	10.71	30.3%	4.4%	34.8%	34.8%
	9.00	31.1%	10.0%	41.1%	41.1%
35.3%	10.93	30.4%	5.0%	35.3%	35.3%
35.9%	10.37	31.4%	4.5%	35.9%	35.9%
38.9%	10.16	33.9%	5.0%	39.9%	39.9%
31.4%	9.00	28.7%	2.8%	31.4%	31.4%
40.0%	10.51	30.0%	10.0%	40.0%	40.0%
45.0%	11.68	40.0%	5.0%	45.0%	45.0%
35.3%	10.93	30.3%	5.0%	36.3%	36.3%
35.8%	10.54	31.3%	4.6%	35.9%	35.9%
34.7%	10.41	29.7%	5.0%	35.7%	34.7%
	9.00	31.1%	10.0%	41.1%	41.1%
29.0%	10.09	29.0%	0	29.0%	29.0%
0.0%	9.18	0	0	5.0%	0
0.0%	9.18	0	0	5.0%	0
0.0%	8.41	0	0	2.0%	0
0.0%	8.41	0	0	2.0%	0
35.3%	10.93	30.3%	5.0%	36.3%	36.3%
38.9%	10.16	33.9%	5.0%	39.9%	39.9%
32.6%	11.27	28.1%	4.5%	33.6%	32.6%
36.2%	10.51	31.6%	4.6%	36.3%	36.3%
34.0%	10.51	29.0%	5.0%	34.4%	34.0%
34.1%	10.43	24.1%	10.0%	35.1%	34.1%
35.7%	10.32	25.7%	10.0%	36.7%	35.7%
32.1%	10.32	25.8%	6.3%	33.1%	32.1%
35.9%	10.53	31.3%	4.6%	35.9%	35.9%
36.8%	10.49	31.8%	5.0%	36.8%	36.8%
36.9%	10.48	31.9%	5.0%	36.9%	36.9%
36.4%	10.44	31.4%	5.0%	36.4%	36.4%
29.0%	11.34	29.0%	0	29.4%	29.0%
35.4%	10.91	30.4%	5.0%	35.4%	35.4%
--	--	--	--	--	--



Tooling Gelcoat	40%	43%
White/off white Gelcoat	33%	31%
Pigmented Gelcoat	33%	40%
Clear Gelcoat		32%
CR/HS or high performance Gelcoat		33%
Fire retardent gelcoat		33%
Clear production gelcoat	48%	33%

**SC VI.3.e SC VI.3.e**

VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion n lb to Mg	Conversion lb to ton	Boats
176.20	140.01	219.38	178.28	271.38	4.54E-04	0.0005	-
169.61	134.98	212.17	172.24	238.39	4.54E-04	0.0005	-
224.61	140.79	269.34	179.22	329.22	4.54E-04	0.0005	-
174.46	135.27	217.48	172.60	247.00	4.54E-04	0.0005	1.00
179.12	143.05	222.53	181.89	249.24	4.54E-04	0.0005	1.00
213.79	162.72	258.58	204.51	279.51	4.54E-04	0.0005	1.00
143.35	122.83	116.29	106.04	147.59	4.54E-04	0.0005	1.00
214.69	132.60	259.48	169.36	319.36	4.54E-04	0.0005	-
261.51	214.69	304.54	259.48	334.48	4.54E-04	0.0005	-
182.31	134.68	225.96	171.88	246.88	4.54E-04	0.0005	-
178.70	141.98	222.08	180.63	249.33	4.54E-04	0.0005	-
169.53	130.68	212.08	167.02	262.02	4.54E-04	0.0005	1.00
224.61	140.79	269.34	179.22	329.22	4.54E-04	0.0005	1.00
125.28	125.28	107.30	107.30	107.30	4.54E-04	0.0005	-
--	--	--	--	100.00	4.54E-04	0.0005	-
--	--	--	--	100.00	4.54E-04	0.0005	1.00
--	--	--	--	40.00	4.54E-04	0.0005	-
--	--	--	--	40.00	4.54E-04	0.0005	1.00
182.31	134.68	225.96	171.88	246.88	4.54E-04	0.0005	1.00
213.79	162.72	258.58	204.51	279.51	4.54E-04	0.0005	-
152.25	118.76	120.55	103.93	191.13	4.54E-04	0.0005	1.00
182.14	144.66	225.78	183.78	253.38	4.54E-04	0.0005	-
163.53	125.28	205.41	160.35	243.35	4.54E-04	0.0005	-
164.41	91.95	206.40	116.28	286.28	4.54E-04	0.0005	-
177.20	102.13	220.46	130.34	300.34	4.54E-04	0.0005	-
148.43	102.66	118.73	95.28	210.23	4.54E-04	0.0005	-
179.29	142.36	222.71	181.08	250.08	4.54E-04	0.0005	-
186.62	146.12	230.55	185.49	260.49	4.54E-04	0.0005	-
187.81	147.20	231.81	186.75	261.75	4.54E-04	0.0005	-
182.90	142.74	226.59	181.53	256.53	4.54E-04	0.0005	-
125.28	125.28	107.30	107.30	115.30	4.54E-04	0.0005	-
174.55	135.20	217.57	172.51	247.51	4.54E-04	0.0005	-
--	--	--	--	--	4.54E-04	0.0005	-



FGGELCOAT

Owosso Composite, LLC, Owosso, MI

YEAR

2021

	January-21	February-21	March-21
<b>TOTAL VOC Emissions (ton)</b>	<b>0.65</b>	<b>0.90</b>	<b>1.09</b>
<b>VOC Emissions PARTS &amp; Catalyst (WWWW) (ton)</b>	<b>0.62</b>	<b>0.88</b>	<b>1.01</b>
<b>HAP Emissions Boats (VWVV) (kg)</b>	<b>44.12</b>	<b>22.03</b>	<b>101.27</b>
<b>Styrene Emissions (ton)</b>	<b>0.44</b>	<b>0.59</b>	<b>0.73</b>
<b>Styrene Emissions PARTS (WWWW) (ton)</b>	<b>0.41</b>	<b>0.57</b>	<b>0.64</b>
<b>Styrene Emissions Boats (VWVV) (ton)</b>	<b>0.04</b>	<b>0.02</b>	<b>0.08</b>

Product Name	Product Name	Type	Boats/Parts	Gelcoat Type	On Material Summ	Units	January-21	February-21	March-21
645283	Polycor HAP37 Tan 964NP451	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	1,280.00	1,705.00	2,620.00
645286	Polycor Hap37 Light Gray 964AP416	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	2,737.00	3,685.00	2,435.00
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	Gelcoat	Parts	Clear production gelcoat	YES	lb	2,464.00	3,889.00	4,720.00
623680	Polycor 944WP506 Off White	Gelcoat	Parts	White/off white Gelcoat	YES	lb	817.00	2,095.00	1,268.00
640895	Platinum Tan Low VOC Gel Coat N-1404-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	87.00	-
671487	Polycor HAP37 CONCH SHELL 964NP555	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	438.00	-	-
205702	Norox MEKP-9H	Catalyst	Parts	0	YES	lb	-	-	-
671486	Polycor HAP37 Buckskin 964NP553	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	600.00	410.00
683929	HAP33 Browncrest Armorcote 991NP599	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	-
681060	HAP37 Beige-BC Polycor 964NP589	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	250.00	-
681121	HAP37 Oxford Gray-BC	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	440.00	-
681120	HAP37 French Gray-BC Polycor 964NP590	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	510.00
681409	HAP37 DK GRAY 2020	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	485.00	-	2,503.00
557967	Int w419-Luu/CSA White- Tub	Gelcoat	Parts	White/off white Gelcoat	YES	lb	850.00	200.00	-
691773	Vanilla- seats	Gelcoat	Parts	White/off white Gelcoat	YES	lb	500.00	-	-
622891	Polycor HAP37 Duck Yellow 964YP359	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	98.00	-	-
37166	Polycor Black 944B025	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	-	-	-
634516	Maxguard IG-LEI-J148A Gelcoat (Light Purple)	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	98.00	-	-
640894	A-Gray Low VOC Gel Coat B-1536-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	-
538937	Polycor Base White 944WJ480	Gelcoat	Parts	White/off white Gelcoat	YES	lb	-	-	-
655100	Polycor HAP33 IMPULSE TORRED RED 996RP240	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	-	-	-
617369	LHB-3815 Black VE Barrier Coat	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	-
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Parts	0	YES	lb	397.56	342.22	402.60
653519	HAP33 Off White ArmorFlex 99FWP506	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	-	-	-
659637	Silverado Low VOC Gel Coat B-1679-LNHN	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	-
106387	Armorcote Green 961GJ117	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	-
683927	HAP33 Charcoal Armorcote 991AP633	Gelcoat	Parts	Pigmented Gelcoat	YES	lb	-	-	-
551413	Maxguard CG-SG-0010 Spray Granite Gelcoat	Gelcoat	Boats	Clear production gelcoat	YES	lb	161.00	161.00	230.00
623680	Polycor 944WP506 Off White	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	98.00	-	882.00
601211	RHD-3507 Jet Black Revolution HD	Gelcoat	Boats	Pigmented Gelcoat	YES	lb	84.00	84.00	120.00
23172	Luperox DDM-9 CLEAR 1536#/PLT	Catalyst	Boats	0	YES	lb	2.44	9.78	13.40
--	--	--	--	--	--	--	8.00	14.00	20.00



April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total
0.56	0.77	1.09	0	0	0	0	0	0	5.06
0.55	0.74	1.04	0	0	0	0	0	0	
3.15	44.41	59.12	0	0	0	0	0	0	
0.40	0.51	0.75	0	0	0	0	0	0	3.41
0.40	0.47	0.70	0	0	0	0	0	0	
0.00	0.04	0.05	0	0	0	0	0	0	

10,119.30

SC VI.3.a

April-21	May-21	June-21	July-21	August-21	September-21	October-21	November-21	December-21	Total Usage 2021
194.00	2,816.00	-							8,615.00
2,604.00	2,826.00	2,544.00							16,831.00
633.00	2,085.00	2,999.00							16,790.00
1,434.00	883.00	1,586.00							8,083.00
1,363.00	-	250.00							1,700.00
470.00	58.00	250.00							1,216.00
-	-	64.00							64.00
-	159.00	130.00							1,299.00
-	1,100.00	-							1,100.00
921.00	20.00	-							1,191.00
355.00	-	4,616.00							5,411.00
-	1,176.00	2,333.00							4,019.00
30.00	-	110.00							3,128.00
584.00	-	-							1,634.00
-	50.00	522.00							1,072.00
-	196.00	-							294.00
-	-	-							-
-	196.00	-							294.00
-	-	-							-
-	-	-							-
-	-	-							-
-	-	-							-
282.64	129.30	450.64							2,004.96
-	-	-							-
-	-	-							-
-	-	-							-
-	-	-							-
23.00	115.00	92.00							782.00
-	-	588.00							1,568.00
12.00	60.00	48.00							408.00
5.36	6.70	5.36							43.04
									-

26.00 32.00 37.00

34.72

SC VI.3.b

SC VI.3.c

	Density (lb/gal)	Styrene Content (wt%)	MMA Content (wt%)
35.5%	10.27	31.0%	4.5%
34.7%	10.71	30.3%	4.4%
	9.00	31.1%	10.0%
35.3%	10.93	30.4%	4.96%
45.0%	11.68	40.0%	5.0%
35.8%	10.54	31.3%	4.6%
0.0%	9.18	0	0
36.2%	10.51	31.6%	4.6%
32.1%	10.32	25.8%	6.3%
35.9%	10.53	31.3%	4.6%
36.8%	10.49	31.8%	5.0%
36.9%	10.48	31.9%	5.0%
36.4%	10.44	31.4%	5.0%
	11.34	29.0%	0
	10.91	30.4%	5.0%
35.9%	10.37	31.4%	4.5%
38.9%	10.16	33.9%	5.0%
31.4%	9.00	28.7%	2.8%
40.0%	10.51	30.0%	10.0%
35.3%	10.93	30.3%	5.0%
34.7%	10.41	29.7%	5.0%
29.0%	10.09	29.0%	0
0.0%	8.41	0	0
32.6%	11.27	28.1%	4.5%
34.0%	10.51	29.0%	5.0%
34.1%	10.43	24.1%	10.0%
35.7%	10.32	25.7%	10.0%
41.1%	9.00	31.1%	10.0%
35.3%	10.93	30.4%	5.0%
32.0%	9.51	28.0%	4.0%
0.0%	8.41	0	0
--	--	--	--



- Parts
  - Tooling Gelcoat 40%
  - White/off white Gelcoat 33%
  - Pigmented Gelcoat 33%
  - Clear Gelcoat
- CR/HS or high performance Gelcoat
  - Fire retardent gelcoat
  - Clear production gelcoat 48%

SC VI.3.d

SC VI.3.e SC VI.3.e

VOC Content (wt%)	Organic HAP Content (wt%)	VVVV HAP Emission Factor PVi (kg/Mg)	VVVV Styrene Emission Factor PVi (kg/Mg)	WWWW HAP Emission Factor (lb/ton)	WWWW Styrene Emission Factor (lb/ton)	VOC emission factor (lb/ton)	Conversion n lb to Mg	Conversion lb to ton
36.8%	35.6%	176.20	140.01	219.38	178.28	271.38	4.54E-04	0.0005
34.8%	34.8%	169.61	134.98	212.17	172.24	238.39	4.54E-04	0.0005
41.1%	41.1%	224.61	140.79	269.34	179.22	329.22	4.54E-04	0.0005
35.3%	35.3%	174.46	135.27	217.48	172.60	247.00	4.54E-04	0.0005
45.0%	45.0%	261.51	214.69	304.54	259.48	334.48	4.54E-04	0.0005
35.9%	35.9%	178.70	141.98	222.08	180.63	249.33	4.54E-04	0.0005
5.0%	0	--	--	--	--	100.00	4.54E-04	0.0005
36.3%	36.3%	182.14	144.66	225.78	183.78	253.38	4.54E-04	0.0005
33.1%	32.1%	148.43	102.66	118.73	95.28	210.23	4.54E-04	0.0005
35.9%	35.9%	179.29	142.36	222.71	181.08	250.08	4.54E-04	0.0005
36.8%	36.8%	186.62	146.12	230.55	185.49	260.49	4.54E-04	0.0005
36.9%	36.9%	187.81	147.20	231.81	186.75	261.75	4.54E-04	0.0005
36.4%	36.4%	182.90	142.74	226.59	181.53	256.53	4.54E-04	0.0005
29.4%	29.0%	125.28	125.28	107.30	107.30	115.30	4.54E-04	0.0005
35.4%	35.4%	174.55	135.20	217.57	172.51	247.51	4.54E-04	0.0005
35.9%	35.9%	179.12	143.05	222.53	181.89	249.24	4.54E-04	0.0005
39.9%	39.9%	213.79	162.72	258.58	204.51	279.51	4.54E-04	0.0005
31.4%	31.4%	143.35	122.83	116.29	106.04	147.59	4.54E-04	0.0005
40.0%	40.0%	214.69	132.60	259.48	169.36	319.36	4.54E-04	0.0005
36.3%	36.3%	182.31	134.68	225.96	171.88	246.88	4.54E-04	0.0005
35.7%	34.7%	169.53	130.68	212.08	167.02	262.02	4.54E-04	0.0005
29.0%	29.0%	125.28	125.28	107.30	107.30	107.30	4.54E-04	0.0005
2.0%	0	--	--	--	--	40.00	4.54E-04	0.0005
33.6%	32.6%	152.25	118.76	120.55	103.93	191.13	4.54E-04	0.0005
34.4%	34.0%	163.53	125.28	205.41	160.35	243.35	4.54E-04	0.0005
35.1%	34.1%	164.41	91.95	206.40	116.28	286.28	4.54E-04	0.0005
36.7%	35.7%	177.20	102.13	220.46	130.34	300.34	4.54E-04	0.0005
41.1%	41.1%	224.61	140.79	269.34	179.22	329.22	4.54E-04	0.0005
35.3%	35.3%	174.46	135.27	217.48	172.60	247.00	4.54E-04	0.0005
32.0%	32.0%	147.74	118.13	118.40	103.60	163.60	4.54E-04	0.0005
2.0%	0	--	--	--	--	40.00	4.54E-04	0.0005
--	--	--	--	--	--	--	4.54E-04	0.0005





Under 63.5713, compliance with Subpart VVVV (4V) organic HAP limits listed in Table 2 is demonstrated by calculating a 12-month rolling average. In cases where the 12-month rolling average emissions do not demonstrate compliance with individual emission limits in Table 2, GLC will use emissions averaging in Equation 1 of 4V as demonstrated below:

$$HAP \text{ emissions} = [(PV_R)(M_R) + (PV_{PG})(M_{PG}) + (PV_{CG})(M_{CG}) + (PV_{TR})(M_{TR}) + (PV_{TG})(M_{TG})] \quad (Eq. 1)$$

Where:

HAP emissions = Organic HAP emissions calculated using MACT model point values for each operation included in the average, kilograms.

$PV_R$  = Weighted-average MACT model point value for production resin used in the past 12 months, kilograms per megagram.

$M_R$  = Mass of production resin used in the past 12 months, megagrams.

$PV_{PG}$  = Weighted-average MACT model point value for pigmented gel coat used in the past 12 months, kilograms per megagram.

$M_{PG}$  = Mass of pigmented gel coat used in the past 12 months, megagrams.

$PV_{CG}$  = Weighted-average MACT model point value for clear gel coat used in the past 12 months, kilograms per megagram.

$M_{CG}$  = Mass of clear gel coat used in the past 12 months, megagrams.

$PV_{TR}$  = Weighted-average MACT model point value for tooling resin used in the past 12 months, kilograms per megagram.

$M_{TR}$  = Mass of tooling resin used in the past 12 months, megagrams.

$PV_{TG}$  = Weighted-average MACT model point value for tooling gel coat used in the past 12 months, kilograms per megagram.

$M_{TG}$  = Mass of tooling gel coat used in the past 12 months, megagrams.

The weight-averaged MACT model point for production resin is required to be calculated as follows:

$$PV_{OP} = \frac{\sum_{i=1}^n (M_i PV_i)}{\sum_{i=1}^n (M_i)} \quad (Eq. 2)$$

Where:

$PV_{OP}$  = Weighted-average MACT model point value for each open molding operation (PVR, PVPG, PVCG, PVTR, and PVTG) included in the average, kilograms of HAP per megagram of material applied.

$M_i$  = Mass of resin or gel coat  $i$  used within an operation in the past 12 months, megagrams.

$n$  = Number of different open molding resins and gel coats used within an operation in the past 12 months.

$PV_i$  = The MACT model point value for resin or gel coat  $i$  used within an operation in the past months, kilograms of HAP per megagram of material applied.

Table 3 to VVVV is used to calculate the MACT model point value ( $PV_i$ ) for each resin and gel coat used in each operation in the past 12 months.

Pigmented, clear, and tooling gelcoats used for part or mold repair and touch up are exempt from the open molding emission limit specified in the regulation, providing that the total gelcoat materials included in this exemption do not exceed 1% by weight of all gelcoat used at the facility on a 12-month rolling-average basis. The facility keeps records each month of the amount of gelcoat used for this exemption, as well as the amount of all gelcoats used at the facility. Files are maintained of the monthly calculations demonstrating that the repair

gelcoats do not exceed 1% by weight of all gelcoat used in the past 12-month period. In the event that calculations indicate that repair gelcoat quantities **do** exceed 1% of all gelcoats, then the quantities of gelcoat exceeding the 1% limit (at minimum) will be included in the resin and gelcoat emissions averaging compliance method for that current 12-month period.

The next section of this document provides a description of each operation (i.e., whether it is resin or gelcoat application, production or tooling, and atomized or non-atomized), the maximum HAP content in use during the last record keeping period, the application method(s) used for the operation, and any additional methods used to control emissions. Any changes to these items will be detailed in an updated Implementation Plan, which will be submitted any time changes are made, as required.

Spray booths equipped with handheld mechanical spray applicators for the application of pigmented gelcoat materials and a shared drying area with a natural gas-fired tube dryer. Applicators are non-atomized.

Spray booths equipped with handheld mechanical spray applicators for the application of clear coat gelcoat materials and a shared drying area with a natural gas-fired tube dryer. Applicators are non-atomized.

- I. Production Resin – Open Molding Spray Layup Booths
  - A. Maximum HAP Content (rounded to nearest whole number): **50%**
  - B. Application Method: **Non-Atomized**
  - C. Other Methods to Control Emissions: **Use of low HAP content resins**
  - D. Calculations Showing Operation Will Comply with Emission Limit in Paragraph 63.5698: **See facility record keeping spread sheet or semiannual reports.**
- II. Production Resin – Spray Booths with Shared Drying Area
  - A. Maximum HAP Content (rounded to nearest whole number): **50%**
  - B. Application Method: **Non-Atomized; some manual**
  - C. Other Methods to Control Emissions: **Use of low HAP content resins**
  - D. Calculations Showing Operation Will Comply with Emission Limit in Paragraph 63.5698: **See facility record keeping spread sheet or semiannual reports.**
- III. Tooling Resin
  - A. Maximum HAP Content (rounded to nearest whole number): **50%**
  - B. Application Method: **NA**
  - C. Other Methods to Control Emissions: **NA**
  - D. Calculations Showing Operation Will Comply with Emission Limit in Paragraph 63.5698: **See facility record keeping spread sheet or semiannual reports when in use.**
- IV. Pigmented Gelcoat
  - A. Maximum HAP Content (rounded to nearest whole number): **60%**
  - B. Application Method: **Mechanical, Non-atomized**
  - C. Other Methods to Control Emissions: **Use of low HAP content gelcoats**
  - D. Calculations Showing Operation Will Comply with Emission Limit in Paragraph 63.5698: **See facility record keeping spread sheet or semiannual reports.**
- V. Tooling Gelcoat
  - A. Maximum HAP Content (rounded to nearest whole number): **60%**
  - B. Application Method: **Mechanical, Non-atomized**
  - C. Other Methods to Control Emissions: **NA**
  - D. Calculations Showing Operation Will Comply with Emission Limit in Paragraph 63.5698: **See facility record keeping spread sheet or semi-annual reports. See record keeping spread sheet or semiannual reports for emission calculations.**

**MACT VVVV Compliance Summary & Implementation Plan**

Great Lakes Composites, LLC (SRN: N2430)

Year 2021

35%

Month	Production Resin								
	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<35%)	Monthly M <sub>R</sub> X PV <sub>R</sub> (kg/Mg)	12-month Rolling M <sub>R</sub> X PV <sub>R</sub> (kg/Mg)	12-month M <sub>R</sub> (Mg)	12-month Rolling PV <sub>R</sub> (kg/Mg)
Jan-17	-	-	0%	--	--	-	-	-	-
Feb-17	-	-	0%	--	--	-	-	-	-
Mar-17	-	-	0%	--	--	-	-	-	-
Apr-17	-	-	0%	--	--	-	-	-	-
May-17	1.05	3.29	32%	32%	Yes	110.95	110.95	2.98	37.18
Jun-17	1.42	4.44	32%	32%	Yes	149.63	260.59	7.01	37.18
Jul-17	0.26	0.81	32%	32%	Yes	27.42	288.00	7.75	37.18
Aug-17	0.75	2.33	32%	32%	Yes	78.67	366.67	9.86	37.18
Sep-17	0.10	0.31	32%	32%	Yes	10.53	377.20	10.14	37.18
Oct-17	-	-	0%	32%	Yes	-	377.20	10.14	37.18
Nov-17	0.18	0.55	32%	32%	Yes	18.46	395.66	10.64	37.18
Dec-17	0.28	0.88	32%	32%	Yes	29.52	425.19	11.43	37.18
Jan-18	1.24	3.88	32%	32%	Yes	130.83	556.01	14.95	37.18
Feb-18	1.24	3.88	32%	32%	Yes	130.83	686.84	18.47	37.18
Mar-18	1.24	3.88	32%	32%	Yes	130.83	817.66	21.99	37.18
Apr-18	1.24	3.88	32%	32%	Yes	130.83	948.49	25.51	37.18
May-18	-	-	0%	32%	Yes	-	837.53	22.52	37.18
Jun-18	0.86	2.69	32%	32%	Yes	90.87	778.77	20.94	37.18
Jul-18	0.81	2.53	32%	32%	Yes	85.50	836.85	22.51	37.18
Aug-18	1.18	3.68	32%	32%	Yes	124.19	882.37	23.73	37.18
Sep-18	0.58	1.80	32%	32%	Yes	60.81	932.65	25.08	37.18
Oct-18	0.34	1.05	32%	32%	Yes	35.49	968.14	26.04	37.18
Nov-18	0.20	0.61	32%	32%	Yes	20.63	970.31	26.10	37.18
Dec-18	0.35	1.10	-	-	-	37.11	--	-	--
Jan-19	0.36	1.13	32%	32%	Yes	38.21	885.28	23.81	37.18
Feb-19	1.35	4.23	32%	32%	Yes	142.54	896.99	24.12	37.18
Mar-19	1.45	4.54	32%	32%	Yes	153.13	919.30	24.72	37.18
Apr-19	0.71	2.23	32%	32%	Yes	75.19	863.66	23.23	37.18
May-19	0.67	2.10	32%	32%	Yes	71.00	934.67	25.14	37.18
Jun-19	1.50	4.68	32%	32%	Yes	157.97	1,001.77	26.94	37.18
Jul-19	0.91	2.85	32%	32%	Yes	96.15	1,012.42	27.23	37.18
Aug-19	0.57	1.77	32%	32%	Yes	59.64	947.87	25.49	37.18
Sep-19	0.58	1.83	32%	32%	Yes	61.60	948.66	25.51	37.18
Oct-19	0.21	0.65	32%	32%	Yes	22.02	935.19	25.15	37.18
Nov-19	0.21	0.65	32%	32%	Yes	22.01	936.57	25.19	37.18
Dec-19	0.39	1.23	32%	32%	Yes	41.63	941.09	25.31	37.18
Jan-20	0.83	2.61	32%	32%	Yes	87.97	990.86	26.65	37.18
Feb-20	1.88	5.89	32%	32%	Yes	198.61	1,046.92	28.16	37.18
Mar-20	0.68	2.12	32%	32%	Yes	71.50	965.29	25.96	37.18
Apr-20	-	-	0%	32%	Yes	-	890.10	23.94	37.18
May-20	0.41	1.29	32%	32%	Yes	43.39	862.49	23.20	37.18
Jun-20	0.53	1.66	32%	32%	Yes	55.98	760.50	20.45	37.18
Jul-20	0.63	1.97	32%	32%	Yes	66.57	730.92	19.66	37.18
Aug-20	0.07	0.23	32%	32%	Yes	7.89	679.18	18.27	37.18
Sep-20	0.10	0.32	32%	32%	Yes	10.85	628.43	16.90	37.18
Oct-20	0.09	0.27	32%	32%	Yes	9.07	615.47	16.55	37.18
Nov-20	0.35	1.11	32%	32%	Yes	37.35	630.81	16.96	37.18
Dec-20	0.36	1.13	32%	32%	Yes	38.21	627.39	16.87	37.18
Jan-21	0.32	0.99	32%	32%	Yes	33.50	572.91	15.41	37.18
Feb-21	0.22	0.69	32%	32%	Yes	23.38	397.68	10.70	37.18

**MACT VVVV Compliance Summary & Implementation Plan**

Great Lakes Composites, LLC (SRN: N2430)

Year 2021

35%

Month	Production Resin								
	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<35%)	Monthly $M_R \times PV_R$ (kg/Mg)	12-month Rolling $M_R \times PV_R$ (kg/Mg)	12-month $M_R$ (Mg)	12-month Rolling $PV_R$ (kg/Mg)
Mar-21	0.75	2.34	32%	32%	Yes	78.93	405.11	10.90	37.18
Apr-21	0.03	0.10	32%	32%	Yes	3.34	408.45	10.98	37.18
May-21	0.36	1.13	32%	32%	Yes	37.95	403.01	10.84	37.18
Jun-21	0.41	1.30	32%	32%	Yes	43.72	390.74	10.51	37.18
Jan-22									

Open molding spray layup booths with handheld mechanical applicators for the production of fiberglass boats and other plastic parts. Applicators are non-atomized. Maximum HAP Content of the materials is 32%.

- $M_R$  = mass of production resin used in past 12 months, megagrams
- $M_{PG}$  = mass of pigmented gel coat in past 12 months, megagrams
- $M_{CG}$  = mass of clear gel coat in past 12 months, megagrams
- $M_{TR}$  = mass of tooling resin in past 12 months, megagrams
- $M_{TG}$  = mass of tooling gel coat in past 12 months, megagrams

Month
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
Jan-18
Feb-18
Mar-18
Apr-18
May-18
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21

Month
Mar-21
Apr-21
May-21
Jun-21
Jan-22

**MACT VVVV Compliance Summary & Implementation Plan**

Great Lakes Composites, LLC (SRN: N2430)

Year 2021

33%

Pigmented Gel Coat									
Month	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<33%)	Monthly M <sub>PG</sub> X PV <sub>PG</sub> (kg/Mg)	12-month Rolling M <sub>PG</sub> X PV <sub>PG</sub> (kg/Mg)	12-month M <sub>PG</sub> (Mg)	12-month Rolling PV <sub>PG</sub> (kg/Mg)
Jan-17	-	-	0%	--	--	-	-	-	-
Feb-17	-	-	0%	--	--	-	-	-	-
Mar-17	-	-	0%	--	--	-	-	-	-
Apr-17	-	-	0%	--	--	-	-	-	-
May-17	0.17	0.50	35%	35%	See Total	76.82	76.82	0.45	168.84
Jun-17	0.23	0.67	35%	35%	See Total	103.38	180.20	1.07	169.01
Jul-17	0.04	0.12	36%	35%	See Total	19.96	200.16	1.18	170.01
Aug-17	0.14	0.40	34%	35%	See Total	59.76	259.92	1.54	169.26
Sep-17	0.02	0.04	35%	35%	See Total	6.77	266.69	1.58	169.31
Oct-17	-	-	0%	35%	See Total	-	266.69	1.58	169.31
Nov-17	0.04	0.12	34%	35%	See Total	18.35	285.04	1.69	169.15
Dec-17	0.32	0.91	35%	35%	See Total	141.54	426.58	2.51	169.78
Jan-18	0.35	0.99	35%	35%	See Total	154.59	581.16	3.41	170.40
Feb-18	0.35	0.99	35%	35%	See Total	154.59	735.75	4.31	170.76
Mar-18	0.35	0.99	35%	35%	See Total	154.59	890.34	5.21	170.99
Apr-18	0.35	0.99	35%	35%	See Total	154.59	1,044.93	6.11	171.16
May-18	-	-	0%	35%	See Total	-	968.12	5.65	171.35
Jun-18	0.30	0.83	37%	35%	See Total	139.33	1,004.06	5.79	173.36
Jul-18	0.26	0.72	37%	35%	See Total	120.39	1,104.49	6.33	174.49
Aug-18	0.50	1.37	36%	36%	See Total	227.67	1,272.40	7.21	176.44
Sep-18	0.44	1.23	36%	36%	See Total	201.34	1,466.97	8.29	177.01
Oct-18	0.45	1.18	38%	36%	See Total	214.23	1,681.20	9.36	179.69
Nov-18	0.03	0.08	37%	36%	See Total	13.15	1,676.00	9.32	179.90
Dec-18	0.01	0.02	-	-	-	3.46	--	-	--
Jan-19	0.34	0.96	36%	36%	See Total	154.71	1,538.05	8.48	181.27
Feb-19	0.21	0.59	35%	36%	See Total	93.90	1,477.35	8.12	181.86
Mar-19	0.26	0.72	36%	36%	See Total	115.03	1,437.80	7.88	182.54
Apr-19	0.10	0.27	37%	36%	See Total	46.40	1,329.60	7.23	184.00
May-19	0.26	0.71	36%	36%	See Total	117.93	1,447.53	7.87	183.96
Jun-19	0.33	0.95	35%	36%	See Total	148.39	1,456.59	7.98	182.61
Jul-19	0.47	1.27	37%	36%	See Total	218.96	1,555.16	8.48	183.49
Aug-19	0.63	1.68	37%	37%	See Total	292.48	1,619.97	8.76	184.87
Sep-19	0.39	1.05	38%	37%	See Total	183.53	1,602.16	8.60	186.35
Oct-19	0.22	0.59	37%	36%	See Total	98.86	1,486.79	8.06	184.41
Nov-19	0.07	0.19	37%	36%	See Total	31.58	1,505.22	8.16	184.41
Dec-19	0.22	0.61	37%	37%	See Total	102.47	1,604.23	8.70	184.48
Jan-20	0.2321	0.65	36%	37%	See Total	105.03	1,554.55	8.41	184.01
Feb-20	1.0970	3.08	36%	36%	See Total	494.17	1,954.82	10.67	184.11
Mar-20	0.1646	0.46	36%	36%	See Total	74.43	1,914.22	10.43	184.17
Apr-20	-	-	0%	36%	See Total	-	1,867.83	10.18	184.11
May-20	0.0628	0.17	37%	36%	See Total	29.05	1,778.95	9.70	184.06
Jun-20	0.2171	0.60	36%	37%	See Total	98.95	1,729.52	9.38	184.20
Jul-20	0.2317	0.63	37%	36%	See Total	106.88	1,617.44	8.80	184.22
Aug-20	0.2053	0.60	34%	36%	See Total	89.97	1,414.93	7.82	183.94
Sep-20	0.2543	0.72	35%	36%	See Total	113.90	1,345.30	7.52	183.39
Oct-20	0.0276	0.08	35%	36%	See Total	12.35	1,258.78	7.06	182.98
Nov-20	0.1535	0.43	35%	36%	See Total	68.85	1,296.05	7.28	182.52
Dec-20	0.4661	1.23	38%	36%	See Total	219.72	1,413.29	7.84	182.18
Jan-21	0.06	0.19	34%	36%	See Total	27.72	1,335.98	7.43	179.84
Feb-21	0.01	0.04	32%	36%	See Total	5.63	847.44	4.67	181.32

**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2021

33%

Pigmented Gel Coat									
Month	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<33%)	Monthly $M_{PG} \times PV_{PG}$ (kg/Mg)	12-month Rolling $M_{PG} \times PV_{PG}$ (kg/Mg)	12-month $M_{PG}$ (Mg)	12-month Rolling $PV_{PG}$ (kg/Mg)
Mar-21	0.18	0.50	35%	36%	See Total	77.84	850.85	4.71	180.59
Apr-21	0.00	0.01	32%	36%	See Total	0.80	851.65	4.72	180.55
May-21	0.08	0.23	33%	36%	See Total	32.69	855.29	4.77	179.39
Jun-21	0.11	0.32	35%	36%	See Total	49.75	806.09	4.51	178.62
Jan-22									

Spray booths equipped with handheld mechanical spray applicators for the application of gelcoat materials and a shared drying area with a natural gas-fired tube dryer. Applicators are non-atomized. Maximum HAP Content of the materials is 39.9%.

- $M_R$  = mass of production resin used in past 12 months, megagrams
- $M_{PG}$  = mass of pigmented gel coat in past 12 months, megagrams
- $M_{CG}$  = mass of clear gel coat in past 12 months, megagrams
- $M_{TR}$  = mass of tooling resin in past 12 months, megagrams
- $M_{TG}$  = mass of tooling gel coat in past 12 months, megagrams



**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2021

48%

Clear Gel Coat									
Month	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<48%)	Monthly M <sub>CG</sub> X PV <sub>CG</sub> (kg/Mg)	12-month Rolling M <sub>CG</sub> X PV <sub>CG</sub> (kg/Mg)	12-month M <sub>CG</sub> (Mg)	12-month Rolling PV <sub>CG</sub> (kg/Mg)
Jan-17	-	-	0%	--	--	-	-	-	-
Feb-17	-	-	0%	--	--	-	-	-	-
Mar-17	-	-	0%	--	--	-	-	-	-
Apr-17	-	-	0%	--	--	-	-	-	-
May-17	0.14	0.35	41%	41%	Yes	70.30	70.30	0.31	224.61
Jun-17	0.17	0.43	41%	41%	Yes	86.70	157.00	0.70	224.61
Jul-17	0.02	0.05	41%	41%	Yes	9.37	166.37	0.74	224.61
Aug-17	0.16	0.40	41%	41%	Yes	81.40	247.78	1.10	224.61
Sep-17	0.00	0.01	41%	41%	Yes	2.34	250.12	1.11	224.61
Oct-17	-	-	0%	41%	Yes	-	250.12	1.11	224.61
Nov-17	0.00	0.01	41%	41%	Yes	2.34	252.46	1.12	224.61
Dec-17	-	-	0%	41%	Yes	-	252.46	1.12	224.61
Jan-18	-	-	0%	41%	Yes	-	252.46	1.12	224.61
Feb-18	-	-	0%	41%	Yes	-	252.46	1.12	224.61
Mar-18	-	-	0%	41%	Yes	-	252.46	1.12	224.61
Apr-18	-	-	0%	41%	Yes	-	252.46	1.12	224.61
May-18	-	-	0%	41%	Yes	-	182.17	0.81	224.61
Jun-18	0.06	0.14	41%	41%	Yes	28.12	123.58	0.55	224.61
Jul-18	0.04	0.09	41%	41%	Yes	18.64	132.85	0.59	224.61
Aug-18	0.10	0.24	41%	41%	Yes	49.21	100.66	0.45	224.61
Sep-18	0.09	0.21	41%	41%	Yes	42.18	140.50	0.63	224.61
Oct-18	0.03	0.08	41%	41%	Yes	16.40	156.90	0.70	224.61
Nov-18	0.01	0.02	41%	41%	Yes	3.11	157.66	0.70	224.61
Dec-18	-	-	-	-	-	-	--	-	--
Jan-19	-	-	0%	41%	Yes	-	157.66	0.70	224.61
Feb-19	0.06	0.14	41%	41%	Yes	28.12	185.78	0.83	224.61
Mar-19	0.07	0.16	41%	41%	Yes	32.81	218.59	0.97	224.61
Apr-19	0.07	0.17	41%	41%	Yes	34.64	253.23	1.13	224.61
May-19	0.09	0.21	41%	41%	Yes	42.18	295.41	1.32	224.61
Jun-19	0.10	0.24	41%	41%	Yes	49.21	316.50	1.41	224.61
Jul-19	0.08	0.18	41%	41%	Yes	37.29	335.14	1.49	224.61
Aug-19	-	-	0%	41%	Yes	-	285.93	1.27	224.61
Sep-19	0.01	0.02	41%	41%	Yes	3.11	246.86	1.10	224.61
Oct-19	0.05	0.13	41%	41%	Yes	25.78	256.23	1.14	224.61
Nov-19	-	-	0%	41%	Yes	-	253.13	1.13	224.61
Dec-19	0.07	0.16	41%	41%	Yes	32.81	285.93	1.27	224.61
Jan-20	0.05	0.13	41%	41%	Yes	25.78	311.71	1.39	224.61
Feb-20	0.11	0.27	41%	41%	Yes	55.93	339.52	1.51	224.61
Mar-20	0.26	0.64	41%	41%	Yes	130.66	437.38	1.95	224.61
Apr-20	-	-	0%	41%	Yes	-	402.74	1.79	224.61
May-20	0.04	0.09	41%	41%	Yes	18.75	379.30	1.69	224.61
Jun-20	0.04	0.09	41%	41%	Yes	18.75	348.84	1.55	224.61
Jul-20	0.08	0.18	41%	41%	Yes	37.49	349.04	1.55	224.61
Aug-20	0.03	0.07	41%	41%	Yes	14.06	363.10	1.62	224.61
Sep-20	-	-	0%	41%	Yes	-	360.00	1.60	224.61
Oct-20	-	-	0%	41%	Yes	-	334.22	1.49	224.61
Nov-20	-	-	0%	41%	Yes	-	334.22	1.49	224.61
Dec-20	-	-	0%	41%	Yes	-	301.41	1.34	224.61
Jan-21	0.03	0.08	41%	41%	Yes	16.40	292.04	1.30	224.61
Feb-21	0.03	0.08	41%	41%	Yes	16.40	252.51	1.12	224.61

**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2021

48%

Clear Gel Coat									
Month	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<48%)	Monthly $M_{CG} \times PV_{CG}$ (kg/Mg)	12-month Rolling $M_{CG} \times PV_{CG}$ (kg/Mg)	12-month $M_{CG}$ (Mg)	12-month Rolling $PV_{CG}$ (kg/Mg)
Mar-21	0.05	0.12	41%	41%	Yes	23.43	145.28	0.65	224.61
Apr-21	0.00	0.01	41%	41%	Yes	2.34	147.63	0.66	224.61
May-21	0.02	0.06	41%	41%	Yes	11.72	140.60	0.63	224.61
Jun-21	0.02	0.05	41%	41%	Yes	9.37	131.22	0.58	224.61
Jan-22									

Spray booths equipped with handheld mechanical spray applicators for the application of gelcoat materials and a shared drying area with a natural gas-fired tube dryer. Applicators are non-atomized. Maximum HAP Content of the materials is 41.1%.

- $M_R$  = mass of production resin used in past 12 months, megagrams
- $M_{PG}$  = mass of pigmented gel coat in past 12 months, megagrams
- $M_{CG}$  = mass of clear gel coat in past 12 months, megagrams
- $M_{TR}$  = mass of tooling resin in past 12 months, megagrams
- $M_{TG}$  = mass of tooling gel coat in past 12 months, megagrams

**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2020

40%

Tooling Gel Coat									
Month	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<40%)	Monthly M <sub>TG</sub> X PV <sub>TG</sub> (kg/Mg)	12-month Rolling M <sub>TG</sub> X PV <sub>TG</sub> (kg/Mg)	12-month M <sub>TG</sub> (Mg)	12-month Rolling PV <sub>TG</sub> (kg/Mg)
Jan-17	-	-	-	--	--	-	-	-	-
Feb-17	-	-	-	--	--	-	-	-	-
Mar-17	-	-	-	--	--	-	-	-	-
Apr-17	-	-	-	--	--	-	-	-	-
May-17	-	-	-	--	--	-	-	-	-
Jun-17	-	-	-	--	--	-	-	-	-
Jul-17	-	-	-	--	--	-	-	-	-
Aug-17	-	-	-	--	--	-	-	-	-
Sep-17	-	-	-	--	--	-	-	-	-
Oct-17	-	-	-	--	--	-	-	-	-
Nov-17	-	-	-	--	--	-	-	-	-
Dec-17	-	-	-	--	--	-	-	-	-
Jan-18	-	-	-	--	--	-	-	-	-
Feb-18	-	-	-	--	--	-	-	-	-
Mar-18	-	-	-	--	--	-	-	-	-
Apr-18	-	-	-	--	--	-	-	-	-
May-18	-	-	-	--	--	-	-	-	-
Jun-18	-	-	-	--	--	-	-	-	-
Jul-18	-	-	-	--	--	-	-	-	-
Aug-18	-	-	-	--	--	-	-	-	-
Sep-18	-	-	-	--	--	-	-	-	-
Oct-18	-	-	-	--	--	-	-	-	-
Nov-18	-	-	-	--	--	-	-	-	-
Dec-18	-	-	-	--	-	-	--	-	--
Jan-19	-	-	-	--	--	-	-	-	-
Feb-19	-	-	-	--	--	-	-	-	-
Mar-19	-	-	-	--	--	-	-	-	-
Apr-19	-	-	-	--	--	-	-	-	-
May-19	-	-	-	--	--	-	-	-	-
Jun-19	-	-	-	--	--	-	-	-	-
Jul-19	-	-	-	--	--	-	-	-	-
Aug-19	-	-	-	--	--	-	-	-	-
Sep-19	-	-	-	--	--	-	-	-	-
Oct-19	-	-	-	--	--	-	-	-	-
Nov-19	-	-	-	--	--	-	-	-	-
Dec-19	-	-	-	--	--	-	-	-	-
Jan-20	-	-	-	--	--	-	-	-	-
Feb-20	-	-	-	--	--	-	-	-	-
Mar-20	-	-	-	--	--	-	-	-	-
Apr-20	-	-	-	--	--	-	-	-	-
May-20	-	-	-	--	--	-	-	-	-
Jun-20	-	-	-	--	--	-	-	-	-
Jul-20	-	-	-	--	--	-	-	-	-
Aug-20	-	-	-	--	--	-	-	-	-
Sep-20	-	-	-	--	--	-	-	-	-
Oct-20	-	-	-	--	--	-	-	-	-
Nov-20	-	-	-	--	--	-	-	-	-
Dec-20	-	-	-	--	--	-	-	-	-
Jan-21	-	-	-	--	--	-	-	-	-
Feb-21	-	-	-	--	--	-	-	-	-

**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2020

40%

Month	Tooling Gel Coat								
	HAP Material Content (ton)	Material Usage (ton)	Organic HAP Content (%)	12-mo rolling Average (%)	In compliance (<40%)	Monthly $M_{TG} \times PV_{TG}$ (kg/Mg)	12-month Rolling $M_{TG} \times PV_{TG}$ (kg/Mg)	12-month $M_{TG}$ (Mg)	12-month Rolling $PV_{TG}$ (kg/Mg)
Mar-21	-	-	-	--	--	-	-	-	-
Apr-21	-	-	-	--	--	-	-	-	-
May-21	-	-	-	--	--	-	-	-	-
Jun-21	-	-	-	--	--	-	-	-	-
Jan-22	-	-	-	--	--	-	-	-	-

- $M_R$  = mass of production resin used in past 12 months, megagrams
- $M_{PG}$  = mass of pigmented gel coat in past 12 months, megagrams
- $M_{CG}$  = mass of clear gel coat in past 12 months, megagrams
- $M_{TR}$  = mass of tooling resin in past 12 months, megagrams
- $M_{TG}$  = mass of tooling gel coat in past 12 months, megagrams

**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2020

Total Organic HAP Emissions								
Month	FGOPENMOLDING HAP (kg)	EUGELCOAT HAP (kg)	EUCLEANUP HAP (kg)	Total HAPs (kg)	12-mo rolling HAP Emissions (kg)	<a href="#">VVVV Eq. 1 HAP Emissions (kg/12-mo rolling)</a>	VVVV HAP Limit (kg)	In Compliance?
Jan-17	-	-	-	-	-	-	-	Yes
Feb-17	-	-	-	-	-	-	-	Yes
Mar-17	-	-	-	-	-	-	-	Yes
Apr-17	-	-	-	-	-	-	-	Yes
May-17	110.95	147.11	-	258.07	258.07	258.07	300.68	Yes
Jun-17	149.63	190.08	-	339.71	597.78	597.79	695.30	Yes
Jul-17	27.42	29.33	-	56.75	654.53	654.53	759.04	Yes
Aug-17	78.67	141.16	-	219.83	874.36	874.37	1,018.80	Yes
Sep-17	10.53	9.12	-	19.64	894.00	894.01	1,041.13	Yes
Oct-17	-	-	-	-	894.00	894.01	1,041.13	Yes
Nov-17	18.46	20.69	-	39.16	933.16	933.17	1,084.50	Yes
Dec-17	29.52	141.54	-	171.06	1,104.22	1,104.23	1,252.59	Yes
Jan-18	130.82	154.59	-	285.41	1,389.63	1,389.64	1,557.24	Yes
Feb-18	130.82	154.59	-	285.41	1,675.04	1,675.06	1,861.89	Yes
Mar-18	130.82	154.59	-	285.41	1,960.45	1,960.47	2,166.53	Yes
Apr-18	130.82	154.59	-	285.41	2,245.86	2,245.89	2,471.18	Yes
May-18	-	-	-	-	1,987.80	1,987.82	2,170.50	Yes
Jun-18	90.87	167.44	-	258.31	1,906.39	1,906.41	2,044.44	Yes
Jul-18	85.50	139.03	-	224.53	2,074.18	2,074.20	2,213.84	Yes
Aug-18	124.18	276.87	-	401.06	2,255.40	2,255.43	2,368.65	Yes
Sep-18	60.81	243.52	-	304.33	2,540.09	2,540.11	2,653.57	Yes
Oct-18	35.49	230.64	-	266.13	2,806.22	2,806.25	2,888.61	Yes
Nov-18	20.63	16.25	-	36.88	2,803.94	2,803.97	2,885.96	Yes
Dec-18	37.10	3.46	-	40.57	-	--	--	-
Jan-19	38.21	154.71	-	192.92	2,580.96	2,580.98	2,648.57	Yes
Feb-19	142.54	122.02	-	264.56	2,560.10	2,560.13	2,642.06	Yes
Mar-19	153.13	147.84	-	300.97	2,575.66	2,575.69	2,672.89	Yes
Apr-19	75.19	81.03	-	156.22	2,446.47	2,446.49	2,545.51	Yes
May-19	71.00	160.10	-	231.11	2,677.58	2,677.60	2,790.13	Yes
Jun-19	157.97	197.59	-	355.56	2,774.83	2,774.86	2,917.60	Yes
Jul-19	96.15	256.25	-	352.40	2,902.69	2,902.72	3,034.26	Yes
Aug-19	59.64	292.47	-	352.11	2,853.75	2,853.78	2,936.35	Yes
Sep-19	61.60	186.63	-	248.23	2,797.65	2,797.68	2,860.42	Yes
Oct-19	22.02	124.64	-	146.66	2,678.18	2,678.21	2,770.83	Yes
Nov-19	22.01	31.58	-	53.59	2,694.89	2,694.91	2,784.38	Yes
Dec-19	41.63	135.28	-	176.91	2,831.23	2,831.26	2,917.32	Yes
Jan-20	87.9734	130.8041	-	218.78	2,857.08	2,849.98	2,966.71	Yes
Feb-20	198.6043	550.0989	-	748.70	3,341.23	3,350.07	3,430.85	Yes
Mar-20	71.4973	205.0892	-	276.59	3,316.85	3,323.77	3,419.38	Yes
Apr-20	-	-	-	-	3,160.63	3,167.72	3,242.11	Yes
May-20	43.3939	47.7985	-	91.19	3,020.71	3,026.37	3,099.99	Yes
Jun-20	55.9810	117.6978	-	173.68	2,838.83	2,836.80	2,883.90	Yes
Jul-20	66.5691	144.3742	-	210.94	2,697.37	2,701.22	2,755.73	Yes
Aug-20	7.8932	104.0269	-	111.92	2,457.18	2,480.45	2,553.84	Yes
Sep-20	10.8481	113.8988	-	124.75	2,333.70	2,367.77	2,439.74	Yes
Oct-20	9.0670	12.3450	-	21.41	2,208.45	2,241.29	2,316.76	Yes
Nov-20	37.3475	68.8444	-	106.19	2,261.06	2,294.31	2,371.36	Yes
Dec-20	38.206	219.713	-	257.92	2,342.07	2,357.95	2,413.94	Yes
Jan-21	33.50	44.12	-	77.62	2,200.91	2,200.93	2,268.30	Yes
Feb-21	23.38	22.03	-	45.41	1,497.62	1,497.63	1,562.25	Yes

**MACT VVVV Compliance Summary & Implementation Plan**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2020

Total Organic HAP Emissions								
Month	FGOPENMOLDING HAP (kg)	EUGELCOAT HAP (kg)	EUCLEANUP HAP (kg)	Total HAPs (kg)	12-mo rolling HAP Emissions (kg)	<a href="#">VVVV Eq. 1 HAP Emissions (kg/12-mo rolling)</a>	VVVV HAP Limit (kg)	In Compliance?
Mar-21	78.93	101.27	-	180.20	1,401.23	1,401.25	1,438.52	Yes
Apr-21	3.34	3.15	-	6.49	1,407.72	1,407.73	1,446.55	Yes
May-21	37.95	44.41	-	82.35	1,398.88	1,398.89	1,438.79	Yes
Jun-21	43.72	59.12	-	102.84	1,328.04	1,328.05	1,370.93	Yes
Jan-22								

$$HAP\ emissions = [(PV_R)(M_R) + (PV_{PG})(M_{PG}) + (PV_{CG})(M_{CG}) + (PV_{TR})(M_{TR}) + (PV_{TG})(M_{TG})] \quad (Eq. 1)$$

$$HAP\ Limit = [46(M_R) + 159(M_{PG}) + 291(M_{CG}) + 54(M_{TR}) + 214(M_{TG})] \quad (Eq. 1)$$

M<sub>R</sub> = mass of production resin used in past 12 months, megagrams

M<sub>PG</sub> = mass of pigmented gel coat in past 12 months, megagrams

M<sub>CG</sub> = mass of clear gel coat in past 12 months, megagrams

M<sub>TR</sub> = mass of tooling resin in past 12 months, megagrams

M<sub>TG</sub> = mass of tooling gel coat in past 12 months, megagrams

HAP Limit = total allowable organic HAP that can be emitted from the open molding operations, kilograms

**MACT WWWW Compliance**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2021

Month	CR/HS Resin		Non CR/HS Resin		White/off white Pigmented Gel Coat		Pigmented Gel Coat		Clear Production Gel Coat		Facility Weighted Average Open Molding Emission Limit (lb/ton)
	Emission limit (lb/ton)	12 month Rolling Usage (tons)	Emission limit (lb/ton)	12 month Rolling Usage (tons)	Emission Limit (lb/ton)	12 month Rolling Usage (tons)	Emission Limit (lb/ton)	12 month Rolling Usage (tons)	Emission Limit (lb/ton)	12 month Rolling Usage (tons)	
Jan-19			88.00	99.48	267.00	5.72	377.00	37.83	522.00	7.74	189.59
Feb-19			88.00	98.59	267.00	5.12	377.00	39.83	522.00	8.47	193.93
Mar-19			88.00	99.77	267.00	4.80	377.00	40.21	522.00	8.76	194.04
Apr-19			88.00	103.31	267.00	4.62	377.00	41.14	522.00	8.72	192.58
May-19			88.00	98.35	267.00	4.06	377.00	39.70	522.00	8.73	193.99
Jun-19			88.00	91.99	267.00	3.29	377.00	38.80	522.00	8.72	197.16
Jul-19			88.00	91.69	267.00	2.78	377.00	37.38	522.00	8.55	194.93
Aug-19			88.00	91.51	267.00	2.34	377.00	35.97	522.00	8.51	192.87
Sep-19			88.00	92.10	267.00	2.04	377.00	34.30	522.00	7.91	188.55
Oct-19			88.00	89.08	267.00	2.75	377.00	33.59	522.00	8.28	191.16
Nov-19			88.00	86.66	267.00	2.34	377.00	33.37	522.00	8.04	191.92
Dec-19			88.00	85.57	267.00	2.16	377.00	31.71	522.00	7.87	189.84
Jan-20			88.00	92.30	267.00	2.61	377.00	33.97	522.00	10.44	196.99
Feb-20			88.00	89.44	267.00	3.06	377.00	35.39	522.00	12.24	205.15
Mar-20			88.00	88.23	267.00	3.21	377.00	32.74	522.00	11.58	198.93
Apr-20			88.00	81.23	267.00	2.93	377.00	29.94	522.00	10.71	198.76
May-20			88.00	77.26	267.00	2.71	377.00	27.31	522.00	10.62	198.16
Jun-20			88.00	76.06	267.00	2.92	377.00	27.30	522.00	10.44	198.90
Jul-20	113.00	3.00	88.00	70.69	267.00	2.90	377.00	27.95	522.00	10.48	202.93
Aug-20	113.00	3.82	88.00	63.28	267.00	2.98	377.00	29.40	522.00	10.90	213.54
Sep-20	113.00	4.64	88.00	56.08	267.00	3.07	377.00	30.85	522.00	10.20	221.62
Oct-20	113.00	4.94	88.00	48.31	267.00	3.31	377.00	31.80	522.00	10.66	234.76
Nov-20	113.00	5.09	88.00	42.71	267.00	2.83	377.00	32.26	522.00	9.70	241.01
Dec-20	113.00	5.67	88.00	37.93	267.00	2.95	377.00	32.59	522.00	10.22	250.53
Jan-21	113.00	6.15	88.00	31.65	267.00	3.18	377.00	31.02	522.00	8.46	254.24
Feb-21	113.00	6.31	88.00	37.10	267.00	3.87	377.00	29.69	522.00	7.79	239.13
Mar-21	113.00	6.46	88.00	47.33	267.00	4.35	377.00	31.61	522.00	9.51	231.09
Apr-21	113.00	5.98	88.00	54.62	267.00	5.36	377.00	34.15	522.00	9.83	226.66
May-21	113.00	5.52	88.00	60.17	267.00	5.61	377.00	37.02	522.00	10.42	225.81
Jun-21	113.00	4.69	88.00	61.47	267.00	6.46	377.00	39.54	522.00	11.46	230.97
Jul-21	113.00	3.87	88.00	61.47	267.00	6.27	377.00	36.88	522.00	10.94	227.22
Aug-21	113.00	3.05	88.00	61.47	267.00	6.19	377.00	34.33	522.00	9.86	221.89
Sep-21	113.00	2.24	88.00	61.47	267.00	6.09	377.00	30.59	522.00	9.86	217.39
Oct-21	113.00	1.93	88.00	61.47	267.00	5.84	377.00	28.04	522.00	9.39	212.43
Nov-21	113.00	1.78	88.00	61.47	267.00	5.61	377.00	24.92	522.00	9.39	207.48
Dec-21	113.00	1.20	88.00	61.47	267.00	5.39	377.00	22.26	522.00	8.40	200.15

**MACT WWWW Compliance**  
 Great Lakes Composites, LLC (SRN: N2430)  
 Year 2021

Month	CR/HS Resin		Non CR/HS Resin		White/off white Pigmented Gel Coat		Pigmented Gel Coat		Clear Production Gel Coat		Facility Weighted Average Open Molding Emission Actual HAP (lb/ton)	In compliance (< Facility Weighted Average Emission Limit)
	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)		
Jan-19			68.48	99.48	362.06	5.72	363.05	37.83	441.67	7.74	172.69	compliant
Feb-19			68.48	98.59	362.06	5.12	343.84	39.83	413.74	8.47	169.75	compliant
Mar-19			68.48	99.77	353.89	4.80	333.27	40.21	396.31	8.76	165.45	compliant
Apr-19			68.48	103.31	341.19	4.62	319.92	41.14	384.14	8.72	159.47	compliant
May-19			68.48	98.35	338.31	4.06	307.93	39.70	370.30	8.73	156.23	compliant
Jun-19			68.48	91.99	323.81	3.29	296.87	38.80	359.45	8.72	154.19	compliant
Jul-19			68.48	91.69	316.81	2.78	288.18	37.38	342.60	8.55	148.59	compliant
Aug-19			68.48	91.51	307.86	2.34	275.65	35.97	325.96	8.51	142.23	compliant
Sep-19			68.48	92.10	298.90	2.04	264.38	34.30	315.73	7.91	135.55	compliant
Oct-19			68.48	89.08	280.16	2.75	251.84	33.59	299.91	8.28	133.23	compliant
Nov-19			68.48	86.66	260.42	2.34	239.81	33.37	283.72	8.04	129.04	compliant
Dec-19			68.48	85.57	225.96	2.16	224.52	31.71	269.34	7.87	122.43	compliant
Jan-20			68.48	92.30	319.47	2.61	300.49	33.97	346.15	10.44	151.06	compliant
Feb-20			68.48	89.44	311.10	3.06	293.17	35.39	332.37	12.24	154.02	compliant
Mar-20			68.48	88.23	305.45	3.21	288.00	32.74	326.46	11.58	149.02	compliant
Apr-20			68.48	81.23	300.66	2.93	284.04	29.94	322.34	10.71	147.41	compliant
May-20			68.48	77.26	293.28	2.71	276.62	27.31	316.41	10.62	144.20	compliant
Jun-20			68.48	76.06	279.60	2.92	269.17	27.30	311.42	10.44	142.44	compliant
Jul-20			68.48	70.69	270.43	2.90	262.46	27.95	303.44	10.48	144.09	compliant
Aug-20	70.54	3.00	68.48	63.28	262.03	2.98	254.20	29.40	295.09	10.90	146.18	compliant
Sep-20	70.55	3.82	68.48	56.08	255.16	3.07	246.64	30.85	289.60	10.20	148.59	compliant
Oct-20	70.56	4.64	68.48	48.31	253.79	3.31	239.70	31.80	283.42	10.66	153.15	compliant
Nov-20	70.56	4.94	68.48	42.71	241.89	2.83	231.52	32.26	276.04	9.70	152.58	compliant
Dec-20	70.56	5.09	68.48	37.93	225.96	2.95	221.80	32.59	269.34	10.22	153.23	compliant
Jan-21	70.57	5.67	68.48	31.65	208.33	3.18	221.05	31.02	269.34	8.46	154.65	compliant
Feb-21	70.57	6.15	68.48	37.10	206.11	3.87	218.83	29.69	269.34	7.79	146.18	compliant
Mar-21	70.57	6.31	68.48	47.33	207.08	4.35	218.74	31.61	269.34	9.51	141.89	compliant
Apr-21	70.62	6.46	68.48	54.62	203.03	5.36	220.81	34.15	269.34	9.83	140.13	compliant
May-21	70.62	5.98	68.48	60.17	203.38	5.61	219.40	37.02	269.34	10.42	139.37	compliant
Jun-21	70.62	5.52	68.48	61.47	204.95	6.46	220.91	39.54	269.34	11.46	142.58	compliant
Jul-21	70.62	4.69	68.48	61.47	204.32	6.27	220.46	36.88	269.34	10.94	140.53	compliant
Aug-21	70.62	3.87	68.48	61.47	204.04	6.19	220.62	34.33	269.34	9.86	138.05	compliant
Sep-21	70.62	3.05	-	61.47	-	6.09	-	30.59	-	9.86	-	-
Oct-21	70.62	2.24	-	61.47	-	5.84	-	28.04	-	9.39	-	-
Nov-21	70.62	1.93	-	61.47	-	5.61	-	24.92	-	9.39	-	-
Dec-21	70.62	1.78	-	61.47	-	5.39	-	22.26	-	8.40	-	-



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### SECTION 1. IDENTIFICATION

Product name : NOROX MCP-75 FRED

#### Manufacturer or supplier's details

Company name of supplier : United Initiators GmbH

Address : Dr.-Gustav-Adolph-Str. 3  
Pullach 09 D-82049

Emergency telephone : +49 / 89 / 74422 – 0 (24 h)

E-mail address of person responsible for the SDS : contact@united-in.com

#### Recommended use of the chemical and restrictions on use

Recommended use : Hardener

---

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids : Category 4

Organic peroxides : Type D

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 4

Skin corrosion : Category 1B

Serious eye damage : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic toxicity - repeated exposure : Category 2

Acute aquatic toxicity : Category 2

Chronic aquatic toxicity : Category 3

#### GHS label elements

Hazard pictograms :



Signal Word : Danger

---

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Hazard Statements : H227 Combustible liquid.  
H242 Heating may cause a fire.  
H302 + H332 Harmful if swallowed or if inhaled.  
H314 Causes severe skin burns and eye damage.  
H360 May damage fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H401 Toxic to aquatic life.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P220 Keep/Store away from clothing/ strong acids, bases, heavy metal salts and other reducing substances /combustible materials.  
P234 Keep only in original container.  
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P363 Wash contaminated clothing before reuse.  
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

**Storage:**

P405 **Store locked up.**  
P410 **Protect from sunlight.**  
P411 + P235 **Store at temperatures not exceeding < 100 °F/ < 38 °C. Keep cool.**  
P420 **Store away from other materials.**

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture  
Chemical nature : Organic Peroxide  
Liquid mixture

### Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Dimethyl phthalate	131-11-3	>= 30 - < 35
2-Butanone, peroxide	1338-23-4	>= 25 - < 30
Cumene hydroperoxide	80-15-9	>= 20 - < 25
Trimethylpentanediol isobutyrate	6846-50-0	>= 10 - < 15
acetophenone	98-86-2	>= 1 - < 5
Cumene	98-82-8	>= 1 - < 5
Butanone	78-93-3	>= 1 - < 5
Benzenemethanol, alpha,alpha-dimethyl-	617-94-7	>= 1 - < 5
Hydrogen peroxide	7722-84-1	>= 1 - < 5
N-Methyl-2-pyrrolidone	872-50-4	>= 0.1 - < 1

## SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.  
Show this material safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.  
Symptoms of poisoning may appear several hours later.  
Call a physician immediately.

If inhaled : Call a physician or poison control center immediately.  
If unconscious, place in recovery position and seek medical advice.  
Keep respiratory tract clear.  
Call a physician immediately.  
If breathed in, move person into fresh air.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash contaminated clothing before re-use.  
If on skin, rinse well with water.  
If on clothes, remove clothes.  
If symptoms persist, call a physician.

In case of eye contact : Small amounts splashed into eyes can cause irreversible

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

- tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do NOT induce vomiting.  
Call a physician immediately.  
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.  
Causes serious eye damage.  
May damage fertility or the unborn child.  
May cause damage to organs through prolonged or repeated exposure.  
Causes severe burns.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- Notes to physician : Treat symptomatically and supportively.
- 

### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting : Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.  
  
Flash back possible over considerable distance.  
Vapors may form explosive mixtures with air.  
Cool closed containers exposed to fire with water spray.
- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.  
Remove undamaged containers from fire area if it is safe to do so.  
Use water spray to cool unopened containers.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must
-

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3	Revision Date: 11/06/2017	SDS Number: 600000000088	Print Date: 11/14/2017
----------------	------------------------------	-----------------------------	---------------------------

---

be disposed of in accordance with local regulations.  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.  
Use personal protective equipment.

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Remove all sources of ignition.  
Follow safe handling advice and personal protective equipment recommendations.  
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.  
Never return spills in original containers for re-use.  
Treat recovered material as described in the section "Disposal considerations".

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.  
Clear spills immediately.  
Suppress (knock down) gases/vapors/mists with a water spray jet.  
To clean the floor and all objects contaminated by this material, use plenty of water.  
Soak up with inert absorbent material.  
Isolate waste and do not reuse.  
Non-sparking tools should be used.  
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

---

### SECTION 7. HANDLING AND STORAGE

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from combustible material.

Advice on safe handling : Do not swallow.  
Do not breathe vapors/dust.  
Avoid exposure - obtain special instructions before use.

---

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Avoid contact with skin and eyes.  
Avoid formation of aerosol.  
Take precautionary measures against static discharges.  
Never return any product to the container from which it was originally removed.  
Provide sufficient air exchange and/or exhaust in work rooms.  
Avoid confinement.  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Smoking, eating and drinking should be prohibited in the application area.  
Wash thoroughly after handling.  
For personal protection see section 8.  
Protect from contamination.

Conditions for safe storage : Avoid impurities (e.g. rust, dust, ash), risk of decomposition.  
Electrical installations / working materials must comply with the technological safety standards.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Store in original container.  
Keep containers tightly closed in a cool, well-ventilated place.  
Store in accordance with the particular national regulations.

Materials to avoid : Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature : < 100 °F

< 38 °C

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Dimethyl phthalate	131-11-3	TWA	5 mg/m <sup>3</sup>	ACGIH
		TWA	5 mg/m <sup>3</sup>	NIOSH REL
		TWA	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA	5 mg/m <sup>3</sup>	OSHA P0
2-Butanone, peroxide	1338-23-4	C	0.2 ppm	ACGIH
		C	0.2 ppm 1.5 mg/m <sup>3</sup>	NIOSH REL
		C	0.7 ppm 5 mg/m <sup>3</sup>	OSHA P0
Cumene hydroperoxide	80-15-9	TWA	1 ppm	US WEEL
acetophenone	98-86-2	TWA	10 ppm	ACGIH
		TWA	10 ppm	US WEEL
Cumene	98-82-8	TWA	50 ppm	ACGIH
		TWA	50 ppm 245 mg/m <sup>3</sup>	NIOSH REL

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

		TWA	50 ppm 245 mg/m3	OSHA Z-1
		TWA	50 ppm 245 mg/m3	OSHA P0
Butanone	78-93-3	TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH
		TWA	200 ppm 590 mg/m3	NIOSH REL
		ST	300 ppm 885 mg/m3	NIOSH REL
		TWA	200 ppm 590 mg/m3	OSHA Z-1
		TWA	200 ppm 590 mg/m3	OSHA P0
		STEL	300 ppm 885 mg/m3	OSHA P0
Hydrogen peroxide	7722-84-1	TWA	1 ppm	ACGIH
		TWA	1 ppm 1.4 mg/m3	NIOSH REL
		TWA	1 ppm 1.4 mg/m3	OSHA Z-1
		TWA	1 ppm 1.4 mg/m3	OSHA P0
N-Methyl-2-pyrrolidone	872-50-4	TWA	10 ppm	US WEEL

### Hazardous components without workplace control parameters

Ingredients	CAS-No.
Trimethylpentanediol isobutyrate	6846-50-0
Benzenemethanol, alpha,alpha-dimethyl-	617-94-7

### Biological occupational exposure limits

Ingredients	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI
N-Methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

**Engineering measures** : Minimize workplace exposure concentrations.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

### Hand protection

Material : butyl-rubber

Break through time : >= 480 min

Glove thickness : 0.5 mm

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.  
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove Wash hands before breaks and at the end of workday.

Eye protection : Tightly fitting safety goggles  
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.  
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Hygiene measures : Keep away from food and drink.  
When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and immediately after handling the product.

---

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : red

Odor : slight

pH : No data available

Melting point/range : No data available

Boiling point/boiling range : Decomposition: Decomposes below the boiling point.

Flash point : > 65 °C



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3	Revision Date: 11/06/2017	SDS Number: 600000000088	Print Date: 11/14/2017
----------------	------------------------------	-----------------------------	---------------------------

---

Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	> 1
Density	:	1.0 g/cm <sup>3</sup>
Solubility(ies) Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	No data available
Self-Accelerating decomposition temperature (SADT)	:	60 °C SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.
Viscosity Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	not determined
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing. Organic peroxide

---

### SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under recommended storage conditions.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	Vapors may form explosive mixture with air.
Conditions to avoid	:	Protect from contamination. Contact with incompatible substances can cause decomposition at or below SADT. Heat, flames and sparks. Avoid confinement.
Incompatible materials	:	Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Hazardous decomposition products : Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

Harmful if swallowed or if inhaled.

#### Product:

Acute oral toxicity : Acute toxicity estimate: 858.13 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 1.61 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 3,102 mg/kg  
Method: Calculation method

#### Ingredients:

##### **Dimethyl phthalate:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : (Rat): > 10.4 mg/l  
Exposure time: 6 h  
Test atmosphere: vapor  
Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rabbit): > 12,000 mg/kg

##### **2-Butanone, peroxide:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : Acute toxicity estimate: 1.5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Expert judgment  
Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: Based on data from similar materials

Acute dermal toxicity : Acute toxicity estimate: 2,500 mg/kg  
Method: Expert judgment

##### **Cumene hydroperoxide:**

Acute oral toxicity : LD50 Oral (Rat): 382 mg/kg

Acute inhalation toxicity : Acute toxicity estimate: 2.01 mg/l  
Exposure time: 4 h

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Test atmosphere: vapor  
Method: Expert judgment  
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : Acute toxicity estimate: 1,100 mg/kg  
Method: Expert judgment

### **Trimethylpentanediol isobutyrate:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: Expert judgment  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LCLo (Rat): > 5.30 mg/l  
Exposure time: 6 h  
Test atmosphere: vapor  
Method: Expert judgment  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Guinea pig): > 18,530 mg/kg  
Method: Expert judgment  
Assessment: The substance or mixture has no acute dermal toxicity

### **acetophenone:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Method: Expert judgment  
Assessment: The component/mixture is moderately toxic after single ingestion.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rat): 3,300 mg/kg  
Method: OECD Test Guideline 402

### **Cumene:**

Acute oral toxicity : LD50 (Rat): 2,700 mg/kg  
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg

### **Butanone:**

Acute oral toxicity : LD50 (Rat): 2,193 mg/kg  
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
Method: OECD Test Guideline 402

### **Benzenemethanol, alpha,alpha-dimethyl-:**

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version: 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

Acute oral toxicity : LD50 (Rat): 1,300 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 4,300 mg/kg

### Hydrogen peroxide:

Acute oral toxicity : LD50 (Rat, male): 1,026 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 0.17 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rabbit): > 6,500 mg/kg

### N-Methyl-2-pyrrolidone:

Acute oral toxicity : LD50 (Rat): 4,150 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 5.1 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 402

### Skin corrosion/irritation

Causes severe burns.

### Product:

Remarks: Extremely corrosive and destructive to tissue.

### Ingredients:

#### Dimethyl phthalate:

Species: Rabbit  
Method: Draize Test  
Result: No skin irritation

#### 2-Butanone, peroxide:

Species: Rabbit  
Result: Causes burns.

#### Cumene hydroperoxide:

Species: Rabbit  
Result: Causes burns.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **Trimethylpentanediol isobutyrate:**

Species: Guinea pig  
Result: Mild skin irritation

### **acetophenone:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **Cumene:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **Butanone:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **Benzenemethanol, alpha,alpha-dimethyl-:**

Species: Rabbit  
Result: Severe skin irritation

### **Hydrogen peroxide:**

Result: Corrosive after 3 minutes or less of exposure

### **N-Methyl-2-pyrrolidone:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Irritating to skin.

### **Serious eye damage/eye irritation**

Causes serious eye damage.

### **Product:**

Remarks: May cause irreversible eye damage.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

#### **2-Butanone, peroxide:**

Result: Irreversible effects on the eye

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **Cumene hydroperoxide:**

Species: Rabbit  
Result: Corrosive

### **Trimethylpentanediol isobutyrate:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

### **acetophenone:**

Species: Rabbit  
Result: Eye irritation  
Method: No information available.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

### **Cumene:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

### **Butanone:**

Species: Rabbit  
Result: Eye irritation  
Method: OECD Test Guideline 405

### **Benzenemethanol, alpha,alpha-dimethyl-:**

Result: Irritating to eyes.

### **Hydrogen peroxide:**

Result: Irreversible effects on the eye

### **N-Methyl-2-pyrrolidone:**

Species: Rabbit  
Result: Eye irritation  
Method: OECD Test Guideline 405

### **Respiratory or skin sensitization**

#### **Skin sensitization**

Not classified based on available information.

#### **Respiratory sensitization**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Mouse  
Method: OECD Test Guideline 429  
Result: Does not cause skin sensitization.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **2-Butanone, peroxide:**

Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitization.

Assessment: Harmful if swallowed., Harmful if inhaled.

### **Cumene hydroperoxide:**

Result: Does not cause skin sensitization.

### **Trimethylpentanediol isobutyrate:**

Species: Guinea pig  
Result: Does not cause skin sensitization.

### **acetophenone:**

Test Type: Draize Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: Does not cause skin sensitization.

### **Cumene:**

Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitization.

### **Butanone:**

Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitization.

### **N-Methyl-2-pyrrolidone:**

Species: Mouse  
Method: OECD Test Guideline 429  
Result: Does not cause skin sensitization.  
Remarks: Based on data from similar materials

### **Germ cell mutagenicity**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

Genotoxicity in vitro : Method: OECD Test Guideline 471  
Result: negative  
: Method: OECD Test Guideline 473

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

- Result: negative
- : Method: OECD Test Guideline 476  
Result: positive
- Genotoxicity in vivo : Test Type: Chromosomal aberration  
Species: Rat  
Application Route: Intraperitoneal  
Result: negative
- Test Type: Micronucleus test  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative
- 2-Butanone, peroxide:**
- Genotoxicity in vitro : Method: OECD Test Guideline 473  
Result: negative
- : Method: OECD Test Guideline 471  
Result: negative
- : Method: OECD Test Guideline 476  
Result: negative
- Cumene hydroperoxide:**
- Genotoxicity in vitro : Result: positive  
Remarks: In vitro tests have shown mutagenic effects.
- Genotoxicity in vivo : Test Type: Micronucleus test  
Species: Mouse  
Application Route: Skin contact  
Result: negative
- Trimethylpentanediol isobutyrate:**
- Genotoxicity in vitro : Method: OECD Test Guideline 476  
Result: negative
- : Test Type: Ames test  
Result: negative
- : Method: OECD Test Guideline 473  
Result: negative
- acetophenone:**
- Genotoxicity in vitro : Method: OECD Test Guideline 473  
Result: negative
- : Method: OECD Test Guideline 476  
Result: negative
- : Method: OECD Test Guideline 471



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Genotoxicity in vivo : Result: negative  
: Species: Mouse  
: Application Route: Intraperitoneal  
: Method: OECD Test Guideline 474  
: Result: negative

### Cumene:

Genotoxicity in vitro : Method: OECD Test Guideline 473  
: Result: negative  
: Method: OECD Test Guideline 471  
: Result: negative  
: Method: OECD Test Guideline 476  
: Result: negative  
: Method: OECD Test Guideline 482  
: Result: negative  
: Test Type: Ames test  
: Result: positive

Genotoxicity in vivo : Species: Rat  
: Application Route: Intraperitoneal  
: Exposure time: 72 h  
: Method: OECD Test Guideline 474  
: Result: Equivocal

Species: Mouse  
Application Route: inhalation (gas)  
Exposure time: 14 w  
Method: OECD Test Guideline 474  
Result: negative

### Butanone:

Genotoxicity in vitro : Method: OECD Test Guideline 471  
: Result: negative  
: Method: OECD Test Guideline 476  
: Result: negative  
: Method: OECD Test Guideline 473  
: Result: negative

Genotoxicity in vivo : Species: Mouse  
: Application Route: Intraperitoneal  
: Method: OECD Test Guideline 474  
: Result: negative

### Hydrogen peroxide:

Genotoxicity in vitro : Test Type: Ames test  
: Result: negative

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Result: negative

### **Carcinogenicity**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Rat  
Application Route: Skin contact  
Method: OECD Test Guideline 451  
Result: negative  
Remarks: Based on data from similar materials

#### **2-Butanone, peroxide:**

Remarks: This information is not available.

#### **Cumene hydroperoxide:**

Remarks: This information is not available.

#### **Cumene:**

Species: Rat  
Application Route: inhalation (gas)  
Exposure time: 2 Years  
LOEC: 250  
Method: OECD Test Guideline 451  
Result: negative

Species: Mouse  
Application Route: inhalation (gas)  
Exposure time: 2 Years  
LOEC: 125  
Method: OECD Test Guideline 451  
Result: negative

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

### **IARC**

Group 2B: Possibly carcinogenic to humans

Cumene 98-82-8

### **OSHA**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

### **NTP**

Reasonably anticipated to be a human carcinogen

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Cumene

98-82-8

### Reproductive toxicity

May damage fertility or the unborn child.

### Ingredients:

#### Dimethyl phthalate:

Effects on fertility : Species: Rat  
Application Route: oral (gavage)  
Method: OECD Test Guideline 440  
Result: negative

Effects on fetal development : Species: Rat  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: 840 mg/kg body weight  
Developmental Toxicity: NOAEL: 3,570 mg/kg body weight  
Method: OECD Test Guideline 414

#### 2-Butanone, peroxide:

Effects on fertility : Species: Rat  
Application Route: oral (gavage)  
General Toxicity Parent: NOAEL: 50 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: negative

#### Cumene hydroperoxide:

Effects on fertility : Remarks: No data available

Effects on fetal development : Remarks: No data available

#### acetophenone:

Effects on fertility : Species: Rat  
Application Route: Ingestion  
General Toxicity Parent: NOAEL: 225 mg/kg body weight  
General Toxicity F1: NOAEL: 225 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: negative

Species: Rat  
Application Route: Ingestion  
General Toxicity Parent: LOAEL: 750 mg/kg body weight  
General Toxicity F1: LOAEL: 750 mg/kg body weight  
Method: OECD Test Guideline 422

Effects on fetal development : Species: Mouse  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: >= 175 mg/kg body weight  
Teratogenicity: NOAEL: >= 175 mg/kg body weight  
Developmental Toxicity: NOAEL: >= 175 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: negative

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### Cumene:

Effects on fetal development : Species: Rabbit  
Application Route: inhalation (vapor)  
General Toxicity Maternal: LOAEL: 500  
Developmental Toxicity: NOAEL: 2,300  
Method: OECD Test Guideline 414

Species: Rat  
Application Route: inhalation (vapor)  
General Toxicity Maternal: NOAEL: 100  
Developmental Toxicity: NOAEL: > 1,200  
Method: OECD Test Guideline 414

### Butanone:

Effects on fertility : Species: Rat  
Application Route: oral (drinking water)  
General Toxicity Parent: NOAEL: 10,000 mg/l  
General Toxicity F1: NOAEL: 10,000 mg/l  
Method: OECD Test Guideline 416  
Remarks: Based on data from similar materials

Species: Rat  
Application Route: oral (drinking water)  
General Toxicity Parent: LOAEL: 20,000 mg/l  
Method: OECD Test Guideline 416  
Remarks: Based on data from similar materials

Effects on fetal development : Species: Rat  
Application Route: Inhalation  
General Toxicity Maternal: NOAEC: ca. 1,002 mg/kg body weight  
Teratogenicity: NOAEC Parent: ca. 1,002 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: negative

### N-Methyl-2-pyrrolidone:

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

### STOT-single exposure

Not classified based on available information.

### Ingredients:

#### Cumene:

Assessment: May cause respiratory irritation.

#### Hydrogen peroxide:

Assessment: May cause respiratory irritation.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **N-Methyl-2-pyrrolidone:**

Assessment: May cause respiratory irritation.

### **STOT-repeated exposure**

May cause damage to organs through prolonged or repeated exposure.

### **Ingredients:**

#### **Cumene hydroperoxide:**

Assessment: May cause damage to organs through prolonged or repeated exposure.

### **Repeated dose toxicity**

#### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Rat  
NOAEL: 770 mg/kg  
Application Route: Oral  
Exposure time: 16 w  
Method: OECD Test Guideline 408

#### **2-Butanone, peroxide:**

Species: Rat  
NOAEL: 200 mg/kg  
Application Route: oral (gavage)  
Exposure time: 28 d  
Method: OECD Test Guideline 407

Repeated dose toxicity - : Harmful if swallowed., Harmful if inhaled.  
Assessment

#### **Cumene hydroperoxide:**

Species: Rat  
NOAEL: 0.031 mg/l  
Application Route: inhalation (dust/mist/fume)  
Exposure time: 90 d

#### **acetophenone:**

Species: Rat  
NOAEL: 225 mg/kg  
LOAEL: 750 mg/kg  
Application Route: Ingestion  
Method: OECD Test Guideline 422

#### **Cumene:**

Species: Rat  
NOAEL: > 536 mg/kg  
Application Route: oral (feed)

Species: Rat

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

NOAEL: 125 mg/kg  
Application Route: inhalation (vapor)  
Method: OECD Test Guideline 413

### **Hydrogen peroxide:**

Species: Mouse  
Application Route: Ingestion  
Exposure time: 90 d  
Symptoms: No adverse effects.

### **N-Methyl-2-pyrrolidone:**

Species: Rat  
NOAEL: 0.5 mg/l  
LOAEL: 1 mg/l  
Application Route: inhalation (vapor)  
Exposure time: 90 d  
Method: OECD Test Guideline 413

Species: Rat  
NOAEL: 3,000 mg/kg  
LOAEL: 7,500 mg/kg  
Application Route: Ingestion  
Exposure time: 90 d  
Method: OECD Test Guideline 408

Species: Rat  
NOAEL: 6,000 mg/kg  
LOAEL: 18,000 mg/kg  
Application Route: oral (feed)  
Exposure time: 28 d  
Method: OECD Test Guideline 407

Species: Rabbit  
NOAEL: 826 mg/kg  
Application Route: Skin contact  
Exposure time: 20 d  
Method: OECD Test Guideline 410

### **Aspiration toxicity**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

No aspiration toxicity classification

#### **Cumene:**

May be fatal if swallowed and enters airways.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### Further information

#### Product:

Remarks: No data available

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ingredients:

##### **Dimethyl phthalate:**

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 39 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 52 mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 260 mg/l  
Exposure time: 72 h
- Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 11 mg/l  
Exposure time: 102 d  
Method: OECD Test Guideline 210
- LOEC (Oncorhynchus mykiss (rainbow trout)): 24 mg/l  
Exposure time: 102 d  
Method: OECD Test Guideline 210
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 9.6 mg/l  
Exposure time: 21 d
- LOEC (Daphnia magna (Water flea)): 23 mg/l  
Exposure time: 21 d
- Toxicity to microorganisms : EC50: 4,100 mg/l  
Exposure time: 0.5 h  
Method: OECD Test Guideline 209

##### **2-Butanone, peroxide:**

- Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 44.2 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- NOEC (Poecilia reticulata (guppy)): 18 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 39 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

- NOEC (*Daphnia magna* (Water flea)): 26.7 mg/l  
Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (*Pseudokirchneriella subcapitata* (green algae)): 5.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- NOEC (*Pseudokirchneriella subcapitata* (green algae)): 2.1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : EC50 (Bacteria): 48 mg/l  
Exposure time: 0.5 h  
Method: OECD Test Guideline 209

### Cumene hydroperoxide:

- Toxicity to fish : LC50 (*Oncorhynchus mykiss* (rainbow trout)): 3.9 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 18 mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (*Desmodesmus subspicatus* (green algae)): 1.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

### Trimethylpentanediol isobutyrate:

- Toxicity to fish : NOEC (*Lepomis macrochirus* (Bluegill sunfish)):  $\geq 6$  mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- LC50 (*Pimephales promelas* (fathead minnow)):  $> 1.55$  mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)):  $\geq 1.46$  mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (*Selenastrum capricornutum* (green algae)):  $> 7.49$  mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : LOEC (*Daphnia magna* (Water flea)): 0.7 mg/l  
Exposure time: 21 d

### Ecotoxicology Assessment

- Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

### acetophenone:



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 162 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 528 mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 86.4 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- NOEC (Pseudokirchneriella subcapitata (green algae)): 24.8 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : IC50: > 1,000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

### Cumene:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4.8 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.14 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 2.01 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.35 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211
- Toxicity to microorganisms : EC50: > 2,000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

### Ecotoxicology Assessment

- Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

### Butanone:

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Pseudomonas putida): 1,150 mg/l  
Exposure time: 16 h  
Method: DIN 38 412 Part 8

### Hydrogen peroxide:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 16.4 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia pulex (Water flea)): 2.4 mg/l  
Exposure time: 48 h

Toxicity to algae : EC50 (Skeletonema costatum (marine diatom)): 1.38 mg/l  
Exposure time: 72 h  
  
NOEC (Skeletonema costatum (marine diatom)): 0.63 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.63 mg/l  
Exposure time: 21 d

Toxicity to microorganisms : EC50: Method: OECD Test Guideline 209

### N-Methyl-2-pyrrolidone:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Method: DIN 38412  
  
EC50 (Palaeomonetes vulgaris (Grass shrimp)): 1,107 mg/l  
Exposure time: 96 h

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 500 mg/l  
Exposure time: 72 h  
  
NOEC (Desmodesmus subspicatus (green algae)): 125 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 12.5 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
  
LOEC (Daphnia magna (Water flea)): 25 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Toxicity to microorganisms : EC50: > 600 mg/l  
Exposure time: 0.5 h  
Method: ISO 8192

### Persistence and degradability

#### Ingredients:

##### **Dimethyl phthalate:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301E

##### **2-Butanone, peroxide:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301D

##### **Cumene hydroperoxide:**

Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301B

##### **Trimethylpentanediol isobutyrate:**

Biodegradability : Result: rapidly biodegradable  
Method: OECD Test Guideline 301B

##### **acetophenone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301C

##### **Cumene:**

Biodegradability : Result: Readily biodegradable.

##### **Butanone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301D

##### **Benzenemethanol, alpha,alpha-dimethyl-:**

Biodegradability : Remarks: No data available

##### **Hydrogen peroxide:**

Biodegradability : Result: Readily biodegradable.

##### **N-Methyl-2-pyrrolidone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301C

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### Bioaccumulative potential

#### Ingredients:

##### **Dimethyl phthalate:**

Bioaccumulation : Bioconcentration factor (BCF): 57  
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water : log Pow: 1.54

##### **2-Butanone, peroxide:**

Partition coefficient: n-octanol/water : log Pow: < 0.3 (25 °C)

##### **Cumene hydroperoxide:**

Partition coefficient: n-octanol/water : log Pow: 1.6

##### **Trimethylpentanediol isobutyrate:**

Partition coefficient: n-octanol/water : log Pow: 4.48

##### **acetophenone:**

Bioaccumulation : Bioconcentration factor (BCF): 0.48

Partition coefficient: n-octanol/water : log Pow: 1.63

##### **Cumene:**

Bioaccumulation : Bioconcentration factor (BCF): 94.69  
Remarks: Calculation

Partition coefficient: n-octanol/water : log Pow: 3.55 (23 °C)

##### **Butanone:**

Partition coefficient: n-octanol/water : log Pow: 0.3 (40 °C)

##### **Benzenemethanol, alpha,alpha-dimethyl-:**

Partition coefficient: n-octanol/water : Remarks: No data available

##### **Hydrogen peroxide:**

Partition coefficient: n-octanol/water : log Pow: -1.57  
Remarks: Calculation

##### **N-Methyl-2-pyrrolidone:**

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

Partition coefficient: n-octanol/water : log Pow: -0.46 (25 °C)

### Mobility in soil

No data available

### Other adverse effects

#### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : **An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life.  
Harmful to aquatic life with long lasting effects.**

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.  
Do not burn, or use a cutting torch on, the empty drum.  
Dispose of in accordance with local regulations.

---

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### **UNRTDG**

UN number : UN 3105  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (METHYL ETHYL KETONE PEROXIDE(S), CUMYL HYDROPEROXIDE)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2

#### **IATA-DGR**

UN/ID No. : UN 3105  
Proper shipping name : Organic peroxide type D, liquid

---

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

(Methyl ethyl ketone peroxide(s), Cumyl hydroperoxide)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : Organic Peroxides, Keep Away From Heat  
Packing instruction (cargo aircraft) : 570  
Packing instruction (passenger aircraft) : 570

### IMDG-Code

UN number : UN 3105  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (METHYL ETHYL KETONE PEROXIDE(S), CUMYL HYDROPEROXIDE)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2  
EmS Code : F-J, S-R  
Marine pollutant : no

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### Domestic regulation

#### 49 CFR

UN/ID/NA number : UN 3105  
Proper shipping name : Organic peroxide type D, liquid (Methyl Ethyl Ketone Peroxide, <=26%, Cumyl Hydroperoxide, <=22%)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : ORGANIC PEROXIDE  
ERG Code : 145  
Marine pollutant : no

## SECTION 15. REGULATORY INFORMATION

### EPCRA - Emergency Planning and Community Right-to-Know

#### CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
2-Butanone, peroxide	1338-23-4	10	38

#### SARA 304 Extremely Hazardous Substances Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrogen peroxide	7722-84-1	1000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 311/312 Hazards** : Fire Hazard  
Reactivity Hazard  
Acute Health Hazard  
Chronic Health Hazard

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3	Revision Date: 11/06/2017	SDS Number: 600000000088	Print Date: 11/14/2017
----------------	------------------------------	-----------------------------	---------------------------

**SARA 302** : The following components are subject to reporting levels established by SARA Title III, Section 302:

Hydrogen peroxide	7722-84-1	1 %
-------------------	-----------	-----

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

Dimethyl phthalate	131-11-3	30.5 %
--------------------	----------	--------

Cumene hydroperoxide	80-15-9	22 %
----------------------	---------	------

acetophenone	98-86-2	2 %
--------------	---------	-----

Cumene	98-82-8	2 %
--------	---------	-----

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Dimethyl phthalate	131-11-3	30.5 %
acetophenone	98-86-2	2 %
Cumene	98-82-8	2 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Cumene hydroperoxide	80-15-9	22 %
acetophenone	98-86-2	2 %
Cumene	98-82-8	2 %
Butanone	78-93-3	1 %

### Clean Water Act

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Dimethyl phthalate	131-11-3	30.5 %
--------------------	----------	--------

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

### California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

Cumene	98-82-8
--------	---------

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

N-Methyl-2-pyrrolidone	872-50-4
------------------------	----------

### The ingredients of this product are reported in the following inventories:

DSL (CA) : All components of this product are on the Canadian DSL

NZIoC (NZ) : On the inventory, or in compliance with the inventory

TSCA (US) : On TSCA Inventory

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

## SECTION 16. OTHER INFORMATION

### Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

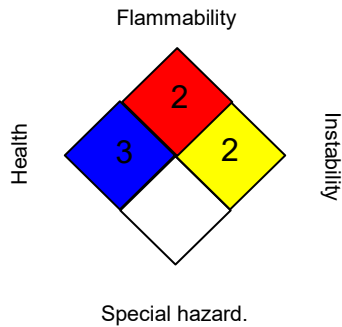
Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### Further information

#### NFPA:



#### HMIS® IV:

HEALTH	*	3
FLAMMABILITY		2
PHYSICAL HAZARD		2

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. For the first box in the Health rating a "/" indicates no chronic health risks and a "\*" indicates chronic hazards exist.

Revision Date : 11/06/2017

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8



# Safety Data Sheet

FOR INDUSTRIAL USE ONLY

136-7977 UP RESIN 767 TYPE RTM RESIN

Revision Date 5/14/2020

## 1. Identification

**Product Name:** 136-7977 UP RESIN 767 TYPE RTM RESIN

**SDS Number:** 150000047602

**Product Type:** Unsaturated polyester

**Product Use:** Industrial

**Manufacturer, Importer, Supplier** Polynt Composites USA, Inc.  
99 East Cottage Avenue  
Carpentersville IL 60110

E-Mail: MSDS@polynt.com

**Telephone** For Emergency Transportation Information  
CHEMTREC US Domestic (800) 424-9300  
CHEMTREC International (703) 741-5970

For additional health, safety or regulatory information, call (847) 836-3659

## 2. Hazard identification

**EMERGENCY OVERVIEW:** FLAMMABLE LIQUID AND VAPOR. AVOID EYE CONTACT WITH VAPOR, SPRAY, OR MIST. AVOID SKIN CONTACT. AVOID BREATHING OF VAPORS. DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT. WASH EXPOSED AREAS THOROUGHLY WITH SOAP AND WATER. HARMFUL IF SWALLOWED. ALSO HARMFUL BY INHALATION AND IN CONTACT WITH SKIN.

### GHS Classification

Carc. 2, Eye Irrit. 2A, Flam. Liq. 3, Skin Irrit. 2, STOT RE 1, STOT SE 3 NE, STOT SE 3 RTI

### Symbol(s) of Product



### Signal Word

Danger

### GHS HAZARD STATEMENTS

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Skin Irritation, category 2	H315	Causes skin irritation.
Eye Irritation, category 2A	H319	Causes serious eye irritation.
STOT, single exposure, category 3, RTI	H335	May cause respiratory irritation.

STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
STOT, repeated exposure, category 1	H372	Causes damage to organs through prolonged or repeated exposure.

**GHS LABEL PRECAUTIONARY STATEMENTS**

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P264	Wash ... thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P321	Specific treatment (see ... on this label).
P405	Store locked up.
P501	Dispose of contents/container to in accordance with local/regional/national/international regulations.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use dry chemical, foam, water spray to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P403+P235	Store in a well-ventilated place. Keep cool.

**GHS SDS PRECAUTIONARY STATEMENTS**

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do not eat, drink or smoke when using this product.

**3. Composition/Information on ingredients**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>
Styrene	100-42-5	40 - 50

**4. First-aid measures**

**FIRST AID - EYE CONTACT:** Hold eyelids apart and immediately flush with plenty of water for 15 minutes. Seek medical advice. Remove contact lenses.

**FIRST AID - INGESTION:** Rinse mouth with water. Never give anything by mouth to an unconscious person. Obtain medical attention. If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel.

**FIRST AID - INHALATION:** Remove to fresh air. If not breathing, administer CPR until help arrives or the victim starts to breathe on his own. If breathing is difficult, give oxygen. Seek medical attention immediately.

**FIRST AID - SKIN CONTACT:** Immediately flush with water for at least 15 minutes. Remove contaminated clothing. Seek medical attention immediately. Wash thoroughly after handling.

**5. Fire-fighting measures****Extinguishing Media:**

<b>Suitable</b>	Dry Chemical, CO <sub>2</sub> , Water Fog/Mist, Foam
<b>Not suitable</b>	Water Jet

**SPECIAL FIREFIGHTING PROCEDURES:** Wear full protective gear & SCBA.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Vapors can form an ignitable mixture with air. Vapors can flow along surfaces to a distant ignition source and flash back. Container may rupture on heating.

## 6. Accidental release measures

**ENVIRONMENTAL MEASURES:** Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Use personal protective equipment. Prevent further leakage or spillage if safe to do so. Try to prevent the material from entering drains or water courses. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

**PRECAUTIONARY MEASURES:** Put on appropriate personal protective equipment (see Section 8). Do not touch or walk through spilled material. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air).

## 7. Handling and storage



**HANDLING:** Avoid heat, sparks and open flames. Avoid breathing vapor and contact with eyes, skin and clothing. Do not leave containers open. Avoid repeated or prolonged contact with skin. Empty containers retain product residue. Observe all safety precautions. Do not reuse container.

**STORAGE:** Keep away from oxidizers, heat or flames. Keep in cool, dry, ventilated storage and in closed containers. Store away from all ignition sources. Ground all containers during transfer. Store in a cool, dry place. Protect from damage. Store away from flame and ignition sources. Keep all containers tightly closed when not in use. Store out of direct sunlight and on an impermeable floor. Do not store with incompatible materials. Store in upright position only. Store and dispose according to national, state and local regulations.

**HYGIENIC PRACTICES:** General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**WORK PRACTICES:** Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

**SPECIAL HANDLING PROCEDURES:** Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Follow US NFPA 30, "Flammable and Combustible Liquids Code", or other national, state and local codes on safe handling of flammable liquids. Train workers in the recognition and prevention of hazards associated with the storage, handling, and transfer of flammable liquids in the plant. Empty containers retain product residue and can be hazardous.

## 8. Exposure controls/personal protection

### Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA CEILING</u>
Styrene	10 ppm	20 ppm	100 ppm	200 ppm

**Further Advice:** MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation  
Sk = Skin Sensitizer N.E. = Not Established

### Personal Protection



**RESPIRATORY PROTECTION:** Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



**SKIN PROTECTION:** Chemical resistant gloves and chemical goggles should be used to prevent skin and eye contact. Impervious gloves.



**EYE PROTECTION:** Safety glasses with side-shields. Avoid contact with eyes.



**OTHER PROTECTIVE EQUIPMENT:** Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.



**HYGIENIC PRACTICES:** General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

## 9. Physical and chemical properties

<b>Color:</b>	Slight reddish-brown	<b>Physical State:</b>	Viscous liquid.
<b>Odor:</b>	Styrene	<b>Odor Threshold:</b>	Not Available
<b>Density, g/cm<sup>3</sup>:</b>	1.087	<b>pH:</b>	Not Available
<b>Freeze Point, °C:</b>	Not Available	<b>Viscosity:</b>	Not Available
<b>Solubility in Water:</b>	Negligible	<b>Partition Coefficient, n-octanol/ water:</b>	Not Available
<b>Decomposition Temp., °C:</b>	Not Available	<b>Flash Point, °C / F°</b>	31 / 88
<b>Boiling Range, °C:</b>	145	<b>Explosive Limits, vol%:</b>	Not Available
<b>Vapor Pressure:</b>	Not Available	<b>Auto-ignition Temp., °C:</b>	Not Available

(See "Other information" Section for abbreviation legend)

## 10. Stability and reactivity

**STABILITY:** This material is stable under normal storage and handling conditions.

**CONDITIONS TO AVOID:** High temperatures, sparks, open flame, and all other sources of ignition. Avoid heat, sparks, flames and other ignition sources.

**INCOMPATIBILITY:** Keep away from strong oxidizing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** No dangerous reaction known under conditions of normal use.

## 11. Toxicological information



### Practical Experiences

**EFFECT OF OVEREXPOSURE - EYE CONTACT:** Moderate irritation including redness, swelling, pain, tearing and hazy vision. May cause irritation, discomfort, reddening and tearing.

**EFFECT OF OVEREXPOSURE - INGESTION:** May cause irritation of the respiratory tract and CNS effects such as dizziness, headaches, nausea and narcosis.

**EFFECT OF OVEREXPOSURE - INHALATION:** Inhalation of high concentrations may cause headache, nausea, and dizziness.

**EFFECT OF OVEREXPOSURE - SKIN CONTACT:** Prolonged contact may cause irritation and/or redness.

**EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS:** No Information

**CARCINOGENICITY:** This product contains styrene classified by the International Agency for Research on Cancer (IARC) as 2A carcinogen.

This product contains styrene, which is listed in the NTP report on carcinogens.

**PRIMARY ROUTE(S) OF ENTRY:** Eye Contact, Ingestion, Inhalation, Skin Contact

### Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name according to EEC</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
100-42-5	Styrene	5000 mg/kg Rat	2000 mg/kg Rat	11.8 mg/L Rat

N.I. = No Information

12. Ecological information

ECOLOGICAL INFORMATION: Discharge into the environment must be avoided. Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits.

13. Disposal considerations



DISPOSAL METHOD: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

14. Transport information

SPECIAL TRANSPORT PRECAUTIONS: No Information

International transport regulations

Regulatory Information:	UN/NA Number	Proper Shipping Name	Classes/*PG	Reportable Quantity (RQ)
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/MDG	UN1866	RESIN SOLUTION	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION	Class 3 PGIII	

15. Regulatory information

U.S. Federal Regulations:

CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:  
Flammable (gases, aerosols, liquids, or solids), Carcinogenicity, Skin Corrosion or Irritation, Serious eye damage or eye irritation, Specific target organ toxicity (single or repeated exposure)

Chemical Name

Styrene

CAS-No. 100-42-5

SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name

Styrene

CAS-No. 100-42-5

TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) regulated components exist in this product.

CALIFORNIA PROPOSITION 65 CARCINOGENS



WARNING: Cancer - www.P65Warnings.ca.gov

Chemical Name

Styrene  
Ethybenzene

CAS-No. 100-42-5  
100-41-4



WARNING: Reproductive Harm - www.P65Warnings.ca.gov.

**Chemical Name**  
1,2-Ethanedithiol  
Methanol

**CAS-No.**  
107-21-1  
67-56-1

**International Regulations**

**Chemical Inventories**  
Australia inventory (AICS) All components are listed or exempted  
Canada inventory (DSL) All components are listed or exempted  
Canada inventory (NDSL) Not listed  
Japan inventory (ENCSC) Not listed  
China inventory (IECSC) All components are listed or exempted  
Korea inventory (KECI) All components are listed or exempted  
New Zealand (NZIOG) Not listed  
Philippines (PICCS) Not listed  
United States inventory (TSCA 8b) All components are listed or exempted

**16. Other information**

**Revision Date:** 5/14/2020  
**Reason for revision:** Updated SDS Information  
**Supersedes Date:** 3/9/2020

**Datasheet produced by:** Regulatory Department

**HMIS Ratings:**

Health: 2	Flammability: 3	Reactivity: 1	Personal Protection: N.I.	Chronic Rating: *
-----------	-----------------	---------------	---------------------------	-------------------

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polymt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polymt Composites USA, Inc. are subject to Polymt Composites USA, Inc terms and conditions of sale. Polymt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polymt Composites USA, Inc, except that the product shall conform to Polymt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.



# Environmental Data Sheet

**Polynt 150000047602**

## Description

**136-7977 UP RESIN 767 TYPE RTM RESIN**

## Environmental Data

HAP (wt %)	43.61
VOC (wt %)	43.68
DENSITY (lb/gal)	8.956
STYRENE (wt %)	43.46
METHYL METHACRYLATE (wt %)	0.00
ETHYLBENZENE (wt %)	0.02
COBALT COMPOUNDS (wt %)	0.08

## Disclaimer

The product composition and ingredient information presented herein is based upon Polynt's knowledge of this product as it is manufactured and shipped. Please use appropriate caution (and consult with air permitting experts) when relying upon this product data to calculate actual or potential air contaminant emissions. Due to variations in each individual customer's processes and conditions of usage, air emissions stack testing remains the most accurate means of determining emissions.



**LUPEROX® DDM-9**

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Company**

Arkema Inc.  
900 First Avenue  
King of Prussia, Pennsylvania 19406

**Functional Additives**

**Customer Service Telephone Number:** (800) 331-7654  
(Monday through Friday, 8:00 AM to 5:00 PM EST)

**Emergency Information**

**Transportation:** CHEMTREC: (800) 424-9300  
(24 hrs., 7 days a week)  
**Medical:** Rocky Mountain Poison Center: (866) 767-5089  
(24 hrs., 7 days a week)

**Product Information**

**Product name:** LUPEROX® DDM-9  
**Synonyms:** Not available  
**Molecular formula:** Complex mixture  
**Chemical family:** Organic peroxide - ketone peroxides  
**Product use:** initiator/catalyst

**2. HAZARDS IDENTIFICATION**

**Emergency Overview**

**Color:** colourless  
**Physical state:** liquid  
**Form:** oily  
**Odor:** sweet

**\*Classification of the substance or mixture:**

Organic peroxides, Type D, H242  
Skin corrosion, Category 1B, H314  
Serious eye damage, Category 1, H318  
Chronic aquatic toxicity, Category 3, H412

\*For the full text of the H-Statements mentioned in this Section, see Section 16.

**LUPEROX® DDM-9**

---

**GHS-Labeling**

Hazard pictograms:



Signal word:

**Danger**

**Hazard statements:**

H242 : Heating may cause a fire.

H314 : Causes severe skin burns and eye damage.

H412 : Harmful to aquatic life with long lasting effects.

**Supplemental Hazard Statements:**

Organic peroxide.

Hazardous decomposition may occur.

**LUPEROX® DDM-9**

**Precautionary statements:**

**Prevention:**

- P210 : Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P220 : Keep/Store away from clothing/ combustible materials.
- P234 : Keep only in original container.
- P264 : Wash skin thoroughly after handling.
- P273 : Avoid release to the environment.
- P280 : Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

- P301 + P330 + P331 : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353 : IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305 + P351 + P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 : Immediately call a POISON CENTER/doctor.
- P363 : Wash contaminated clothing before reuse.

**Storage:**

- P405 : Store locked up.
- P410 : Protect from sunlight.
- P411 : Maximum storage temperature is specified on label and in section 7 of SDS.
- P420 : Store away from other materials.

**Disposal:**

- P501 : Dispose of contents/ container to an approved waste disposal plant.

**Supplemental information:**

**Potential Health Effects:**

If swallowed, may cause severe irritation and injury to the mouth, throat and digestive tract.

<b>3. COMPOSITION/INFORMATION ON INGREDIENTS</b>
--------------------------------------------------

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester	6846-50-0	>= 57 - < 59 %	H412

LUPEROX® DDM-9

2-Butanone, peroxide	1338-23-4	>= 32 - < 34 %	H242, H302, H314, H318
2,4-Pentanediol, 2-methyl-	107-41-5	>= 5.5 - < 6.5 %	H319, H336
2-Butanone	78-93-3	>= 1 - < 2 %	H225, H319, H336

\*\*For the full text of the H-Statements mentioned in this Section, see Section 16.

**4. FIRST AID MEASURES**

**4.1. Description of necessary first-aid measures:**

**Inhalation:**

If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Skin:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eyes:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

**Ingestion:**

If swallowed, DO NOT induce vomiting. Get medical attention immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**4.2. Most important symptoms/effects, acute and delayed:**

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information) and Section 11 (Toxicology Information) of this SDS.

**4.3. Indication of immediate medical attention and special treatment needed, if necessary:**

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

**5. FIREFIGHTING MEASURES**

**Extinguishing media (suitable):**

**LUPEROX® DDM-9**

---

Water spray, Carbon dioxide (CO<sub>2</sub>), Foam, Dry chemical

**Protective equipment:**

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

**Further firefighting advice:**

Fight fire with large amounts of water from a safe distance.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

**Fire and explosion hazards:**

Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self accelerating decomposition reaction with release of flammable vapors which may autoignite.

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Hazardous organic compounds

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as clean sand, earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal. DO NOT USE peat moss. DO NOT USE vermiculite. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Add inhibitor to prevent polymerization.

**Protective equipment:**

Appropriate personal protective equipment is set forth in Section 8.

**LUPEROX® DDM-9****7. HANDLING AND STORAGE****Handling****General information on handling:**

Contact with materials to avoid or exposure to temperatures exceeding the SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may autoignite.

Do not taste or swallow.

Do not get in eyes, on skin, or on clothing.

Avoid breathing vapor or mist.

Keep away from heat, sparks and flames.

No smoking.

Use only with adequate ventilation.

Wash thoroughly after handling.

Prevent product contamination.

Keep container tightly closed and away from combustible materials.

Keep only in the original container.

Do not reuse container as it may retain hazardous product residue.

Emptied container retains vapor and product residue.

Container hazardous when empty.

Improper disposal or reuse of this container may be dangerous and/or illegal.

**Storage****General information on storage conditions:**

Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity.

Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Outside or detached storage is preferred. Store out of direct sunlight in a cool well-ventilated place. Store in original container.

Store away from combustibles and materials to avoid. Refer also to National Fire Protection Association (NFPA) Code 400, Hazardous Materials Code.

**Storage stability – Remarks:**

Follow the recommended storage temperatures provided in this Section in order to maintain stability and oxygen content.

**Storage incompatibility – General:**

Store away from excessive heat, sources of ignition, and reactive materials.

Store separate from:

Strong acids

Strong bases

Strong oxidizing agents

Reducing agents

Accelerators

Friedel - Crafts reaction catalyst

transition metal salts

metal ions

Brass

Copper

Iron

For all Organic Peroxides, compatible materials of contact are stainless steel 304 or 316 (preferred), high-density polyethylene (HDPE), polytetrafluoroethylene or glass linings.

**LUPEROX® DDM-9**

**Temperature tolerance – Do not store below:**  
50 °F (10 °C)

**Temperature tolerance – Do not store above:**  
100 °F (38 °C)

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Airborne Exposure Guidelines:**

**2-Butanone, peroxide (1338-23-4)**

US. ACGIH Threshold Limit Values

Ceiling Limit Value	0.2 ppm
---------------------	---------

**2,4-Pentanediol, 2-methyl- (107-41-5)**

US. ACGIH Threshold Limit Values

Ceiling Limit Value	25 ppm
---------------------	--------

**2-Butanone (78-93-3)**

US. ACGIH Threshold Limit Values

Time weighted average	200 ppm
Short Term Exposure Limit (STEL):	300 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

PEL:	200 ppm (590 mg/m <sup>3</sup> )
------	----------------------------------

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

**Engineering controls:**

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

**Respiratory protection:**

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material

**LUPEROX® DDM-9**

and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

**Skin protection:**

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

**Eye protection:**

Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

<b>9. PHYSICAL AND CHEMICAL PROPERTIES</b>
--------------------------------------------

<b>Color:</b>	colourless
<b>Physical state:</b>	liquid
<b>Form:</b>	oily
<b>Odor:</b>	sweet
<b>Odor threshold:</b>	No data available
<b>Flash point</b>	The flashpoint of this product is greater than the Self Acceleration Decomposition Temperature (SADT).
<b>Auto-ignition temperature:</b>	No data available.
<b>Lower flammable limit (LFL):</b>	No data available
<b>Upper flammable limit (UFL):</b>	No data available
<b>pH:</b>	No data available
<b>Density:</b>	1.0077 g/cm <sup>3</sup> (68 °F (20 °C))
<b>Specific Gravity (Relative density):</b>	1.0088 (68 °F( 20 °C))Water=1 (liquid)
<b>Vapor pressure:</b>	5.20 mmHg (66 °F (19 °C))



**LUPEROX® DDM-9**

<b>Boiling point/boiling range:</b>	Decomposes before boiling. Rate of decomposition increases with rising temperature.
<b>Melting point/range:</b>	No data available.
<b>Freezing point:</b>	No data available
<b>Evaporation rate:</b>	No data available
<b>Solubility in water:</b>	slightly soluble
<b>Refractive index:</b>	1.4356
<b>Viscosity, dynamic:</b>	17.30 mPa.s 68 °F (20 °C)
<b>Oil/water partition coefficient:</b>	No data available.
<b>Self-Accelerating Decomposition Temperature (SADT):</b>	167 °F (75 °C) 45 pound container
<b>Thermal decomposition:</b>	Decomposes on heating.
<b>Active oxygen content:</b>	8.7 - 9.0 %
<b>Flammability:</b>	See GHS Classification in Section 2

<b>10. STABILITY AND REACTIVITY</b>
-------------------------------------

**Stability:**

This material is chemically unstable and should only be handled under specified conditions. See HANDLING AND STORAGE section of this MSDS for specified conditions.

**Hazardous reactions:**

Hazardous polymerization does not occur.

**Materials to avoid:**

- Strong acids
- Strong bases
- Strong oxidizing agents
- Reducing agents
- Accelerators
- Friedel - Crafts reaction catalyst
- transition metal salts
- metal ions
- Brass
- Copper
- Iron

For all Organic Peroxides, compatible materials of contact are stainless steel 304 or 316 (preferred), high-density polyethylene (HDPE), polytetrafluoroethylene or glass linings.

**Conditions / hazards to avoid:**

**LUPEROX® DDM-9**

SADT - Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction. This reaction will generate flammable vapors which may autoignite. The length of time to generate a decomposition reaction, after the SADT has been reached or exceeded, is dependent upon how much the SADT has been exceeded and the length of time needed for the reaction exotherm (heat spike from increasing decomposition rate) to initiate a rapid decomposition reaction. Typically, SADT is inversely proportional to package size. Larger packages will have a lower SADT due to smaller ratio to heat transfer area to volume of product. See HANDLING AND STORAGE section of this MSDS for specified conditions. See Hazardous Decomposition Products below.

**Hazardous decomposition products:**

Temperatures at or above SADT can result in the release of hazardous decomposition products which are flammable and may autoignite.

Thermal decomposition giving flammable and toxic products :

Carbon oxides

Hazardous organic compounds

**11. TOXICOLOGICAL INFORMATION**

Data on this material and/or its components are summarized below.

**Data for LUPEROX® DDM-9****Acute toxicity****Oral:**

Acute toxicity estimate 2,859 mg/kg.

**Dermal:**

Acute toxicity estimate > 5,000 mg/kg.

**Inhalation:**

4 h Acute toxicity estimate > 40 mg/l. (vapor)

**Data for Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester (6846-50-0)****Acute toxicity****Oral:**

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

**Dermal:**

No deaths occurred. (rabbit) LD0 > 2,000 mg/kg.

**Inhalation:**

No deaths occurred. (rat) 6 h LC0 > 5.3 mg/l.

**Skin Irritation:**

Not irritating. (rabbit) Irritation Index: 0/8. (4 h)

**Eye Irritation:**

Causes mild eye irritation. (rabbit)

**LUPEROX® DDM-9**

---

**Skin Sensitization:**

Not a sensitizer. Repeated skin exposure. (guinea pig) No skin allergy or irritation was observed.

**Repeated dose toxicity**

Repeated oral administration to rat / affected organ(s): kidney, liver / signs: clinical chemistry changes, changes in organ weights, hyaline droplet nephropathy / (not considered relevant in humans)

Subchronic dietary administration to dog / No adverse systemic effects reported.

**Genotoxicity****Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

**Developmental toxicity**

Reproductive/Developmental Effects Screening Assay. dietary (rat) / No birth defects were observed.

**Reproductive effects**

Reproductive/Developmental Effects Screening Assay. dietary (rat) / No toxicity to reproduction. At high dose : levels produced toxic effects in the mothers and offspring

**Human experience****Skin contact:**

No skin allergy was observed. (studied using human volunteers)

**Data for 2-Butanone, peroxide (1338-23-4)****Acute toxicity****Oral:**

Harmful if swallowed. (rat) LD50 = 1,017 mg/kg. (35 - 39 %) (In solution in Dimethyl phthalate)

**Dermal:**

Harmful in contact with skin. (rabbit) LD50 = 4,000 mg/kg. (35 - 39 %) (In solution in Dimethyl phthalate)

**Inhalation:**

Practically nontoxic. (rat) 4 h LC50 = 17 mg/l. (35 - 39 %) (aerosol, In solution in Dimethyl phthalate)

**Skin Irritation:**

Causes severe skin burns. (rabbit) (4 h) (33 %) (occluded exposure, In solution in Dimethyl phthalate)

**Eye Irritation:**

Causes serious eye damage. (rabbit) OECD Test Guideline 405 (33 - 39 %) (In solution in Dimethyl phthalate)

**Skin Sensitization:**

Not a sensitizer. Guinea pig maximization test. No skin allergy was observed (40 %) (In solution in Dimethyl phthalate)

**Repeated dose toxicity**

Repeated oral administration to rat / affected organ(s): Stomach, liver / signs: Irritation of the gastric mucosa, increased organ weight

Subchronic dermal administration to rat and mouse / affected organ(s): skin / signs: severe damage /

---

**LUPEROX® DDM-9**

---

No adverse systemic effects reported.

**Genotoxicity****Assessment in Vitro:**

Both positive and negative responses for genetic changes were observed in laboratory tests using: bacteria, animal cells

**Genotoxicity****Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice

**Developmental toxicity**

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No birth defects were observed.

**Reproductive effects**

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No toxicity to reproduction.

**Human experience****Skin contact:**

No skin allergy was observed. (studied using human volunteers)

Skin allergy was observed. Isolated case reports after exposure to a mixture containing this substance.

**Human experience****Eye contact:**

Eyes: Pain, tearing, sensitivity to light, irritation. Mist and/or vapor are reported to cause irritation when proper industrial hygiene controls/procedures are not used. (based on reports of occupational exposure to workers) (severity of effects depends on extent of exposure)

Eyes: Pain, causes severe burns. (accidental exposure to concentrated solutions) (based on reports of occupational exposure to workers) (severity of effects depends on extent of exposure)

**Human experience****Ingestion:**

Esophagus: Severe irritation, burns. (accidental exposure to concentrated solutions)

**Data for 2,4-Pentanediol, 2-methyl- (107-41-5)****Acute toxicity****Oral:**

No deaths occurred. (rat) LD<sub>0</sub> > 2,000 mg/kg. signs: GI tract irritation, central nervous system depression

**Dermal:**

No deaths occurred. (rat) LD<sub>0</sub> > 2,000 mg/kg.

**Inhalation:**

No deaths occurred. (rat) 8 h LC<sub>0</sub> >= 0.34 mg/l (70 ppm). (saturated vapor)

**Specific target organ toxicity - single exposure:**

May cause drowsiness or dizziness.

---

**LUPEROX® DDM-9**

---

**Skin Irritation:**

Practically non-irritating. (rabbit) (4 h)

**Eye Irritation:**

Causes serious eye irritation. (rabbit)

**Skin Sensitization:**

Not a sensitizer. Guinea pig maximization test. No skin allergy was observed

**Repeated dose toxicity**

Subchronic oral administration to rat / affected organ(s): kidney, liver, Stomach / signs: Irritation of the gastric mucosa / No significant impairment of function.

Repeated inhalation administration to rat / affected organ(s): upper respiratory tract / Local irritation (Aerosol)

**Genotoxicity****Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells

**Developmental toxicity**

Exposure during pregnancy. Oral (rat) / No birth defects were observed. (delays in development, at doses that produce effects in mothers)

**Reproductive effects**

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No toxicity to reproduction. At high dose : Effects on offspring / (increased mortality in the offspring, decreased growth rate)

**Human experience****Inhalation:**

Discomfort. (severity of effects depends on extent of exposure) (studied using human volunteers)

**Human experience****Skin contact:**

No skin allergy was observed. (studied using human volunteers)

Local irritation, redness, swelling. (subjects with dermatitis or eczema)

Central nervous system depression. (severity of effects depends on extent of exposure)

**Human experience****Eye contact:**

Discomfort, slightly irritating. (liquid or aerosol) (studied using human volunteers) (severity of effects depends on extent of exposure)

**Data for 2-Butanone (78-93-3)****Acute toxicity****Oral:**

May be harmful if swallowed. (rat) LD50 = 2,600 - 5,400 mg/kg.

---

**LUPEROX® DDM-9**

---

**Dermal:**

Practically nontoxic. (rabbit) LD50 > 6,400 - 8,000 mg/kg.

**Inhalation:**

Practically nontoxic. (rat) 4 h LC50 = 34.5 mg/l (11700 ppm).

**Specific target organ toxicity - single exposure:**

May cause drowsiness or dizziness.

**Skin Irritation:**

Causes mild skin irritation. (rabbit) (24 h)

**Eye Irritation:**

Causes serious eye irritation. (rabbit) Draize Test 21/110.

**Skin Sensitization:**

Not a sensitizer. Buehler method. (guinea pig) No skin allergy was observed

**Repeated dose toxicity**

Subchronic inhalation administration to rat / affected organ(s): liver / signs: blood chemistry changes, changes in organ weights

Repeated inhalation administration to rat, mouse, cat, chicken / no nervous system injuries

**Carcinogenicity**

Chronic dermal application administration to mouse / No increase in tumor incidence was reported.

**Genotoxicity****Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, animal cells, human cells

Both positive and equivocal responses have been reported in tests using: yeast

**Genotoxicity****Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice, hamster

**Developmental toxicity**

Exposure during pregnancy. inhalation (mouse) / No birth defects were observed. (skeletal variations, delays in development)

Exposure during pregnancy. inhalation (rat) / No birth defects were observed. (delays in development, at doses that produce effects in mothers)

**Reproductive effects**

Reproduction test. drinking water (rat) / No toxicity to reproduction / (similar material)

**Human experience****Inhalation:**

Upper respiratory tract: irritation. (vapor)

---

**LUPEROX® DDM-9**

Central nervous system: drowsiness, dizziness. Exposure to other materials makes the association questionable. (based on reports of occupational exposure to workers)

Nervous system: altered reflexes, changes in motor activity. Exposure to other materials makes the association questionable. (based on reports of occupational exposure to workers)

**Human experience****Skin contact:**

Skin: No skin allergy was observed. (studied using human volunteers)

Skin: dermatitis, cracking. Has a degreasing effect on the skin. (repeated or prolonged exposure)

**Human experience****Eye contact:**

Eyes: irritating. (vapor)

**12. ECOLOGICAL INFORMATION****Chemical Fate and Pathway**

Data on this material and/or its components are summarized below.

**Data for Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester (6846-50-0)****Biodegradation:**

Inherently biodegradable. (aerobic, 28 d) biodegradation 71 % / The 10 day time window criterion is not fulfilled.

**Theoretical Biological Oxygen Demand:**

Theoretical oxygen demand (ThOD) = 2,400 mg/g

**Bioaccumulation:**

BCF = 670 (without metabolism)

BCF = 14,611 (with metabolism)

BCF = 5.2 - 31 (Carp)

**Octanol Water Partition Coefficient:**

log Pow: = 4.04 - 4.91 (Method: calculated)

**Data for 2-Butanone, peroxide (1338-23-4)****Biodegradation:**

Readily biodegradable. (28 d) biodegradation 87 % / OECD guideline 301D (Closed bottle test)

**Octanol Water Partition Coefficient:**

log Pow: < 0.3, at 77 °F (25 °C) (Method: OECD Test Guideline 117)

**Data for 2,4-Pentandiol, 2-methyl- (107-41-5)****Biodegradation:**

Readily biodegradable. (28 d) biodegradation 81 % / OECD Test Guideline 301 F

**LUPEROX® DDM-9**

---

**Octanol Water Partition Coefficient:**

log Pow: = -0.14(Method: calculated)

**Data for 2-Butanone (78-93-3)****Biodegradation:**

Readily biodegradable. (28 d) biodegradation 98 % / OECD Test Guideline 301 D

**Octanol Water Partition Coefficient:**

log Pow: = 0.3

**Photodegradation:**Half-life direct photolysis: = 6.9 d  
(is rapidly degraded in air by OH radicals.)**Ecotoxicology**

Data on this material and/or its components are summarized below.

**Data for Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester (6846-50-0)****Aquatic toxicity data:**No effect up to the limit of solubility. *Lepomis macrochirus* (Bluegill sunfish) 96 h NOEC > 6 mg/l**Aquatic invertebrates:**No effect up to the limit of solubility. *Daphnia magna* (Water flea) 48 h EC50 > 1.46 mg/l**Algae:**No effect up to the limit of solubility. *Selenastrum capricornutum* 72 h EC50 (growth rate) > 7.49 mg/l**Chronic toxicity to aquatic invertebrates:**Harmful. *Daphnia magna* (Water flea) 21 d NOEC (reproduction) = 0.7 mg/l**Data for 2-Butanone, peroxide (1338-23-4)****Aquatic toxicity data:**Harmful. *Poecilia reticulata* (guppy) 96 h LC50 = 44.2 mg/l (In solution in Dimethyl phthalate)**Aquatic invertebrates:**Harmful. *Daphnia* (water flea) 48 h EC50 = 39 mg/l (In solution in Dimethyl phthalate)**Algae:**Toxic. *Pseudokirchneriella subcapitata* (green algae) 72 h ErC50 = 5.6 mg/l (In solution in Dimethyl phthalate)**Microorganisms:**

Respiration inhibition / Activated sludge 30 min EC50 = 48 mg/l (In solution in Dimethyl phthalate)

**Data for 2,4-Pentanediol, 2-methyl- (107-41-5)****Aquatic toxicity data:**Practically nontoxic. *Gambusia affinis* (Mosquito fish) 96 h LC50 = 8,510 mg/l**Aquatic invertebrates:**Practically nontoxic. *Daphnia magna* (Water flea) 48 h EC50 = 5,410 mg/l

---



**LUPEROX® DDM-9**

**Algae:**

Practically nontoxic. Selenastrum capricornutum 72 h EC50 > 429 mg/l

**Microorganisms:**

Practically nontoxic. Bacteria 10 d NOEC > 1,000 mg/l

**Chronic toxicity to aquatic plants:**

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 d NOEC = 429 mg/l

**Data for 2-Butanone (78-93-3)**

**Aquatic toxicity data:**

Practically nontoxic. Pimephales promelas (fathead minnow) 96 h LC50 = 3,200 mg/l

**Aquatic invertebrates:**

Practically nontoxic. Daphnia magna (Water flea) 48 h EC50 = 308 mg/l

**Algae:**

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 h EC50 = 1,972 mg/l

**Microorganisms:**

Pseudomonas putida 16 h Toxicity threshold = 1,150 mg/l

**13. DISPOSAL CONSIDERATIONS**

**Waste disposal:**

Dilution followed by incineration is the preferred method. Dilution ratio of 10:1 in a clean, compatible, combustible solvent (i.e., Fuel Oil #2, mineral oil) will reduce reactivity hazard during incineration and transportation. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

**14. TRANSPORT INFORMATION**

**US Department of Transportation (DOT)**

<b>UN Number</b>	:	3105
<b>Proper shipping name</b>	:	Organic peroxide type D, liquid
<b>Technical name</b>	:	(Methyl ethyl ketone peroxide(s), <= 45%)
<b>Class</b>	:	5.2
<b>Marine pollutant</b>	:	no
<b>Reportable quantity</b>	:	10 lbs (Methyl ethyl ketone peroxide(s))

**International Maritime Dangerous Goods Code (IMDG)**

**LUPEROX® DDM-9**

**UN Number** : 3105  
**Proper shipping name** : ORGANIC PEROXIDE TYPE D, LIQUID  
**Technical name** : (METHY ETHYL KETONE PEROXIDE, <= 45%)  
**Class** : 5.2  
**Marine pollutant** : no

**15. REGULATORY INFORMATION**

**Chemical Inventory Status**

United States TSCA Inventory	TSCA	The components of this product are all on the TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

**United States – Federal Regulations**

**SARA Title III – Section 302 Extremely Hazardous Chemicals:**

<u>Chemical name</u>	<u>CAS-No.</u>	<u>SARA Reportable Quantities</u>	<u>SARA Threshold Planning Quantity</u>
Hydrogen peroxide	7722-84-1	1000 lbs	1000 lbs

**SARA Title III - Section 311/312 Hazard Categories:**

Acute Health Hazard, Reactivity Hazard

**SARA Title III – Section 313 Toxic Chemicals:**

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):**

**LUPEROX® DDM-9**

<u>Chemical name</u>	<u>CAS-No.</u>	<u>Reportable quantity</u>
2-Butanone, peroxide	1338-23-4	10 lbs
2-Butanone	78-93-3	5000 lbs

**United States – State Regulations**

**New Jersey Right to Know**

<u>Chemical name</u>	<u>CAS-No.</u>
2-Butanone, peroxide	1338-23-4
2,4-Pentanediol, 2-methyl-	107-41-5
2-Butanone	78-93-3

**New Jersey Right to Know – Special Health Hazard Substance(s)**

<u>Chemical name</u>	<u>CAS-No.</u>
2-Butanone, peroxide	1338-23-4
2-Butanone	78-93-3

**Pennsylvania Right to Know**

<u>Chemical name</u>	<u>CAS-No.</u>
Propanoic acid, 2-methyl-, 2,2-dimethyl-1-(1-methylethyl)-1,3-propanediyl ester	6846-50-0
2-Butanone, peroxide	1338-23-4
2,4-Pentanediol, 2-methyl-	107-41-5
2-Butanone	78-93-3
Hydrogen peroxide	7722-84-1

**Pennsylvania Right to Know – Environmentally Hazardous Substance(s)**

<u>Chemical name</u>	<u>CAS-No.</u>
2-Butanone, peroxide	1338-23-4

## LUPEROX® DDM-9

2-Butanone  
Hydrogen peroxide

78-93-3  
7722-84-1

**California Prop. 65**

This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive defects.

**16. OTHER INFORMATION****Full text of H-Statements referred to under sections 2 and 3.**

H225	Highly flammable liquid and vapour.
H242	Heating may cause a fire.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H412	Harmful to aquatic life with long lasting effects.

## Latest Revision(s):

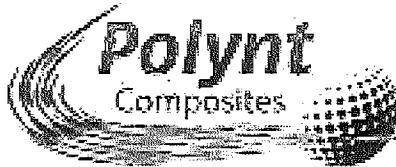
Reference number:	200014107
Date of Revision:	02/01/2018
Date Printed:	02/01/2018

LUPEROX® is a registered trademark of Arkema Inc.

The statements, technical information and recommendations contained herein are believed to be accurate as of the date hereof. Since the conditions and methods of use of the product and of the information referred to herein are beyond our control, ARKEMA expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information; **NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE GOODS DESCRIBED OR THE INFORMATION PROVIDED HEREIN.** The information provided herein relates only to the specific product designated and may not be applicable when such product is used in combination with other materials or in any process. The user should thoroughly test any application before commercialization. Nothing contained herein constitutes a license to practice under any patent and it should not be construed as an inducement to infringe any patent and the user is advised to take appropriate steps to be sure that any proposed use of the product will not result in patent infringement. See SDS for Health & Safety Considerations.

*Arkema has implemented a Medical Policy regarding the use of Arkema products in Medical Devices applications that are in contact with the body or circulating bodily fluids (<http://www.arkema.com/en/social-responsibility/responsible-product-management/medical-device-policy/index.html>) Arkema has designated Medical grades to be used for such Medical Device applications. Products that have not been designated as Medical grades are not authorized by Arkema for use in Medical Device applications that are in contact with the body or circulating bodily fluids. In addition, Arkema strictly prohibits the use of any Arkema products in Medical Device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Arkema trademarks and the Arkema name shall not be used in conjunction with customers' medical devices, including without limitation, permanent or temporary implantable devices, and customers shall not represent to anyone else, that Arkema allows, endorses or permits the use of Arkema products in such medical devices.*

*It is the sole responsibility of the manufacturer of the medical device to determine the suitability (including biocompatibility) of all raw materials, products and components, including any medical grade Arkema products, in order to ensure that the final end-use product is safe for its end use; performs or functions as intended; and complies with all applicable legal and regulatory requirements (FDA or other national drug agencies) It is the sole responsibility of the manufacturer of the medical device to conduct all necessary tests and inspections and to evaluate the medical device under actual end-use requirements and to adequately advise and warn purchasers, users, and/or learned intermediaries (such as physicians) of pertinent risks and fulfill any postmarket surveillance obligations. Any decision regarding the appropriateness of a particular Arkema material in a particular medical device should be based on the judgment of the manufacturer, seller, the competent authority, and the treating physician.*



## Safety Data Sheet

FOR INDUSTRIAL USE ONLY

### UNSATURATED POLYESTER RESIN

Revision Date 7/6/2017

#### 1. Identification

Product Name: UNSATURATED POLYESTER RESIN

STYPOL 040-8086

SDS Number: 0408086B3

Product Use: Industrial

Manufacturer, Importer,  
Supplier: Polynt Composites USA, Inc.  
99 East Cottage Avenue  
Carpentersville IL 60110

E-Mail: MSDS@polynt.com

Telephone

For Emergency Transportation Information  
CHEMTREC US Domestic (800) 424-9300  
CHEMTREC International (703) 527-3887

For additional health, safety or regulatory information, call (847) 836-3659

#### 2. Hazard identification

**EMERGENCY OVERVIEW:** May cause sensitization by inhalation and skin contact. Risk of serious damage to the lungs (by aspiration).

##### GHS Classification

Acute Tox. 4 Inhalation, Carc. 2, Eye Irrit. 2, Flam. Liq. 3, Repr. 2, Skin Irrit. 2, STOT RE 1

##### Symbol(s) of Product



##### Signal Word

Danger

##### GHS HAZARD STATEMENTS

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Skin Irritation, category 2	H315	Causes skin irritation.
Eye Irritation, category 2	H319	Causes serious eye irritation.
Acute Toxicity, Inhalation, category 4	H332	Harmful if inhaled.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
Reproductive Toxicity, category 2	H361	Suspected of damaging fertility or the unborn child.

STOT, repeated exposure, category 1 H372 Causes damage to organs through prolonged or repeated exposure.

**GHS LABEL PRECAUTIONARY STATEMENTS**

P201	Obtain special instructions before use.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash ... thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P321	Specific treatment (see ... on this label).
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use dry chemical, foam, water spray to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to in accordance with local/regional/national/international regulations.

**GHS SDS PRECAUTIONARY STATEMENTS**

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do not eat, drink or smoke when using this product.

**3. Composition/Information on ingredients**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
STYRENE MONOMER	100-42-5	30 - 40	GHS02-GHS07-GHS08	H226-302-304-315-319-332-351-361-372

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

**4. First-aid measures**

**FIRST AID - EYE CONTACT:** If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**FIRST AID - INGESTION:** Aspiration hazard if swallowed - can enter lungs and cause damage. If ingested, consult a physician. Do NOT induce vomiting.

**FIRST AID - INHALATION:** Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

**FIRST AID - SKIN CONTACT:** Wash with soap and water. Remove contaminated clothes and shoes. Get medical attention if irritation develops.

**5. Fire-fighting measures**

**Extinguishing Media:**

Suitable	Carbon Dioxide, Dry Chemical, Foam, Water Fog
Not suitable	Water Jet

**SPECIAL FIREFIGHTING PROCEDURES:** Use full protective clothing. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Do not use a solid water stream as it may scatter and spread fire. Cool containers / tanks with water spray. In case of fire: Use carbon dioxide, dry chemical, foam, water fog to extinguish. Vapors may be ignited by heat, pilot lights, other flames and ignition sources. Self-accelerating decomposition may occur if the specific control temperature is not maintained. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

**6. Accidental release measures**

**ENVIRONMENTAL MEASURES:** Prevent entry into waterways, sewers, basements or confined areas. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Avoid breathing vapors or mists. Use non-sparking tools and equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Do not flush into surface water or sanitary sewer system. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**PRECAUTIONARY MEASURES:** No Information

**7. Handling and storage**

**HANDLING:** Wash contaminated clothing before reuse. Avoid contact with skin, eyes and clothing. Ground/bond container and equipment. Wear personal protective equipment. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Do not breathe vapors, mist or gas.

**STORAGE:** Store contents under 100F (37.8C). Store drums with bung in the upright position. Electrical equipment must be grounded; suitable for the classification of the area where it is installed and conform to the National Electric Code (see NFPA 70). Store in cool well ventilated space away from incompatible materials. Keep container closed when not in use. Store and dispose according to national, state and local regulations.

**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**WORK PRACTICES:** Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

**SPECIAL HANDLING PROCEDURES:** Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

**8. Exposure controls/personal protection****Ingredients with Occupational Exposure Limits**

Chemical Name	ACGIH TLV-TWA	ACGIH-TLV STEL	OSHA PEL-TWA	OSHA CEILING
STYRENE MONOMER	20 ppm	40 ppm	100 ppm	200 ppm

Further Advice: MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation  
Sk = Skin Sensitizer N.E. = Not Established

**Personal Protection**

**RESPIRATORY PROTECTION:** When concentrations exceed the exposure limits specified, use of a NIOSH-approved dust, mist and fume respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a full facepiece, supplied air, or Self Contained Breathing Apparatus (SCBA) may be necessary. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe

working limits of the selected respirator.



**SKIN PROTECTION:** Wear suitable protective equipment. Wear chemical resistant footwear and clothing such as gloves, an apron or a whole body suit as appropriate.



**EYE PROTECTION:** Ensure that eyewash stations and safety showers are close to the workstation location. Safety glasses with side-shields. Wear chemical-resistant glasses and/or goggles and a face shield when eye and face contact is possible due to splashing or spraying of material.



**OTHER PROTECTIVE EQUIPMENT:** Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.



**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

## 9. Physical and chemical properties

Color:	Clear	Physical State:	Liquid
Odor:	Styrene	Odor Threshold:	Not Available
Density, g/cm <sup>3</sup> :	1.089	pH:	Not Available
Freeze Point, °C:	Not Available	Viscosity:	Not Available
Solubility in Water:	Insoluble	Partition Coefficient, n-octanol/ water:	Not Available
Decomposition Temp., °C:	Not Available	Flash Point, °C / F°	31 / 88
Boiling Range, °C:	145	Explosive Limits, vol%:	Not Available
Vapor Pressure:	Not Available	Auto-ignition Temp., °C:	Not Available

(See "Other information" Section for abbreviation legend)

## 10. Stability and reactivity

**STABILITY:** The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution. Stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid improper addition of promotor and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If adding accelerator like cobalt drier, mix accelerator with base material before adding catalyst. Burning may produce obnoxious and toxic fumes. Hazardous polymerization may occur. Keep product away from heat, sparks, pilot lights, static electricity, and open flame.

**INCOMPATIBILITY:** Free radical initiators. Copper. Strong acids. Metal salts. Strong oxidizing and reducing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal use.

## 11. Toxicological information



### Practical Experiences

**EFFECT OF OVEREXPOSURE - EYE CONTACT:** Exposure may cause mild irritation. Symptoms may include stinging, tearing, and redness.

**EFFECT OF OVEREXPOSURE - INGESTION:** May cause severe gastrointestinal disturbance with headache, nausea, vomiting and diarrhea.

**EFFECT OF OVEREXPOSURE - INHALATION:** Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). Prolonged, repeated or high exposures may cause central nervous system depression leading to headaches, nausea, drowsiness, dizziness, and possibly narcosis. In extreme cases, may cause loss of consciousness. Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effect, such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Ingestion of large doses may cause headaches, dizziness, nausea, vomiting, and drowsiness. Irritating to skin.



**EFFECT OF OVEREXPOSURE - SKIN CONTACT:** Prolonged skin contact may defat the skin and produce dermatitis.

**EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS:** Repeated or prolonged exposure may cause central nervous system damage. Prolonged skin contact may defat the skin and produce dermatitis. Prolonged or repeated exposure may cause liver and kidney effects.

**CARCINOGENICITY:** \* This product contains the following chemicals classified by the International Agency for Research on Cancer (IARC) as 1, 2A, or 2B carcinogens:

\*This product may contain a chemical which is listed in the NTP report on carcinogens.

**PRIMARY ROUTE(S) OF ENTRY:** Eye Contact, Ingestion, Inhalation, Skin Contact

#### Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name according to EEC</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
100-42-5	STYRENE MONOMER	1000 mg/kg Rat	N.I.	11.7 mg/L Rat

N.I. = No Information

## 12. Ecological information

**ECOLOGICAL INFORMATION:** Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits. Discharge into the environment must be avoided.

## 13. Disposal considerations



**DISPOSAL METHOD:** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

## 14. Transport information

**SPECIAL TRANSPORT PRECAUTIONS:** No Information

### International transport regulations

Regulatory Information:	UN/NA Number	Proper Shipping Name	Classes/ *PG	Reportable Quantity (RQ)
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/IMDG	UN1866	RESIN SOLUTION	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION	Class 3 PGIII	

## 15. Regulatory information

### U.S. Federal Regulations:

#### CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5

**SARA SECTION 313:**

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5

**TOXIC SUBSTANCES CONTROL ACT:**

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

**U.S. State Regulations:****NEW JERSEY RIGHT-TO-KNOW:**

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
N,N-DIETHYLANILINE	91-66-7
MINERAL SPIRITS(PETROLEUM NAPHTHA)	64742-88-7
HYDROQUINONE	123-31-9
ETHYLBENZENE	100-41-4
MINERAL SPIRITS (STODDARD TYPE)	8052-41-3
N,N-DIMETHYLANILINE	121-69-7
ACETONE	67-64-1
1,4-NAPHTHOQUINONE	130-15-4
METHYL ALCOHOL	67-56-1
PHENOTHIAZINE	92-84-2
CUMENE	98-82-8
MINERAL SPIRITS	8032-32-4
P-TOLUIDINE	106-49-0

**PENNSYLVANIA RIGHT-TO-KNOW**

The following hazardous ingredients are present:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
N,N-DIETHYLANILINE	91-66-7
DIETHYLENE GLYCOL	111-46-6
HYDROQUINONE	123-31-9
ETHYLBENZENE	100-41-4
MINERAL SPIRITS (STODDARD TYPE)	8052-41-3
N,N-DIMETHYLANILINE	121-69-7
ACETONE	67-64-1
1,4-NAPHTHOQUINONE	130-15-4
METHYL ALCOHOL	67-56-1
PHENOTHIAZINE	92-84-2
CUMENE	98-82-8
MINERAL SPIRITS	8032-32-4
P-TOLUIDINE	106-49-0

**U.S. State Regulations:****MASSACHUSETTS RIGHT-TO-KNOW:**

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
N,N-DIETHYLANILINE	91-66-7
HYDROQUINONE	123-31-9
ETHYLBENZENE	100-41-4
MINERAL SPIRITS (STODDARD TYPE)	8052-41-3
N,N-DIMETHYLANILINE	121-69-7

ACETONE	67-64-1
1,4-NAPHTHOQUINONE	130-15-4
METHYL ALCOHOL	67-56-1
PHENOTHIAZINE	92-84-2
CUMENE	98-82-8
P-TOLUIDINE	106-49-0

**CALIFORNIA PROPOSITION 65 CARCINOGENS**

Warning: This product contains a chemical known to the state of California to cause cancer.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
ETHYLBENZENE	100-41-4
N,N-DIMETHYL-P-TOLUIDINE	99-97-8
CUMENE	98-82-8

**CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS**

Warning: This product contains a chemical known to the state of California to cause birth defects or other reproductive harm.

<u>Chemical Name</u>	<u>CAS-No.</u>
METHYL ALCOHOL	67-56-1

**International Regulations**

Chemical Inventories	Australia inventory (AICS)	Not Determined
	Canada inventory (DSL)	Not Determined
	Japan Inventory (ENCSC)	Not Determined
	China Inventory (IECSC)	Not Determined
	Korea Inventory (KECI)	Not Determined
	New Zealand (NZIoC)	Not Determined
	Philippines (PICCS)	Not Determined
	United States Inventory (TSCA 8b)	All components are listed or exempted

**16. Other information**

Revision Date:	7/6/2017	Supercedes Date:	5/16/2017
Reason for revision:	Updated SDS Information		
Datasheet produced by:	Regulatory Department		

**HMIS Ratings:**

Health:	2	Flammability:	3	Reactivity:	1	Personal Protection:	N.I.	Chronic Rating:	N.I.
---------	---	---------------	---	-------------	---	----------------------	------	-----------------	------

**Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.

H372 Causes damage to organs through prolonged or repeated exposure.

Icons for GHS Pictograms shown in Section 3 describing each ingredient:

GHS02



GHS07



GHS08



Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polynt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polynt Composites USA, Inc. are subject to Polynt Composites USA, Inc terms and conditions of sale. Polynt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polynt Composites USA, Inc, except that the product shall conform to Polynt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

Effective Date: 12/05/01

Page 1

1. PRODUCT IDENTIFICATION

Trade Name: DION FR (R) 7704-00  
Chemical Family: Unsaturated Polyester Resin in Styrene  
Intended Use: Fire Retardant Resin

NFPA Hazard Classification

Health Hazard: 2  
Fire Hazard: 3  
Reactivity: 1  
Special Hazard:

HMS Hazard Classification:

Health: 2\* Moderate Hazard/Chronic Effect  
Flammability: 3 Serious Hazard  
Reactivity: 1 Slight Hazard  
Personal Protection:

2. COMPOSITION / INFORMATION ON INGREDIENTS

CAS No.	Name	ACGIH TLV		OSHA	AMOUNT
		TWA	STEL	PEL	
100425	Styrene	20 ppm	40 ppm	100 ppm	29.50 ±2 wt%
Proprietary	Polyester Resin	NE	NE	NE	66.00 ±4 wt%
78400	Phosphoric acid, triethyl ester	NE	NE	NE	2.00 ±1 wt%
98839	alpha-Methyl Styrene	50 ppm	100 ppm	100 ppm	2.50 ±0.5wt%

Refer to Section 8, Subheading "Exposure Guidelines", for additional information concerning exposure limits. Section 8, "Exposure Guidelines", includes information concerning the OSHA-styrene industry voluntary agreement on exposure limits for styrene.

3. HAZARDS IDENTIFICATION

Emergency Overview:

Appearance: Amber Opaque Liquid Pungent Odor FLAMMABLE liquid and vapor.  
Harmful if swallowed - can enter lungs and cause damage May undergo hazardous polymerization.

Route(s) of Entry:

Inhalation, ingestion, skin and eye.

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01  
-----

Page 2  
-----

Acute Exposure:

INHALATION: Harmful if inhaled. Effects from exposure may include headaches, fatigue, nausea, sensation of drunkenness, central nervous system depression and pulmonary edema. SKIN: Harmful if absorbed through skin. Contact causes skin irritation. Prolonged or repeated skin contact can result in defatting and drying of the skin. EYES: Harmful to eyes. Direct contact with this material causes eye irritation. Symptoms may include stinging, tearing, redness and swelling. INGESTION: Harmful if swallowed. Single dose oral toxicity is low. Swallowing small amounts during normal handling is not likely to cause harmful effects; swallowing large amounts may be harmful. Effects from exposure through ingestion may include gastrointestinal disturbances, pain and discomfort. Effects of exposure by ingestion may also include those indicated by the inhalation route. Styrene is harmful or fatal if liquid is aspirated into the lungs.

Chronic Exposure:

Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans and may aggravate pre-existing disorders of these organs; central nervous system effects, effects on hearing and respiratory tract damage.

Carcinogenicity:

This material contains styrene which is listed by the International Agency for Research (IARC) on Cancer as a group 2B cancer causing agent (possibly carcinogenic to humans). (see Section 11 for further details)

=====  
4. FIRST AID MEASURES

Eye Contact:

Immediately flush eyes with large quantities of clean water for at least 15 minutes. Get immediate medical attention.

Skin Contact:

Wash skin with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists. Wash contaminated clothing before reuse.

Ingestion:

DO NOT INDUCE VOMITING. ASPIRATION HAZARD: this material may enter the lungs during vomiting. Immediately give the victim one or two glasses of water or milk to drink. Never give anything by mouth to an unconscious person. GET IMMEDIATE MEDICAL ATTENTION.

Inhalation:

Remove victim to fresh air. Keep warm and quiet. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. GET IMMEDIATE MEDICAL ATTENTION.  
=====

5. FIRE FIGHTING MEASURES

Flash Point: 89 degrees F (32 degrees C)  
Flash Point Method Used: SetaFlash Closed Cup  
Flammable Limits in Air (Lower): 1.1 % in air Styrene

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01

Page 3  
-----

Flammable Limits in Air (Upper): 7 % in air Styrene  
Autoignition: 914 degrees F (490 degrees C) Styrene

General Hazards:

FLAMMABLE LIQUID: This material's flash point is less than 100 degrees F (38 degrees C). Use water in flooding quantities as a fog to extinguish the fire. DO NOT USE a solid stream of water as that may spread the fire. DO NOT extinguish a fire resulting from the flow of this flammable liquid until the flow of liquid is effectively shut off. This precaution will help prevent the accumulation of an explosive vapor-air mixture after the initial fire is extinguished.

Fire Fighting Extinguishing Media:

Use carbon dioxide, foam, dry chemical or water fog to extinguish fire.

Fire Fighting Equipment:

Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use.

Fire Fighting Instructions:

Evacuate all persons from the fire area to an explosion-protected location. Move non-burning material, as feasible, to a safe location as soon as possible. Fire fighters should be protected from potential explosion hazard while extinguishing the blaze. Containers of this material may build up pressure if exposed to heat (fire). Use water spray to disperse vapors if a spill or leak has not ignited. DO NOT extinguish a fire resulting from the flow of this flammable liquid until the flow of liquid is effectively shut off. This precaution will help prevent the accumulation of an explosive vapor-air mixture after the initial fire is extinguished. Use water spray to disperse vapors if a spill or leak has not ignited. See Section 13 for disposal considerations.

Fire and Explosion Hazards:

FLAMMABLE LIQUID. Vapors can form an explosive mixture with air. Vapor can travel to a source of ignition (spark or flame) and flash back. This material may polymerize (react) when its container is exposed to heat (as during a fire). This polymerization increases pressure inside a closed container and may result in the violent rupture of the container.

Hazardous Combustion Products:

Combustion may produce carbon monoxide, carbon dioxide and irritating or toxic vapors and gases.

=====

## 6. ACCIDENTAL RELEASE MEASURES

Accidental Release Measures:

FOR SMALL SPILLS: Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Use non-sparking (non-metallic) tools to clean up spill. Remove all sources of ignition. NO SMOKING. FOR LARGE SPILLS: Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). NO SMOKING. Persons not wearing protective equipment (see Section 8) should be excluded from the area of the spill until clean-up has been completed. Stop spill at source. Prevent spilled material from contaminating soil or entering drains,

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01

Page 4  
-----

sewers, streams or other bodies of water. Prevent spilled material from spreading. Immediately notify authorities of any reportable spill as may be required pursuant to regulations. See Section 15 for applicable CERCLA reportable quantities. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other waste materials to waste containers for disposal. See Section 13 for disposal considerations.

=====  
7. HANDLING AND STORAGE

Signal Word:

W A R N I N G

Handling Information:

Avoid inhalation and contact with eyes, skin, and clothing. Wash hands thoroughly after handling and before eating or drinking. Remove and wash contaminated clothing before reuse. Use with adequate ventilation. Ground and bond containers when transferring the material to prevent static electricity sparks which could ignite the vapor. Use spark-proof tools and explosion-proof equipment. Consult your supplier of promoters and catalysts for additional instructions on proper mixing and usage. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death. Empty drums should be completely drained and properly bunged. Empty drums should be promptly returned to a drum reconditioner or properly disposed. See Section 13 for disposal considerations.

Storage Information:

Keep away from ignition sources: flames, pilot lights, electrical sparks, and sparking tools. NO SMOKING. Do not store in direct sunlight. Store separate from oxidizing materials, peroxides, and metal salts. Keep container closed when not in use. To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 75 degrees F (25 degrees C). Copper or copper containing alloys should be avoided as containers.

=====  
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:

The Occupational Safety and Health Administration (OSHA), has established for styrene, a Permissible Exposure Limit (PEL) of 100 ppm for an 8 hour Time Weighted Average (TWA); 200 ppm for an acceptable ceiling concentration; and a 600 ppm concentration within a duration of 5 minutes in any 3 hours as an acceptable maximum peak above the acceptable ceiling concentration for an 8 hour shift. While the federal workplace exposure limit for styrene is 100 ppm, OSHA accepted the styrene industry's proposal to voluntarily meet a PEL of 50 ppm on an 8 hour TWA and a Short Term Exposure Limit (STEL) of 100 ppm, 15 minute exposure. The American



MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01

Page 5  
-----

Conference of Governmental Industrial Hygenists (ACGIH) have established, for styrene, Threshold Limit Values (TLV) of 20 ppm or 85 mg/m<sup>3</sup> TWA and 40 ppm or 170 mg/m<sup>3</sup> Short Term Exposure Limit (STEL), 15 minute exposure, with a skin notation which indicates absorpion through the skin which could add to the employees exposure. The Occupational Safety and Health Administration (OSHA), has established for alpha-methyl styrene, a Permissible Exposure Limit (PEL) of 100 ppm or 480 mg/m<sup>3</sup> ceiling limit for an 8 hour Time Weighted Average (TWA). The American Conference of Governmental Industrial Hygenists (ACGIH) have established, for alpha-methyl styrene, Threshold Limit Values (TLV) of 50 ppm or 242 mg/m<sup>3</sup> TWA and 100 ppm or 483 mg/m<sup>3</sup> Short Term Exposure Limit (STEL), 15 minute exposure. There are no exposure limits assigned to Triethyl Phosphate by the Occupational Safety and Health Administration (OSHA) or American Conference of Governmental Industrial Hygenists (ACGIH).

Engineering Controls:

The use of general or local exhaust ventilation may be required to maintain exposures below the regulatory or recommended occupational exposure limits. See occupational exposure limits in Section 2 and under Exposure Guidelines in Section 8. Use explosion-proof ventilation equipment.

Eye Protection:

Wear 1) safety glasses with side shields and a faceshield or 2) goggles and a faceshield. Facilities storing or utilizing this material should be equipped with an eyewash station and safety shower.

Skin Protection:

Wear chemical resistant gloves such as polyvinyl alcohol or Viton (R) . If splashing is likely, wear impervious clothing and boots to prevent repeated or prolonged skin contact. Consult your supplier of personal protective equipment for additional instructions on proper usage.

Respiratory Protection:

A NIOSH/MSHA approved air purifying respirator with organic vapor cartridge or canister may be necessary under certain circumstances where airborne concentrations are expected to exceed exposure limits. See Section 2 and 8 for applicable occupational exposure limits. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use. Protection provided by air purifying respirators is limited. Use a positive pressure air-supplied respirator if 1) there is any potential for an uncontrolled release, 2) exposure levels are not known, or 3) during other circumstances where air purifying respirators may not provide adequate protection.

=====

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	Amber, Opaque
Odor:	Pungent
Odor Threshold:	0.2 ppm Styrene
Physical State:	Liquid
Solubility in Water:	Insoluble at 20 degrees C (68 degrees F)
Vapor Pressure:	6.12 (mm Hg) Styrene

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01

Page 6  
-----

Specific Gravity: 1.22 - 1.26 g/cc at 25 degrees C (77 degrees F)  
Boiling Point: 295 degrees F (146 degrees C) Styrene  
Melting Point: Not applicable  
Freezing Point: -22.7 degrees F (-30.4 degrees C) Styrene  
Evaporation Rate: < 1 (BuAc=1) Styrene  
Vapor Density: 3.6 (AIR=1) Styrene  
% Volatile: 32 % by weight  
VOC Content: 422 grams/liter (calculated)product as supplied  
pH: Not applicable

=====

## 10. STABILITY AND REACTIVITY

### Stability:

Stable at normal temperatures and storage conditions. See Section 7 for additional storage information.

### Incompatibility:

Avoid contact with oxidizing materials such as peroxides, chlorates, and permanganates.

### Hazardous Decomposition Products:

Thermal decomposition may produce various hydrocarbons and irritating, acrid vapors.

### Hazardous Polymerization:

Product will undergo hazardous polymerization at temperatures above 150 F (65 C). Hazardous polymerization will occur if contaminated with peroxides, metal salts and polymerization catalysts.

=====

## 11. TOXICOLOGICAL INFORMATION

### Acute Eye Toxicity:

Studies indicate that exposures to concentrations of styrene above 200 ppm cause irritation of the eyes. Styrene causes transient moderate eye irritation without corneal involvement. Triethyl Phosphate is a moderate eye irritant (rabbit).

### Acute Skin Toxicity:

Draize Skin Primary Irritation Score (range, 0-8) for a 4-hour exposure (rabbits) to styrene is 6.6. Styrene: dermal LD50 (rabbit), 5 g/kg. Styrene causes severe irritation at 72 hours. Triethyl Phosphate: dermal LD50 (guinea pig), > 20 ml / kg. Skin irritation (guinea pig): slight. Repeated skin application (guinea pig): very slight irritation.

### Acute Inhalation Toxicity:

Styrene: inhalation LC50 (rat), 24 g/m<sup>3</sup> / 4 hrs. Studies indicate that exposures to concentrations of styrene above 200 ppm cause irritation of the upper respiratory tract. Acute exposure to high concentrations of styrene may produce irritation of the mucous membranes of the upper respiratory tract, nose, and mouth, followed by symptoms of narcosis, muscular contraction, and death due to respiratory center paralysis. Triethyl Phosphate: inhalation LC50 (rat), > 2050 mg / m<sup>3</sup> / 6 hours.

MSDS No: 2245

Reichhold, Inc.

Corporate Headquarters

P.O. Box 13582

Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES

1-800-424-9300

-----  
Effective Date: 12/05/01

Page 7  
-----

Acute Oral Toxicity:

Styrene: oral LD50 (rat), 5 g / kg. alpha-Methyl Styrene: oral LD50 (rat), 4900 mg/kg; (mouse), 4500 mg/kg. Triethyl Phosphate: oral LD50 (rat), 1311 mg / kg.

Subchronic:

Styrene: inhalation NOEL(rat) 200 ppm 6 hr / day 13 weeks, target organ effects: auditory response; inhalation LOEL (rat) 800 ppm 6 hr / day 3 - 13 weeks, target organ effects: auditory response. Styrene has been shown to cause probable hearing loss in rats exposed for at least six hours per day for three to thirteen weeks to 800 ppm of styrene in the air, as indicated by a rise in the auditory brainstem response threshold and loss of hair cells of the inner ear. No effects were observed in rats exposed to styrene at 200 ppm for 13 weeks. Based on animal studies and human experience, no significant risk of hearing loss is expected in occupationally exposed persons. Overexposure to styrene has been suggested as a cause of the following effects in laboratory animals and may aggravate pre-existing disorders of the following organs in humans; mild, reversible kidney effects, effects on hearing, respiratory tract damage, testis damage and liver damage. Triethyl Phosphate: inhalation (2.5 weeks, rat), LOEL = 1786 mg / m3 (transient anesthesia) (respiratory tract irritation); NOEL = 366 mg / m3; oral (4 months, male rat), LOEL = 0.1% in diet (increase in weight: liver); NOEL = not established; oral (5 months, female rat), LOEL = 1.0% in diet (target organ effects: liver); NOEL = 0.5% in diet.

Chronic/Carcinogenicity:

The International Agency for Research on Cancer (IARC) has classified styrene in Group 2B, possibly carcinogenic to humans. IARC concluded that evidence of carcinogenicity from human health studies, was inadequate and based the classification on animal and other relevant data. The animal data included an increased incidence of cancer observed in a few studies in which rats and mice were given styrene by inhalation or by ingestion for their lifetimes. IARC considered the combined results of these cancer studies to provide "limited evidence" of carcinogenicity. Other scientists consider the results of these studies inadequate to assess human carcinogenicity because these studies had either negative or statistically inconclusive results or had serious problems such as poor study design or very high mortality. Other relevant data included results from in-vivo and in-vitro genotoxicity studies. IARC also relied on data on styrene oxide including the results of two studies demonstrating stomach tumors in rats that were fed styrene oxide for their lifetime. Several epidemiology studies involving workers in the styrene, polystyrene or reinforced plastics industries have been conducted. Together, these studies show no increased cancer risk from occupational exposure to styrene. Preliminary results of a recent inhalation study indicated that mice exposed to styrene showed an increased incidence of lung tumors, however no dose response relationship was observed. The relevance of these findings is uncertain since data from other long-term animal studies and from epidemiology studies of workers exposed to styrene do not provide a basis to conclude that styrene is carcinogenic. The American Conference of Governmental Industrial Hygienists (ACGIH) has adopted the listing of Styrene as "A4-Not Classifiable as a Human Carcinogen." There is inadequate data on which to classify the agent in terms of its

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01  
-----

Page 8  
-----

carcinogenicity in humans and/or animals.

Teratology:

Styrene did not cause birth defects in orally-dosed rats, mice, rabbits and hamsters exposed by inhalation. Styrene given by inhalation for six hours a day during organ development has been shown to be toxic to fetal mice at 250 ppm and to fetal hamsters at 1000 ppm. Information from human experience and the results of animal studies suggest no significant risk of birth defects or reproductive toxicity of styrene to humans.

Reproduction:

Triethyl Phosphate: oral (rat), LOEL = 1.0% in diet; NOEL = 0.5% in diet.

Mutagenicity:

Styrene has given mixed positive and negative results in a number of mutagenicity tests. It was not mutagenic in the Ames test without metabolic activation but gave negative and positive mutagenic results with metabolic activation. It has also given negative mutagenic results in the Chinese Hamster Ovary Test, and the Forward Gene Mutation Test and positive results in the Sister Chromatid Exchange and the Chromosomal Aberration assay. Triethyl Phosphate was negative in a cell transformation assay and in a Salmonella typhimurium (Ames test) assay ( =/- activation).

=====

## 12. ECOLOGICAL INFORMATION

Ecotoxicity:

Styrene: LC50 (Sheepshead minnow), 9.1 mg / l / 96 hr. Styrene is toxic to aquatic organisms and should not be released to sewage, drainage systems and all bodies of water at concentrations exceeding approved limits under applicable regulations and permits. Triethyl Phosphate: 96 hour LC50 (fathead minnow), > 1000 microliters / l; 96 hour EC50 (daphnid), 330 microliters / l; 96 hour LC50 (flatworm), > 1000 microliters / l; 96 hour LC50 (ramshorn snail), > 1000 microliters / l; 96 hour LC50 (sideswimmer), > 100 microliters / l; 96 hour LC50 (segmented worm), > 100 microliters / l; 96 hour LC50 (pill bug), > 100 microliters / l.

Environmental Fate:

Styrene released to soil is subject to biodegradation. The results of one extensive biological screening study suggest that styrene will be rapidly destroyed by biodegradation in most aerobic environments, but the rate may be slow at low concentrations in aquifers and lake waters and in environments at low pH (6). Triethyl Phosphate, diluted with water, when released directly or indirectly into the environment is not expected to have a significant impact.

=====

## 13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:

RCRA HAZARDOUS WASTE: This material and containers that are not empty, if discarded, would be regulated as a hazardous waste under RCRA. Treatment and/or disposal must be completed at a RCRA-permitted Treatment, Storage and Disposal Facility (TSD). The storage and transportation of RCRA

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

Effective Date: 12/05/01

Page 9

-----  
hazardous wastes are also regulated by the USEPA. EMPTY DRUMS: "Empty containers", as defined under 40 CFR 261.7 or other applicable state or provincial regulations or transportation regulations, are not classified as hazardous wastes.

RCRA Hazard Class:

D001 (IGNITABLE): When discarded in its purchased form, this material would be regulated under 40 CFR 261.21 as EPA Hazardous Waste Number D001 based on the characteristic of ignitability.

=====  
14. TRANSPORT INFORMATION

DOT / IATA / IMDG: Non Bulk  
Proper Shipping Name: RESIN SOLUTION  
Hazard Class: 3  
ID Number: UN1866  
Packing Group: III  
Label:  
Placard:  
Marine Pollutant:  
ERG Number: 127

DOT / IMDG: Bulk  
Proper Shipping Name: RESIN SOLUTION  
Technical Shipping Name (If n.o.s.):  
Hazard Class: 3  
ID Number: UN1866  
Packing Group: III  
Label:  
Placard:  
Marine Pollutant:  
ERG Number: 127

TDG: Bulk and Non-Bulk  
Proper Shipping Name: RESIN SOLUTION  
Technical Shipping Name (If n.o.s.): STYRENE  
Hazard Class: 3(9.2)  
ID Number: UN1866  
Packing Group: III  
Label:  
Placard:  
ERG Number: 127

=====  
15. REGULATORY INFORMATION

Occupational Safety and Health Act (OSHA):

This material is classified as a hazardous chemical under the criteria of

Material Safety Data Sheet  
INFORMATION TELEPHONE NO. 1-800-275-6353  
DION FR (R) 7704-00

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01

Page 10  
-----

the US Occupational Safety and Health Administration (OSHA) Hazard  
Communication Standard, 29 CFR 1910.1200.

SARA Title III: Section 304 - CERCLA:

Styrene (CAS# 100-42-5): Reportable Quantity = 1,000 lb.

SARA Title III: Section 311/312 - Hazard Communication Standard (HCS):

This material is classified as an IMMEDIATE HEALTH HAZARD, DELAYED HEALTH  
HAZARD, FLAMMABILITY HAZARD, and REACTIVITY HAZARD under the US Superfund  
Amendment and Reauthorization Act (Section 311/312).

SARA Title III: Section 313 Toxic Chemical List (TCL):

Styrene (100-42-5)

TSCA Section 8(b) - Inventory Status:

All components of this material are listed on the US Toxic Substances  
Control Act (TSCA) inventory.

Canadian Inventory Status:

This material contains components that are NOT listed on the Canadian  
Domestic Substances List (DSL) or the Canadian Non-Domestic Substances  
List (NDSL). New Substances Notifications (NSN) have been submitted to  
Environment Canada.

Canadian WHMIS:

This material is classified by the Canadian Workplace Hazardous Material  
Information System as: B2 (flammable liquid) D2A (materials causing  
other toxic effects, very toxic material) D2B (materials causing other  
toxic effects, toxic material) F (dangerously reactive material)

California Proposition 65:

WARNING: This product contains a chemical(s) known to the State of  
California to cause cancer. Styrene Oxide

Additional Canadian Regulatory Information:

The following chemicals are listed on the WHMIS Ingredient Disclosure List:  
Styrene Monomer (CAS# 100-42-5) Alpha Methyl Styrene (CAS# 98-83-9)

=====

## 16. OTHER INFORMATION

MSDS No: 2245  
Reason Issued: Updates to sections 2, 9, 14, 15  
Prepared By: Environment, Health & Safety Department  
Supersedes Date: 03/29/01

### Disclaimer:

This information is provided in good faith and is correct to the best of  
Reichhold's knowledge as of the date hereof and is designed to assist our  
customers; however, Reichhold makes no representation as to its  
completeness or accuracy. Our products are intended for sale to industrial  
and commercial customers. We require customers to inspect and test our  
products before use and to satisfy themselves as to suitability for their  
specific applications. Any use which Reichhold customers or third parties  
make of this information, or any reliance on, or decisions made based upon  
it, are the responsibility of such customer or third party. Reichhold  
disclaims responsibility for damages, or liability, of any kind resulting  
from the use of this information. THERE ARE NO WARRANTIES OR  
REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY OR

Material Safety Data Sheet  
INFORMATION TELEPHONE NO. 1-800-275-6353  
DION FR (R) 7704-00

MSDS No: 2245  
Reichhold, Inc.  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709-3582

ALL CHEMICAL EMERGENCIES  
1-800-424-9300

-----  
Effective Date: 12/05/01

Page 11  
-----

FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THIS INFORMATION OR TO  
THE PRODUCT IT DESCRIBES. IN NO EVENT SHALL REICHHOLD BE LIABLE FOR  
SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### SECTION 1. IDENTIFICATION

Product name : NOROX MCP-75 FRED

#### Manufacturer or supplier's details

Company name of supplier : United Initiators GmbH

Address : Dr.-Gustav-Adolph-Str. 3  
Pullach 09 D-82049

Emergency telephone : +49 / 89 / 74422 – 0 (24 h)

E-mail address of person responsible for the SDS : contact@united-in.com

#### Recommended use of the chemical and restrictions on use

Recommended use : Hardener

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids : Category 4

Organic peroxides : Type D

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 4

Skin corrosion : Category 1B

Serious eye damage : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic toxicity - repeated exposure : Category 2

Acute aquatic toxicity : Category 2

Chronic aquatic toxicity : Category 3

#### GHS label elements

Hazard pictograms :



Signal Word : Danger



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Hazard Statements : H227 Combustible liquid.  
H242 Heating may cause a fire.  
H302 + H332 Harmful if swallowed or if inhaled.  
H314 Causes severe skin burns and eye damage.  
H360 May damage fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H401 Toxic to aquatic life.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P220 Keep/Store away from clothing/ strong acids, bases, heavy metal salts and other reducing substances /combustible materials.  
P234 Keep only in original container.  
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P363 Wash contaminated clothing before reuse.  
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

**Storage:**

P405 **Store locked up.**  
P410 **Protect from sunlight.**  
P411 + P235 **Store at temperatures not exceeding < 100 °F/ < 38 °C. Keep cool.**  
P420 **Store away from other materials.**

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture  
Chemical nature : Organic Peroxide  
Liquid mixture

### Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Dimethyl phthalate	131-11-3	>= 30 - < 35
2-Butanone, peroxide	1338-23-4	>= 25 - < 30
Cumene hydroperoxide	80-15-9	>= 20 - < 25
Trimethylpentanediol isobutyrate	6846-50-0	>= 10 - < 15
acetophenone	98-86-2	>= 1 - < 5
Cumene	98-82-8	>= 1 - < 5
Butanone	78-93-3	>= 1 - < 5
Benzenemethanol, alpha,alpha-dimethyl-	617-94-7	>= 1 - < 5
Hydrogen peroxide	7722-84-1	>= 1 - < 5
N-Methyl-2-pyrrolidone	872-50-4	>= 0.1 - < 1

## SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.  
Show this material safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.  
Symptoms of poisoning may appear several hours later.  
Call a physician immediately.

If inhaled : Call a physician or poison control center immediately.  
If unconscious, place in recovery position and seek medical advice.  
Keep respiratory tract clear.  
Call a physician immediately.  
If breathed in, move person into fresh air.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash contaminated clothing before re-use.  
If on skin, rinse well with water.  
If on clothes, remove clothes.  
If symptoms persist, call a physician.

In case of eye contact : Small amounts splashed into eyes can cause irreversible

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

- tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do NOT induce vomiting.  
Call a physician immediately.  
Rinse mouth thoroughly with water.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed or if inhaled.  
Causes serious eye damage.  
May damage fertility or the unborn child.  
May cause damage to organs through prolonged or repeated exposure.  
Causes severe burns.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- Notes to physician : Treat symptomatically and supportively.
- 

### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire fighting : Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.  
  
Flash back possible over considerable distance.  
Vapors may form explosive mixtures with air.  
Cool closed containers exposed to fire with water spray.
- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.  
Remove undamaged containers from fire area if it is safe to do so.  
Use water spray to cool unopened containers.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must
-

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3	Revision Date: 11/06/2017	SDS Number: 600000000088	Print Date: 11/14/2017
----------------	------------------------------	-----------------------------	---------------------------

---

be disposed of in accordance with local regulations.  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.  
Use personal protective equipment.

---

### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.  
Remove all sources of ignition.  
Follow safe handling advice and personal protective equipment recommendations.  
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.  
Never return spills in original containers for re-use.  
Treat recovered material as described in the section "Disposal considerations".

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.  
Clear spills immediately.  
Suppress (knock down) gases/vapors/mists with a water spray jet.  
To clean the floor and all objects contaminated by this material, use plenty of water.  
Soak up with inert absorbent material.  
Isolate waste and do not reuse.  
Non-sparking tools should be used.  
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

---

### SECTION 7. HANDLING AND STORAGE

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from combustible material.

Advice on safe handling : Do not swallow.  
Do not breathe vapors/dust.  
Avoid exposure - obtain special instructions before use.

---

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Avoid contact with skin and eyes.  
Avoid formation of aerosol.  
Take precautionary measures against static discharges.  
Never return any product to the container from which it was originally removed.  
Provide sufficient air exchange and/or exhaust in work rooms.  
Avoid confinement.  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Smoking, eating and drinking should be prohibited in the application area.  
Wash thoroughly after handling.  
For personal protection see section 8.  
Protect from contamination.

Conditions for safe storage : Avoid impurities (e.g. rust, dust, ash), risk of decomposition.  
Electrical installations / working materials must comply with the technological safety standards.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Store in original container.  
Keep containers tightly closed in a cool, well-ventilated place.  
Store in accordance with the particular national regulations.

Materials to avoid : Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature : < 100 °F

< 38 °C

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Dimethyl phthalate	131-11-3	TWA	5 mg/m <sup>3</sup>	ACGIH
		TWA	5 mg/m <sup>3</sup>	NIOSH REL
		TWA	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA	5 mg/m <sup>3</sup>	OSHA P0
2-Butanone, peroxide	1338-23-4	C	0.2 ppm	ACGIH
		C	0.2 ppm 1.5 mg/m <sup>3</sup>	NIOSH REL
		C	0.7 ppm 5 mg/m <sup>3</sup>	OSHA P0
Cumene hydroperoxide	80-15-9	TWA	1 ppm	US WEEL
acetophenone	98-86-2	TWA	10 ppm	ACGIH
		TWA	10 ppm	US WEEL
Cumene	98-82-8	TWA	50 ppm	ACGIH
		TWA	50 ppm 245 mg/m <sup>3</sup>	NIOSH REL

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

		TWA	50 ppm 245 mg/m3	OSHA Z-1
		TWA	50 ppm 245 mg/m3	OSHA P0
Butanone	78-93-3	TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH
		TWA	200 ppm 590 mg/m3	NIOSH REL
		ST	300 ppm 885 mg/m3	NIOSH REL
		TWA	200 ppm 590 mg/m3	OSHA Z-1
		TWA	200 ppm 590 mg/m3	OSHA P0
		STEL	300 ppm 885 mg/m3	OSHA P0
Hydrogen peroxide	7722-84-1	TWA	1 ppm	ACGIH
		TWA	1 ppm 1.4 mg/m3	NIOSH REL
		TWA	1 ppm 1.4 mg/m3	OSHA Z-1
		TWA	1 ppm 1.4 mg/m3	OSHA P0
N-Methyl-2-pyrrolidone	872-50-4	TWA	10 ppm	US WEEL

### Hazardous components without workplace control parameters

Ingredients	CAS-No.
Trimethylpentanediol isobutyrate	6846-50-0
Benzenemethanol, alpha,alpha-dimethyl-	617-94-7

### Biological occupational exposure limits

Ingredients	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI
N-Methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

**Engineering measures** : Minimize workplace exposure concentrations.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

#### Hand protection

Material : butyl-rubber

Break through time : >= 480 min

Glove thickness : 0.5 mm

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work.  
For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove Wash hands before breaks and at the end of workday.

Eye protection : Tightly fitting safety goggles  
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.  
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Hygiene measures : Keep away from food and drink.  
When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and immediately after handling the product.

---

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : red

Odor : slight

pH : No data available

Melting point/range : No data available

Boiling point/boiling range : Decomposition: Decomposes below the boiling point.

Flash point : > 65 °C

---

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3	Revision Date: 11/06/2017	SDS Number: 600000000088	Print Date: 11/14/2017
----------------	------------------------------	-----------------------------	---------------------------

---

Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	> 1
Density	:	1.0 g/cm <sup>3</sup>
Solubility(ies) Water solubility	:	soluble
Partition coefficient: n- octanol/water	:	No data available
Self-Accelerating decomposi- tion temperature (SADT)	:	60 °C SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.
Viscosity Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	not determined
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing. Organic peroxide

---

### SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under recommended storage conditions.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reac- tions	:	Vapors may form explosive mixture with air.
Conditions to avoid	:	Protect from contamination. Contact with incompatible substances can cause decomposition at or below SADT. Heat, flames and sparks. Avoid confinement.
Incompatible materials	:	Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Hazardous decomposition products : Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

Harmful if swallowed or if inhaled.

#### Product:

Acute oral toxicity : Acute toxicity estimate: 858.13 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 1.61 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 3,102 mg/kg  
Method: Calculation method

#### Ingredients:

##### **Dimethyl phthalate:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : (Rat): > 10.4 mg/l  
Exposure time: 6 h  
Test atmosphere: vapor  
Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rabbit): > 12,000 mg/kg

##### **2-Butanone, peroxide:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : Acute toxicity estimate: 1.5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Expert judgment  
Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: Based on data from similar materials

Acute dermal toxicity : Acute toxicity estimate: 2,500 mg/kg  
Method: Expert judgment

##### **Cumene hydroperoxide:**

Acute oral toxicity : LD50 Oral (Rat): 382 mg/kg

Acute inhalation toxicity : Acute toxicity estimate: 2.01 mg/l  
Exposure time: 4 h

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Test atmosphere: vapor  
Method: Expert judgment  
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : Acute toxicity estimate: 1,100 mg/kg  
Method: Expert judgment

### **Trimethylpentanediol isobutyrate:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: Expert judgment  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LCLo (Rat): > 5.30 mg/l  
Exposure time: 6 h  
Test atmosphere: vapor  
Method: Expert judgment  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Guinea pig): > 18,530 mg/kg  
Method: Expert judgment  
Assessment: The substance or mixture has no acute dermal toxicity

### **acetophenone:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Method: Expert judgment  
Assessment: The component/mixture is moderately toxic after single ingestion.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rat): 3,300 mg/kg  
Method: OECD Test Guideline 402

### **Cumene:**

Acute oral toxicity : LD50 (Rat): 2,700 mg/kg  
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg

### **Butanone:**

Acute oral toxicity : LD50 (Rat): 2,193 mg/kg  
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
Method: OECD Test Guideline 402

### **Benzenemethanol, alpha,alpha-dimethyl-:**

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Acute oral toxicity : LD50 (Rat): 1,300 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 4,300 mg/kg

### **Hydrogen peroxide:**

Acute oral toxicity : LD50 (Rat, male): 1,026 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 0.17 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rabbit): > 6,500 mg/kg

### **N-Methyl-2-pyrrolidone:**

Acute oral toxicity : LD50 (Rat): 4,150 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 5.1 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 402

### **Skin corrosion/irritation**

Causes severe burns.

### **Product:**

Remarks: Extremely corrosive and destructive to tissue.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Rabbit  
Method: Draize Test  
Result: No skin irritation

#### **2-Butanone, peroxide:**

Species: Rabbit  
Result: Causes burns.

#### **Cumene hydroperoxide:**

Species: Rabbit  
Result: Causes burns.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **Trimethylpentanediol isobutyrate:**

Species: Guinea pig  
Result: Mild skin irritation

### **acetophenone:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **Cumene:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **Butanone:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **Benzenemethanol, alpha,alpha-dimethyl-:**

Species: Rabbit  
Result: Severe skin irritation

### **Hydrogen peroxide:**

Result: Corrosive after 3 minutes or less of exposure

### **N-Methyl-2-pyrrolidone:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Irritating to skin.

### **Serious eye damage/eye irritation**

Causes serious eye damage.

### **Product:**

Remarks: May cause irreversible eye damage.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

#### **2-Butanone, peroxide:**

Result: Irreversible effects on the eye

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **Cumene hydroperoxide:**

Species: Rabbit  
Result: Corrosive

### **Trimethylpentanediol isobutyrate:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

### **acetophenone:**

Species: Rabbit  
Result: Eye irritation  
Method: No information available.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

### **Cumene:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

### **Butanone:**

Species: Rabbit  
Result: Eye irritation  
Method: OECD Test Guideline 405

### **Benzenemethanol, alpha,alpha-dimethyl-:**

Result: Irritating to eyes.

### **Hydrogen peroxide:**

Result: Irreversible effects on the eye

### **N-Methyl-2-pyrrolidone:**

Species: Rabbit  
Result: Eye irritation  
Method: OECD Test Guideline 405

### **Respiratory or skin sensitization**

#### **Skin sensitization**

Not classified based on available information.

#### **Respiratory sensitization**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Mouse  
Method: OECD Test Guideline 429  
Result: Does not cause skin sensitization.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **2-Butanone, peroxide:**

Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitization.

Assessment: Harmful if swallowed., Harmful if inhaled.

### **Cumene hydroperoxide:**

Result: Does not cause skin sensitization.

### **Trimethylpentanediol isobutyrate:**

Species: Guinea pig  
Result: Does not cause skin sensitization.

### **acetophenone:**

Test Type: Draize Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: Does not cause skin sensitization.

### **Cumene:**

Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitization.

### **Butanone:**

Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: Does not cause skin sensitization.

### **N-Methyl-2-pyrrolidone:**

Species: Mouse  
Method: OECD Test Guideline 429  
Result: Does not cause skin sensitization.  
Remarks: Based on data from similar materials

### **Germ cell mutagenicity**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

Genotoxicity in vitro : Method: OECD Test Guideline 471  
Result: negative

: Method: OECD Test Guideline 473

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

- Result: negative
- : Method: OECD Test Guideline 476  
Result: positive
- Genotoxicity in vivo : Test Type: Chromosomal aberration  
Species: Rat  
Application Route: Intraperitoneal  
Result: negative
- Test Type: Micronucleus test  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative
- 2-Butanone, peroxide:**
- Genotoxicity in vitro : Method: OECD Test Guideline 473  
Result: negative
- : Method: OECD Test Guideline 471  
Result: negative
- : Method: OECD Test Guideline 476  
Result: negative
- Cumene hydroperoxide:**
- Genotoxicity in vitro : Result: positive  
Remarks: In vitro tests have shown mutagenic effects.
- Genotoxicity in vivo : Test Type: Micronucleus test  
Species: Mouse  
Application Route: Skin contact  
Result: negative
- Trimethylpentanediol isobutyrate:**
- Genotoxicity in vitro : Method: OECD Test Guideline 476  
Result: negative
- : Test Type: Ames test  
Result: negative
- : Method: OECD Test Guideline 473  
Result: negative
- acetophenone:**
- Genotoxicity in vitro : Method: OECD Test Guideline 473  
Result: negative
- : Method: OECD Test Guideline 476  
Result: negative
- : Method: OECD Test Guideline 471

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Genotoxicity in vivo : Result: negative  
: Species: Mouse  
: Application Route: Intraperitoneal  
: Method: OECD Test Guideline 474  
: Result: negative

### Cumene:

Genotoxicity in vitro : Method: OECD Test Guideline 473  
: Result: negative  
: Method: OECD Test Guideline 471  
: Result: negative  
: Method: OECD Test Guideline 476  
: Result: negative  
: Method: OECD Test Guideline 482  
: Result: negative  
: Test Type: Ames test  
: Result: positive

Genotoxicity in vivo : Species: Rat  
: Application Route: Intraperitoneal  
: Exposure time: 72 h  
: Method: OECD Test Guideline 474  
: Result: Equivocal

Species: Mouse  
Application Route: inhalation (gas)  
Exposure time: 14 w  
Method: OECD Test Guideline 474  
Result: negative

### Butanone:

Genotoxicity in vitro : Method: OECD Test Guideline 471  
: Result: negative  
: Method: OECD Test Guideline 476  
: Result: negative  
: Method: OECD Test Guideline 473  
: Result: negative

Genotoxicity in vivo : Species: Mouse  
: Application Route: Intraperitoneal  
: Method: OECD Test Guideline 474  
: Result: negative

### Hydrogen peroxide:

Genotoxicity in vitro : Test Type: Ames test  
: Result: negative



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse  
Result: negative

### **Carcinogenicity**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

Species: Rat  
Application Route: Skin contact  
Method: OECD Test Guideline 451  
Result: negative  
Remarks: Based on data from similar materials

#### **2-Butanone, peroxide:**

Remarks: This information is not available.

#### **Cumene hydroperoxide:**

Remarks: This information is not available.

#### **Cumene:**

Species: Rat  
Application Route: inhalation (gas)  
Exposure time: 2 Years  
LOEC: 250  
Method: OECD Test Guideline 451  
Result: negative

Species: Mouse  
Application Route: inhalation (gas)  
Exposure time: 2 Years  
LOEC: 125  
Method: OECD Test Guideline 451  
Result: negative

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

### **IARC**

Group 2B: Possibly carcinogenic to humans

Cumene 98-82-8

### **OSHA**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

### **NTP**

Reasonably anticipated to be a human carcinogen

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

Cumene

98-82-8

### Reproductive toxicity

May damage fertility or the unborn child.

### Ingredients:

#### Dimethyl phthalate:

Effects on fertility : Species: Rat  
Application Route: oral (gavage)  
Method: OECD Test Guideline 440  
Result: negative

Effects on fetal development : Species: Rat  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: 840 mg/kg body weight  
Developmental Toxicity: NOAEL: 3,570 mg/kg body weight  
Method: OECD Test Guideline 414

#### 2-Butanone, peroxide:

Effects on fertility : Species: Rat  
Application Route: oral (gavage)  
General Toxicity Parent: NOAEL: 50 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: negative

#### Cumene hydroperoxide:

Effects on fertility : Remarks: No data available

Effects on fetal development : Remarks: No data available

#### acetophenone:

Effects on fertility : Species: Rat  
Application Route: Ingestion  
General Toxicity Parent: NOAEL: 225 mg/kg body weight  
General Toxicity F1: NOAEL: 225 mg/kg body weight  
Method: OECD Test Guideline 422  
Result: negative

Species: Rat  
Application Route: Ingestion  
General Toxicity Parent: LOAEL: 750 mg/kg body weight  
General Toxicity F1: LOAEL: 750 mg/kg body weight  
Method: OECD Test Guideline 422

Effects on fetal development : Species: Mouse  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: >= 175 mg/kg body weight  
Teratogenicity: NOAEL: >= 175 mg/kg body weight  
Developmental Toxicity: NOAEL: >= 175 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: negative

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### Cumene:

Effects on fetal development : Species: Rabbit  
Application Route: inhalation (vapor)  
General Toxicity Maternal: LOAEL: 500  
Developmental Toxicity: NOAEL: 2,300  
Method: OECD Test Guideline 414

Species: Rat  
Application Route: inhalation (vapor)  
General Toxicity Maternal: NOAEL: 100  
Developmental Toxicity: NOAEL: > 1,200  
Method: OECD Test Guideline 414

### Butanone:

Effects on fertility : Species: Rat  
Application Route: oral (drinking water)  
General Toxicity Parent: NOAEL: 10,000 mg/l  
General Toxicity F1: NOAEL: 10,000 mg/l  
Method: OECD Test Guideline 416  
Remarks: Based on data from similar materials

Species: Rat  
Application Route: oral (drinking water)  
General Toxicity Parent: LOAEL: 20,000 mg/l  
Method: OECD Test Guideline 416  
Remarks: Based on data from similar materials

Effects on fetal development : Species: Rat  
Application Route: Inhalation  
General Toxicity Maternal: NOAEC: ca. 1,002 mg/kg body weight  
Teratogenicity: NOAEC Parent: ca. 1,002 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: negative

### N-Methyl-2-pyrrolidone:

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

### STOT-single exposure

Not classified based on available information.

### Ingredients:

#### Cumene:

Assessment: May cause respiratory irritation.

#### Hydrogen peroxide:

Assessment: May cause respiratory irritation.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### **N-Methyl-2-pyrrolidone:**

Assessment: May cause respiratory irritation.

### **STOT-repeated exposure**

May cause damage to organs through prolonged or repeated exposure.

### **Ingredients:**

#### **Cumene hydroperoxide:**

Assessment: May cause damage to organs through prolonged or repeated exposure.

### **Repeated dose toxicity**

#### **Ingredients:**

##### **Dimethyl phthalate:**

Species: Rat  
NOAEL: 770 mg/kg  
Application Route: Oral  
Exposure time: 16 w  
Method: OECD Test Guideline 408

##### **2-Butanone, peroxide:**

Species: Rat  
NOAEL: 200 mg/kg  
Application Route: oral (gavage)  
Exposure time: 28 d  
Method: OECD Test Guideline 407

Repeated dose toxicity - : Harmful if swallowed., Harmful if inhaled.  
Assessment

##### **Cumene hydroperoxide:**

Species: Rat  
NOAEL: 0.031 mg/l  
Application Route: inhalation (dust/mist/fume)  
Exposure time: 90 d

##### **acetophenone:**

Species: Rat  
NOAEL: 225 mg/kg  
LOAEL: 750 mg/kg  
Application Route: Ingestion  
Method: OECD Test Guideline 422

##### **Cumene:**

Species: Rat  
NOAEL: > 536 mg/kg  
Application Route: oral (feed)

Species: Rat

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

NOAEL: 125 mg/kg  
Application Route: inhalation (vapor)  
Method: OECD Test Guideline 413

### **Hydrogen peroxide:**

Species: Mouse  
Application Route: Ingestion  
Exposure time: 90 d  
Symptoms: No adverse effects.

### **N-Methyl-2-pyrrolidone:**

Species: Rat  
NOAEL: 0.5 mg/l  
LOAEL: 1 mg/l  
Application Route: inhalation (vapor)  
Exposure time: 90 d  
Method: OECD Test Guideline 413

Species: Rat  
NOAEL: 3,000 mg/kg  
LOAEL: 7,500 mg/kg  
Application Route: Ingestion  
Exposure time: 90 d  
Method: OECD Test Guideline 408

Species: Rat  
NOAEL: 6,000 mg/kg  
LOAEL: 18,000 mg/kg  
Application Route: oral (feed)  
Exposure time: 28 d  
Method: OECD Test Guideline 407

Species: Rabbit  
NOAEL: 826 mg/kg  
Application Route: Skin contact  
Exposure time: 20 d  
Method: OECD Test Guideline 410

### **Aspiration toxicity**

Not classified based on available information.

### **Ingredients:**

#### **Dimethyl phthalate:**

No aspiration toxicity classification

#### **Cumene:**

May be fatal if swallowed and enters airways.

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### Further information

#### Product:

Remarks: No data available

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ingredients:

##### **Dimethyl phthalate:**

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 39 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 52 mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 260 mg/l  
Exposure time: 72 h
- Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 11 mg/l  
Exposure time: 102 d  
Method: OECD Test Guideline 210
- LOEC (Oncorhynchus mykiss (rainbow trout)): 24 mg/l  
Exposure time: 102 d  
Method: OECD Test Guideline 210
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 9.6 mg/l  
Exposure time: 21 d
- LOEC (Daphnia magna (Water flea)): 23 mg/l  
Exposure time: 21 d
- Toxicity to microorganisms : EC50: 4,100 mg/l  
Exposure time: 0.5 h  
Method: OECD Test Guideline 209

##### **2-Butanone, peroxide:**

- Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 44.2 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- NOEC (Poecilia reticulata (guppy)): 18 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 39 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

- NOEC (*Daphnia magna* (Water flea)): 26.7 mg/l  
Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (*Pseudokirchneriella subcapitata* (green algae)): 5.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- NOEC (*Pseudokirchneriella subcapitata* (green algae)): 2.1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : EC50 (Bacteria): 48 mg/l  
Exposure time: 0.5 h  
Method: OECD Test Guideline 209

### Cumene hydroperoxide:

- Toxicity to fish : LC50 (*Oncorhynchus mykiss* (rainbow trout)): 3.9 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 18 mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (*Desmodesmus subspicatus* (green algae)): 1.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

### Trimethylpentanediol isobutyrate:

- Toxicity to fish : NOEC (*Lepomis macrochirus* (Bluegill sunfish)):  $\geq 6$  mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- LC50 (*Pimephales promelas* (fathead minnow)):  $> 1.55$  mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)):  $\geq 1.46$  mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (*Selenastrum capricornutum* (green algae)):  $> 7.49$  mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : LOEC (*Daphnia magna* (Water flea)): 0.7 mg/l  
Exposure time: 21 d

### Ecotoxicology Assessment

- Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

### acetophenone:

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 162 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 528 mg/l  
Exposure time: 48 h
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 86.4 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- NOEC (Pseudokirchneriella subcapitata (green algae)): 24.8 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : IC50: > 1,000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

### Cumene:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4.8 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.14 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 2.01 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.35 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211
- Toxicity to microorganisms : EC50: > 2,000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

### Ecotoxicology Assessment

- Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

### Butanone:

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202



# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Pseudomonas putida): 1,150 mg/l  
Exposure time: 16 h  
Method: DIN 38 412 Part 8

### Hydrogen peroxide:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 16.4 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia pulex (Water flea)): 2.4 mg/l  
Exposure time: 48 h

Toxicity to algae : EC50 (Skeletonema costatum (marine diatom)): 1.38 mg/l  
Exposure time: 72 h  
  
NOEC (Skeletonema costatum (marine diatom)): 0.63 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.63 mg/l  
Exposure time: 21 d

Toxicity to microorganisms : EC50: Method: OECD Test Guideline 209

### N-Methyl-2-pyrrolidone:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Method: DIN 38412  
  
EC50 (Palaeomonetes vulgaris (Grass shrimp)): 1,107 mg/l  
Exposure time: 96 h

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 500 mg/l  
Exposure time: 72 h  
  
NOEC (Desmodesmus subspicatus (green algae)): 125 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 12.5 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
  
LOEC (Daphnia magna (Water flea)): 25 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

Toxicity to microorganisms : EC50: > 600 mg/l  
Exposure time: 0.5 h  
Method: ISO 8192

### Persistence and degradability

#### Ingredients:

##### **Dimethyl phthalate:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301E

##### **2-Butanone, peroxide:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301D

##### **Cumene hydroperoxide:**

Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301B

##### **Trimethylpentanediol isobutyrate:**

Biodegradability : Result: rapidly biodegradable  
Method: OECD Test Guideline 301B

##### **acetophenone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301C

##### **Cumene:**

Biodegradability : Result: Readily biodegradable.

##### **Butanone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301D

##### **Benzenemethanol, alpha,alpha-dimethyl-:**

Biodegradability : Remarks: No data available

##### **Hydrogen peroxide:**

Biodegradability : Result: Readily biodegradable.

##### **N-Methyl-2-pyrrolidone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301C

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

---

### Bioaccumulative potential

#### Ingredients:

##### **Dimethyl phthalate:**

Bioaccumulation : Bioconcentration factor (BCF): 57  
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water : log Pow: 1.54

##### **2-Butanone, peroxide:**

Partition coefficient: n-octanol/water : log Pow: < 0.3 (25 °C)

##### **Cumene hydroperoxide:**

Partition coefficient: n-octanol/water : log Pow: 1.6

##### **Trimethylpentanediol isobutyrate:**

Partition coefficient: n-octanol/water : log Pow: 4.48

##### **acetophenone:**

Bioaccumulation : Bioconcentration factor (BCF): 0.48

Partition coefficient: n-octanol/water : log Pow: 1.63

##### **Cumene:**

Bioaccumulation : Bioconcentration factor (BCF): 94.69  
Remarks: Calculation

Partition coefficient: n-octanol/water : log Pow: 3.55 (23 °C)

##### **Butanone:**

Partition coefficient: n-octanol/water : log Pow: 0.3 (40 °C)

##### **Benzenemethanol, alpha,alpha-dimethyl-:**

Partition coefficient: n-octanol/water : Remarks: No data available

##### **Hydrogen peroxide:**

Partition coefficient: n-octanol/water : log Pow: -1.57  
Remarks: Calculation

##### **N-Methyl-2-pyrrolidone:**

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

---

Partition coefficient: n-octanol/water : log Pow: -0.46 (25 °C)

### Mobility in soil

No data available

### Other adverse effects

#### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : **An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life.  
Harmful to aquatic life with long lasting effects.**

---

## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.  
Do not burn, or use a cutting torch on, the empty drum.  
Dispose of in accordance with local regulations.

---

## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### **UNRTDG**

UN number : UN 3105  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (METHYL ETHYL KETONE PEROXIDE(S), CUMYL HYDROPEROXIDE)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2

#### **IATA-DGR**

UN/ID No. : UN 3105  
Proper shipping name : Organic peroxide type D, liquid

---

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

(Methyl ethyl ketone peroxide(s), Cumyl hydroperoxide)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : Organic Peroxides, Keep Away From Heat  
Packing instruction (cargo aircraft) : 570  
Packing instruction (passenger aircraft) : 570

### IMDG-Code

UN number : UN 3105  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (METHYL ETHYL KETONE PEROXIDE(S), CUMYL HYDROPEROXIDE)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2  
EmS Code : F-J, S-R  
Marine pollutant : no

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### Domestic regulation

#### 49 CFR

UN/ID/NA number : UN 3105  
Proper shipping name : Organic peroxide type D, liquid (Methyl Ethyl Ketone Peroxide, <=26%, Cumyl Hydroperoxide, <=22%)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : ORGANIC PEROXIDE  
ERG Code : 145  
Marine pollutant : no

## SECTION 15. REGULATORY INFORMATION

### EPCRA - Emergency Planning and Community Right-to-Know

#### CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
2-Butanone, peroxide	1338-23-4	10	38

#### SARA 304 Extremely Hazardous Substances Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Hydrogen peroxide	7722-84-1	1000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 311/312 Hazards** : Fire Hazard  
Reactivity Hazard  
Acute Health Hazard  
Chronic Health Hazard

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version 1.3      Revision Date: 11/06/2017      SDS Number: 600000000088      Print Date: 11/14/2017

**SARA 302** : The following components are subject to reporting levels established by SARA Title III, Section 302:

Hydrogen peroxide	7722-84-1	1 %
-------------------	-----------	-----

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

Dimethyl phthalate	131-11-3	30.5 %
--------------------	----------	--------

Cumene hydroperoxide	80-15-9	22 %
----------------------	---------	------

acetophenone	98-86-2	2 %
--------------	---------	-----

Cumene	98-82-8	2 %
--------	---------	-----

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Dimethyl phthalate	131-11-3	30.5 %
acetophenone	98-86-2	2 %
Cumene	98-82-8	2 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Cumene hydroperoxide	80-15-9	22 %
acetophenone	98-86-2	2 %
Cumene	98-82-8	2 %
Butanone	78-93-3	1 %

### Clean Water Act

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Dimethyl phthalate	131-11-3	30.5 %
--------------------	----------	--------

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

### California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

Cumene	98-82-8
--------	---------

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

N-Methyl-2-pyrrolidone	872-50-4
------------------------	----------

### The ingredients of this product are reported in the following inventories:

DSL (CA) : All components of this product are on the Canadian DSL

NZIoC (NZ) : On the inventory, or in compliance with the inventory

TSCA (US) : On TSCA Inventory

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

## SECTION 16. OTHER INFORMATION

### Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

# SAFETY DATA SHEET

## NOROX MCP-75 FRED



Version  
1.3

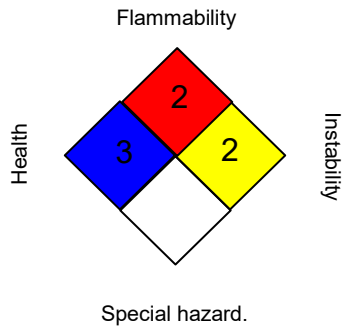
Revision Date:  
11/06/2017

SDS Number:  
600000000088

Print Date:  
11/14/2017

### Further information

#### NFPA:



#### HMIS® IV:

HEALTH	*	3
FLAMMABILITY		2
PHYSICAL HAZARD		2

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. For the first box in the Health rating a "/" indicates no chronic health risks and a "\*" indicates chronic hazards exist.

Revision Date : 11/06/2017

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

US / Z8





## Section 1. Identification

**Product name** H884-IVA-20  
**Product type** Polyester Resin Solution  
**Chemical family** Aromatic.  
**SDS No.** NA-1504:905 (Version: 2.0)

**Relevant identified uses of the substance or mixture and uses advised against**

**Identified uses** Used in the manufacture of thermoset plastic parts.  
**Uses advised against** No additional information.

**Supplier's details**  
 AOC, LLC  
 955 Highway 57 East  
 Collierville, TN 38017  
 E-Mail: aoc.sds@aoc-resins.com  
 Website: www.aoc-resins.com  
 Phone Number: (901) 854-2800  
 Hours: 8AM-5pm (Central Time) Monday-Friday

<b>Emergency telephone number</b>	CHEMTREC Within USA and Canada	+1 (800) 424-9300	CCN1023
	CHEMTREC Outside USA and Canada	+1 (703) 527-3887	
	CANUTEC Within Canada	+1 (613) 996-6666	

## Section 2. Hazards identification

**OSHA/HCS status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the substance or mixture**

- FLAMMABLE LIQUIDS – Category 3 – H226
- SKIN CORROSION/IRRITATION – Category 2 – H315
- SERIOUS EYE DAMAGE/ EYE IRRITATION – Category 2 – H319
- ACUTE TOXICITY (INHALATION) – Category 4 – H332
- SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) – Category 3 – H335
- REPRODUCTIVE TOXICITY – Category 2 – H361d
- CARCINOGENICITY – Category 2 – H351
- SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) – Category 1 – H372
- ASPIRATION HAZARD – Category 1 – H304

**GHS label elements**

**Hazard pictograms**



**Signal word**

Danger

**Hazard statements**

- H226: Flammable liquid and vapor.
- H332: Harmful if inhaled.
- H361d: Suspected of damaging the unborn child.
- H351: Suspected of causing cancer.
- H319: Causes serious eye irritation.
- H315: Causes skin irritation.
- H335: May cause respiratory irritation.
- H372: Causes damage to organs through prolonged or repeated exposure if inhaled.
- H304: May be fatal if swallowed and enters airways.

## Section 2. Hazards identification

### Precautionary statements

#### General

- P101: If medical advice is needed, have product container or label at hand.  
P102: Keep out of reach of children.

#### Prevention

- P210: Keep away from heat, sparks, open flames and hot surfaces. - No smoking.  
P233: Keep container tightly closed.  
P240: Ground/bond container and receiving equipment.  
P241: Use explosion-proof electrical/ventilating/lighting/material-handling equipment.  
P242: Use only non-sparking tools.  
P243: Take precautionary measures against static discharge.  
P201: Obtain special instructions before use.  
P202: Do not handle until all safety precautions have been read and understood.  
P264: Wash hands thoroughly after handling.  
P270: Do not eat, drink or smoke when using this product.  
P271: Use only outdoors or in a well-ventilated area.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P260: Do not breathe vapor or mist.

#### Response

- P370+P378: In case of fire: Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.  
P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P331: Do NOT induce vomiting.  
P308+P313: IF exposed or concerned: Get medical advice/attention.  
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P312: Call a POISON CENTER or physician if you feel unwell.  
P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
P332+P313: If skin irritation occurs, get medical advice/attention.  
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337+P313: If eye irritation persists, get medical advice/attention.  
P308+P311: IF exposed or concerned: Call a POISON CENTER or doctor/physician.  
P391: Collect spillage.

#### Storage

- P403 + P235: Store in a well-ventilated place. Keep cool.  
P233: Keep container tightly closed.  
P405: Store locked up.

#### Disposal

- P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

### Hazards not otherwise classified

None known.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture.

Ingredient name	CAS number	%
Styrene	100-42-5	32.0
Cobalt 2-Ethylhexanoate	136-52-7	≤0.3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### Description of necessary first aid measures

#### Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Use of buffered baby shampoo will aid in removal. If irritation persists, get medical attention.

#### Inhalation

Move the victim to a safe area as soon as possible. Allow the victim to rest in a well-ventilated area. If breathing is difficult, give oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

## Section 4. First aid measures

### **Skin contact**

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. If irritation persists, seek medical attention. Wash contaminated clothing before reuse. Clean shoes thoroughly before reuse.

### **Ingestion**

Wash out mouth with water. Remove dentures if any. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Seek immediate medical attention.

### **Most important symptoms/effects, acute and delayed**

#### **Eye contact**

Causes serious eye irritation.

#### **Inhalation**

Harmful if inhaled. May cause respiratory irritation.

#### **Skin contact**

Causes skin irritation.

#### **Ingestion**

Irritating to mouth, throat and stomach.

### **Over-exposure signs/symptoms**

#### **Eye contact**

Adverse symptoms may include the following: pain or irritation, watering, redness.

#### **Inhalation**

Adverse symptoms may include the following: respiratory tract irritation, coughing.

#### **Skin contact**

Adverse symptoms may include the following: irritation, redness.

#### **Ingestion**

Adverse symptoms may include the following: Irritating to mouth, throat and stomach..

### **Indication of immediate medical attention and special treatment needed, if necessary**

#### **Notes to physician**

Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**See toxicological information (Section 11)**

## Section 5. Fire-fighting measures

### **Extinguishing media**

#### **Suitable extinguishing media**

Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.

#### **Unsuitable extinguishing media**

Do not use water jet.

#### **Specific hazards arising from the chemical**

Flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

#### **Hazardous thermal decomposition products**

Decomposition products may include the following materials: carbon dioxide, carbon monoxide, sulfur oxides halogenated compounds, metal oxide/oxides

#### **Special protective actions for fire-fighters**

Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

#### **Special protective equipment for fire-fighters**

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

#### **For non-emergency personnel**

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation.

#### **For emergency responders**

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. See also the information in "For non-emergency personnel".

#### **Environmental precautions**

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

### Methods and materials for containment and cleaning up

#### **Small spill**

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

#### **Large spill**

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

#### **Protective measures**

Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

#### **Advice on general occupational hygiene**

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

#### **Conditions for safe storage, including any incompatibilities**

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Segregate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Refer to the product label and/or technical data sheet for further information.

## Section 8. Exposure controls/personal protection

### Control parameters

### Occupational exposure limits

## Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
Styrene	<b>ACGIH TLV (United States, 3/2015).</b> TWA: 20 ppm 8 hours. TWA: 85 mg/m <sup>3</sup> 8 hours. STEL: 40 ppm 15 minutes. STEL: 170 mg/m <sup>3</sup> 15 minutes. <b>OSHA PEL Z2 (United States, 2/2013).</b> TWA: 100 ppm 8 hours. CEIL: 200 ppm AMP: 600 ppm 5 minutes. <b>NIOSH REL (United States, 10/2013).</b> TWA: 50 ppm 10 hours. TWA: 215 mg/m <sup>3</sup> 10 hours. STEL: 100 ppm 15 minutes. STEL: 425 mg/m <sup>3</sup> 15 minutes.
Cobalt 2-Ethylhexanoate	<b>OSHA PEL (United States).</b> TWA: 0.1 mg/m <sup>3</sup> <b>ACGIH TLV (United States, 3/2015).</b> TWA: 0.02 mg/m <sup>3</sup> , (as Co) 8 hours.

### Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

### Individual protection measures

#### Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

#### Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

#### Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

#### Other skin protection

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

#### Respiratory protection

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



## Section 9. Physical and chemical properties

### Appearance

Physical state	Liquid.
Color	Amber.
Odor	Aromatic.
Odor threshold	0.01 - 0.1 ppm ( <i>Styrene</i> )
pH	<i>Not applicable.</i>
Melting point	-23.8°F / -30.6°C ( <i>Styrene</i> )
Boiling point	293°F / 145°C ( <i>Styrene</i> )
Flash point	88°F / 31°C ( <i>Styrene</i> )
Evaporation rate	< 1 (Butyl acetate = 1)
Flammability (solid, gas)	<i>Not applicable.</i>
Lower and upper explosive (flammable) limits	<b>Lower:</b> 1.1% <b>Upper:</b> 6.1% ( <i>Styrene</i> )
Vapor pressure	5.0 mm Hg@ 68°F / 20°C ( <i>Styrene</i> )

## Section 9. Physical and chemical properties

Vapor density	3.6 (Air = 1) ( <i>Styrene</i> )
Relative density	1.1 (Water = 1)
Solubility	Slight.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	914°F / 490°C ( <i>Styrene</i> )
Decomposition temperature	Not available.
Viscosity	Not available.
Molecular weight	1,000 to 15,000

## Section 10. Stability and reactivity

### Reactivity

No specific test data related to reactivity available for this product or its ingredients.

### Chemical stability

The product is stable. Stable under recommended storage and handling conditions (see Section 7).

### Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

### Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

### Incompatible materials

Reactive or incompatible with the following materials: oxidizing materials

### Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Styrene	LC50 Inhalation Gas.	Rat	2770 ppm	4 hours
	LC50 Inhalation Vapor	Rat	11800 mg/m <sup>3</sup>	4 hours
Cobalt 2-Ethylhexanoate	LD50 Oral	Rat	2650 mg/kg	-
	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	1.22 g/kg	-
	LD50 Oral	Rat	6171 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Styrene	Eyes - Mild irritant	Human	-	50 parts per million	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	100 Percent	-

#### Sensitization

May cause sensitization by skin contact.

#### Carcinogenicity

##### Classification

Product/ingredient name	ACGIH	IARC	NTP
Styrene	-	2B	Reasonably anticipated to be a human carcinogen.
Cobalt 2-Ethylhexanoate	-	2B	-

- 1) Negative Study A published study concluded that the mechanism for producing cancer in mice exposed to styrene is not applicable in human metabolism. (June 2013 Pharmacology & Toxicology 66 (2013))
- 2) Negative Study A recent update to an extensive study of reinforced plastic workers from 1948-1977 concluded that there was no coherent evidence that styrene exposure increased risk of cancer (March 2013 Epidemiology Vol. 24 Issue 2)
- 3) Positive Study Styrene induced pulmonary toxicity and carcinogenicity in mice was shown to be caused by a metabolite of styrene, probably styrene oxide. (Dec.2001 Toxicology Vol.169 Issue 2)

## Section 11. Toxicological information

### Mutagenicity

No mutagenic effect.

### Reproductive toxicity

Not considered to be toxic to the reproductive system.

### Teratogenicity

No known effect according to our database..

### Specific target organ toxicity (single exposure)

No known effect according to our database.

### Specific target organ toxicity (repeated exposure)

A study of long term effects of workers exposed to styrene levels in the range of 25-35 ppm, 8 hour TWA, indicated a possible mild hearing loss.

### Aspiration hazard

No known effect according to our database.

### Potential acute health effects

#### Eye contact

Causes serious eye irritation.

#### Inhalation

Harmful if inhaled. May cause respiratory irritation.

#### Skin contact

Causes skin irritation.

#### Ingestion

Irritating to mouth, throat and stomach.

### Symptoms related to the physical, chemical and toxicological characteristics

#### Eye contact

Adverse symptoms may include the following: pain or irritation, watering, redness.

#### Inhalation

Adverse symptoms may include the following: respiratory tract irritation, coughing.

#### Skin contact

Adverse symptoms may include the following: irritation, redness.

#### Ingestion

Adverse symptoms may include the following: Irritating to mouth, throat and stomach..

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Result	Species	Exposure
Styrene	Acute EC50 4.7 mg/l Fresh water Acute LC50 4.02 mg/l Fresh water	Daphnia - Daphnia magna Fish - Pimephales promelas	48 hours 96 hours

### Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
Styrene	EU	100 % - Readily - 1 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Styrene	-	-	Readily

### Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
Styrene	2.95	13.49	low

### Mobility in soil

#### Soil/water partition coefficient (K<sub>oc</sub>)

Not available.

#### Other adverse effects

No known effect according to our database.

## Section 13. Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### Disposal methods

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid disposal. Attempt to use product completely in accordance with intended use. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

### Special precautions

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

### DOT / TDG/ IMDG/IMO / ICAO/IATA and National regulations.

UN number	UN1866
Proper shipping name	Resin Solution
Transport hazard class(es)	3



Packing group III

Additional information US regulations require the reporting of spills when the amount exceeds the Reportable Quantity (RQ) for specific components of this material. See CERCLA in Section 15, Regulatory Information, for the Reportable Quantities.

IMDG **Emergency schedules (EmS):** F-E, S-E  
**Remarks:** FP-31°C

IATA No additional information.

Environmental hazards Marine pollutant: No.

Special precautions for user **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

## Section 15. Regulatory information

### Inventories (National and International)

United States inventory (TSCA 8b)	: All components are listed or exempted.
Australia (AICS)	: Not determined.
Canada (DSL)	: All components are listed or exempted.
China (IECSC)	: Not determined.
Europe (EINECS)	: Not determined.
New Zealand (NZIoC)	: Not determined.
Philippines (PICCS)	: Not determined.
Japan (ENCS)	: <b>Japan inventory (ENCS):</b> Not determined. <b>Japan inventory (ISHL):</b> Not determined.
Malaysia (EHS Register)	: Not determined.
Republic of Korea (KECI)	: Not determined.
Taiwan (CSNN)	: Not determined.

### SARA 311/312

#### Composition/information on ingredients



## Section 15. Regulatory information

Name	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Styrene Cobalt 2-Ethylhexanoate	Yes. No.	No. No.	No. No.	No. Yes.	Yes. Yes.

### SARA 313

	Product name	CAS number
Form R - Reporting requirements	Styrene Cobalt 2-Ethylhexanoate	100-42-5 136-52-7

**CERCLA RQ** - Styrene - 1000 lbs. (453.6 kg)

### State regulations

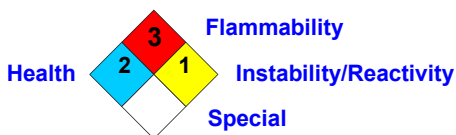
#### California Prop. 65

**WARNING:** This product contains a chemical known to the State of California to cause cancer.

**WARNING:** This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

## Section 16. Other information

### National Fire Protection Association (U.S.A.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

### History

**Date of issue** : 02/01/2017

**Date of previous issue** : 05/26/2015

**Version** : 2.0

AOC Corporate Regulatory Affairs

### Key to abbreviations

: ATE = Acute Toxicity Estimate  
BCF = Bioconcentration Factor  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
IATA = International Air Transport Association  
IBC = Intermediate Bulk Container  
IMDG = International Maritime Dangerous Goods  
LogPow = logarithm of the octanol/water partition coefficient  
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
UN = United Nations

▣ Indicates information that has changed from previously issued version.

### Notice to reader

*The information contained in this data sheet is furnished in good faith and without warranty, representation, or inducement or license of any kind, except that it is accurate to the best of AOC, LLC's knowledge, or was obtained from sources believed by AOC, LLC to be reliable. The accuracy, adequacy or completeness of health and safety precautions set forth herein cannot be guaranteed, and the buyer is solely responsible for ensuring that the product is used, handled, stored, and disposed of safely and in compliance with applicable federal, state or provincial, and local laws. AOC, LLC disclaims liability for any loss, damage or personal injury that arises from, or is in any way related to, use of the information contained in this data sheet.*

*This Safety Data Sheet (SDS) and its content are the confidential and proprietary information of AOC and it may not be modified, altered, deconstructed, or presented in any other manner, without the explicit authorization of AOC and/or its legal counsel.*

# SAFETY DATA SHEET

Revision Date: 24/Nov/2014

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****Product Identifier****Product Description:** POLYLITE® TLP 33234-24**Other means of identification****SAP ID(s):** 6105 ; 6106; 187027; 191893**Material Code:** 33234-24**Chemical Family** Polyester Resin**Recommended use of the chemical and restrictions on use****Intended Use:** Marine-Low Profile Resin**Uses advised against** No information available**Details of the supplier of the safety data sheet****Manufacturer/Supplier:**Reichhold LLC 2  
Corporate Headquarters  
P.O. Box 13582  
Research Triangle Park, NC 27709  
USA  
Tel +1-919-990-7500  
Fax +1-919-767-8602**Emergency Telephone****E-mail address**

(Chemtrec) 1-800-424-9300

prodsafety@reichhold.com

**2. HAZARDS IDENTIFICATION****Classification****OSHA Regulatory Status**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Inhalation (Vapors)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A
Carcinogenicity	Sub-category 1B
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Chronic aquatic toxicity	Category 3
Flammable liquids	Category 3

**Label elements****Emergency Overview Statements****Danger****Hazard Statements**Harmful if inhaled  
Causes skin irritation  
Causes serious eye irritation  
May cause cancer  
Suspected of damaging fertility or the unborn child  
May cause respiratory irritation  
Causes damage to hearing through prolonged or repeated exposure if inhaled  
Harmful to aquatic life with long lasting effects  
Flammable liquid and vapor

**Appearance** Pink Opaque**Physical State** Liquid**Odor** Pungent**Precautionary Statements - Prevention**

Obtain special instructions before use  
 Do not handle until all safety precautions have been read and understood  
 Use personal protective equipment as required  
 Use only outdoors or in a well-ventilated area  
 Wash face, hands and any exposed skin thoroughly after handling  
 Wear protective gloves/protective clothing/eye protection/face protection  
 Do not breathe mist, vapors, spray  
 Do not eat, drink or smoke when using this product  
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
 Keep container tightly closed  
 Ground/bond container and receiving equipment  
 Use explosion-proof electrical/ventilating/lighting equipment  
 Use only non-sparking tools  
 Take precautionary measures against static discharge  
 Keep cool  
 Avoid release to the environment

**Precautionary Statements - Response**

IF exposed or concerned: Get medical advice/attention  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 If eye irritation persists: Get medical advice/attention  
 If skin irritation occurs: Get medical advice/attention  
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
 Wash contaminated clothing before reuse  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 In case of fire: Use CO<sub>2</sub>, dry chemical, or foam to extinguish

**Precautionary Statements - Storage**

Store in a well-ventilated place. Keep container tightly closed

**Precautionary Statements - Disposal**

Dispose of contents/container to industrial incineration plant  
 Dispose of in accordance with federal, state and local regulations

**Hazards not otherwise classified (HNOC)****Other Information**

Unknown acute toxicity 65.6% of the mixture consists of ingredient(s) of unknown toxicity.  
 Unknown aquatic toxicity 66.6% of the mixture consists of component(s) of unknown hazards to the aquatic environment.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No	Weight-%	Trade Secret
Polyester Resin	Proprietary	64.8	
Styrene	100-42-5	33	
Cobalt compounds	Proprietary	< 0.15	*

\* The exact percentage (concentration) of composition has been withheld as a trade secret.

#### 4. FIRST AID MEASURES

##### First Aid Measures

<b>Eye Contact</b>	Immediately flush eyes for at least 15 minutes. Get medical attention.
<b>Skin Contact</b>	Wash off with warm water and soap. Remove contaminated clothing and shoes. If skin irritation persists, call a physician. Wash contaminated clothing before reuse.
<b>Inhalation</b>	Remove person to fresh air. If signs/symptoms continue, get medical attention. Keep patient warm and at rest. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Get medical attention immediately.
<b>Ingestion</b>	Do not induce vomiting. Potential for aspiration if swallowed. This material may enter the lungs during vomiting. Never give anything by mouth to an unconscious person. GET IMMEDIATE MEDICAL ATTENTION.

##### Most important symptoms and effects, both acute and delayed

<b>Most Important Symptoms and Effects</b>	No information available.
--------------------------------------------	---------------------------

##### Indication of any immediate medical attention and special treatment needed

<b>Notes to Physician</b>	Treat symptomatically.
---------------------------	------------------------

#### 5. FIRE-FIGHTING MEASURES

##### Suitable Extinguishing Media

Carbon dioxide (CO<sub>2</sub>), Foam, Dry chemical, Water spray

##### Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

##### Specific hazards arising from the chemical

<b>Hazardous combustion products</b>	Combustion may produce carbon monoxide, carbon dioxide and irritating or toxic vapors and gases
<b>Combustion/Explosion Hazards</b>	Flammable. Vapors may form explosive mixture with air. Flash back possible over considerable distance. This material may polymerize (react) when its container is exposed to heat (as during a fire). This polymerization increases pressure inside a closed container and may result in the violent rupture of the container. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death.

##### Protective Equipment and Precautions for Firefighters:

Wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing. Thoroughly decontaminate all protective equipment after use. Evacuate all persons from the fire area to a safe location. Move non-burning material, as feasible, to a safe location as soon as possible. Fire fighters should be protected from potential explosion hazard while extinguishing the blaze. DO NOT extinguish a fire resulting from the flow of this flammable liquid until the flow of liquid is effectively shut off. This precaution will help prevent the accumulation of an explosive vapor-air mixture after the initial fire is extinguished. Use water spray to cool fire-exposed containers.

#### 6. ACCIDENTAL RELEASE MEASURES

##### Personal precautions, protective equipment and emergency procedures

**Personal Precautions** Remove all sources of ignition. Evacuate personnel to safe areas. Avoid contact with skin and eyes. Use personal protective equipment as required. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

**Other Information** All equipment used when handling the product must be grounded.

### Environmental Precautions

**Environmental Precautions** Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Prevent product from entering drains. Soak up with inert absorbent material and dispose of as hazardous waste. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

### Methods and material for containment and cleaning up

**Methods for Containment** Prevent spilled material from 1) contaminating soil, 2) entering sanitary sewers, storm sewers, and drainage systems, and 3) entering bodies of water or ditches that lead to waterways. Prevent spreading over a wide area (e.g. by containment or oil barriers).

**Methods for Clean-up** Soak up with inert absorbent material. Remove from surface water (e.g. by skimming or siphoning). Dispose of contaminated material as waste according to item 13.

## 7. HANDLING AND STORAGE

### Precautions for Safe Handling

**Handling** Do not breathe vapor or mist. Avoid contact with eyes, skin and clothing. Take off contaminated clothing and wash before reuse. Ensure adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion-proof equipment. Consult your supplier of promoters and catalysts for additional instructions on proper mixing and usage. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death. Empty drums should be completely drained and properly bunged. Empty drums should be promptly returned to a drum reconditioner or properly disposed. Do not use compressed air for filling, discharging or handling. Wash hands before breaks and immediately after handling the product.

### Conditions for safe storage, including any incompatibilities

**Storage** Keep away from heat and sources of ignition. No smoking. Keep away from direct sunlight. Keep containers tightly closed in a cool, well-ventilated place. To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 77°F (25°C).

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure limits

Components with workplace control parameters

#### **Styrene (CAS #: 100-42-5)**

ACGIH TLV

20 ppm TWA  
40 ppm STEL  
A4 Not Classifiable as a Human Carcinogen

OSHA PEL

100 ppm TWA  
200 ppm Ceiling

Industry PEL

While the federal workplace exposure limit for styrene is 100 ppm, OSHA accepted the styrene industry's proposal to voluntarily meet a PEL of 50 ppm on an 8 hour TWA and a Short Term Exposure Limit (STEL) of 100 ppm, 15 minute exposure.

Canada - Alberta OELs	40 ppm STEL 170 mg/m <sup>3</sup> STEL 20 ppm TWA 85 mg/m <sup>3</sup> TWA
Canada - Ontario OELs	35 ppm TWA 100 ppm STEL
Canada - British Columbia OELs	50 ppm TWA 75 ppm STEL
NIOSH IDLH	700 ppm Immediately dangerous to life or health IDLH
Mexico OEL	100 ppm STEL 425 mg/m <sup>3</sup> STEL 50 ppm TWA 215 mg/m <sup>3</sup> TWA (skin)

**Legend**

ACGIH (*American Conference of Governmental Industrial Hygienists*)

TLV® (*Threshold Limit Value*)

TWA (*time-weighted average*)

STEL - *Short Term Exposure Limit*

OSHA - *Occupational Safety and Health Administration*

PEL - *Permissible Exposure Limit*

OEL - *Occupational Exposure Limit*

NIOSH - *National Institute for Occupational Safety and Health*

IDLH - *Immediately Dangerous to Life or Health*

SKIN: *Skin Absorption*

**Appropriate engineering controls****Engineering Controls**

Use general ventilation to maintain airborne concentrations to levels that are below regulatory and recommended occupational exposure limits. Local ventilation may be required during certain operations. Use explosion-proof equipment.

**Individual protection measures, such as personal protective equipment****Eye/face Protection**

Safety glasses with side-shields. If splashes are likely to occur. Tight sealing safety goggles. Ensure that eyewash stations and safety showers are close to the workstation location.

**Skin Protection**

Wear protective nitrile rubber or Viton™ gloves. Gloves made of nitrile rubber or polyvinyl chloride (PVC) may be used for splash protection and brief or intermittent contact with styrenated polyester resin. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. Impervious clothing. Rubber or plastic boots.

**Respiratory Protection**

None required if hazards have been assessed and airborne concentrations are maintained below the exposure limits listed in Section 8. Wear an approved air-purifying respirator with organic vapor cartridges and particulate filters where airborne concentrations may exceed exposure limits in Section 8 and/or there is exposure to dust or mists due to sanding, grinding, cutting, or spraying. Use an approved positive-pressure air-supplied respirator with emergency escape provisions if there is any potential for an uncontrolled release, airborne concentrations are not known, or any other circumstances where air-purifying respirators may not provide adequate protection

**General Hygiene Considerations**

Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Pink Opaque
Odor	Pungent
Odor Threshold	0.2 ppm (Styrene)
Physical State	Liquid
pH	Not applicable

<b>Flash Point</b>	32 °C / 89 °F
<b>Flash Point Method:</b>	Seta closed cup
<b>Autoignition Temperature</b>	490°C / 914°F (Styrene)
<b>Boiling point / boiling range</b>	146°C / 295°F (Styrene)
<b>Melting point / Freezing point</b>	No information available
<b>Flammability Limit in Air</b>	
<b>Lower</b>	1.1% (Styrene)
<b>Upper</b>	6.1% (Styrene)
<b>Specific Gravity</b>	1.08 - 1.12 @ 25°C
<b>Solubility</b>	Insoluble (Water)
<b>Evaporation Rate</b>	0.49 (BuAc = 1) (Styrene)
<b>Vapor Pressure</b>	5 mmHg @ 20°C (Styrene) 6.7 hPa (Styrene)
<b>Vapor Density</b>	3.6 (Air = 1) (Styrene)
<b>Explosive Properties</b>	No information available
<b>Oxidizing Properties</b>	No information available
<b>Percent Volatile, wt. %</b>	32.75 - 36.25 % by weight
<b>VOC Content:</b>	369 g/l (calculated) product as supplied
<b>Viscosity</b>	400 - 500 cps @ 25°C
<b>Partition Coefficient (n-octanol/water)</b>	No information available
<b>Decomposition temperature</b>	No information available

## 10. STABILITY AND REACTIVITY

### Reactivity

No dangerous reaction known under conditions of normal use.

### Chemical Stability

Stable under normal conditions. Stable under recommended storage conditions.

### Possibility of Hazardous Reactions

#### **Hazardous Polymerization**

Polymerization can occur. Hazardous polymerization will occur if contaminated with peroxides, metal salts and polymerization catalysts. Hazardous polymerization may occur upon depletion of inhibitor - may cause heat and pressure build-up in closed containers. Product will undergo hazardous polymerization at temperatures above 150 F (65 C).

#### **Conditions to Avoid**

Heat, flames and sparks. Contamination by those materials referred to under Incompatible materials. Unstable upon depletion of inhibitor. Elevated temperatures.

#### **Incompatible materials**

Strong acids. Strong oxidizing agents. Metal salts. Polymerization catalysts.

#### **Hazardous Decomposition Products**

Hydrocarbons. Carbon monoxide. Carbon dioxide (CO<sub>2</sub>). Thermal decomposition can lead to release of irritating and toxic gases and vapors.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

#### **Primary Routes of Entry**

Eye contact, Ingestion, Inhalation, Skin Contact, Skin absorption

### Acute toxicity

#### **Styrene**

<b>Oral LD50</b>	= 5000 mg/kg (Rat)
<b>Dermal LD50</b>	> 2000 mg/kg (Rat)
<b>Inhalation LC50</b>	= 11.8 mg/l (4 H) (Rat)

### Information on toxicological effects

<b>Symptoms</b>	Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
<b><u>Delayed and immediate effects as well as chronic effects from short and long-term exposure</u></b>	
<b>Eyes</b>	Irritating to eyes.
<b>Skin</b>	Harmful by skin absorption. Contact causes skin irritation. Prolonged skin contact may defat the skin and produce dermatitis.
<b>Inhalation</b>	Harmful by inhalation. May cause irritation of respiratory tract. Inhalation of high vapor concentrations can cause CNS-depression and narcosis.
<b>Ingestion</b>	Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Aspiration hazard if swallowed - can enter lungs and cause damage. Ingestion is not an anticipated route of exposure for this material in industrial use.
<b>Sensitization</b>	Not sensitizing.
<b>Repeated dose toxicity</b>	In humans, styrene may cause a transient decrease in color discrimination and effects on hearing. Repeated or prolonged exposure may cause skin irritation and dermatitis, due to defatting properties of the product. May cause damage to the liver, eyes, brain, respiratory system, central nervous system through prolonged or repeated exposure if inhaled. May cause damage to the kidneys, liver, eyes, brain, respiratory system, central nervous system through prolonged or repeated exposure if inhaled.
<b>Mutagenic effects</b>	Styrene has given mixed positive and negative results in a number of mutagenicity tests. Styrene was not mutagenic without metabolic activation but gave negative and positive mutagenic results with metabolic activation.
<b>Carcinogenicity</b>	.
<u>Styrene</u> ACGIH IARC NTP <u>Cobalt compounds</u> IARC	Group A4 - Not classifiable as a human carcinogen. Group 2B - Possibly Carcinogenic to Humans Reasonably anticipated to be human carcinogen  Group 2B - Possibly Carcinogenic to Humans
<b>Legend</b>	<i>IARC - International Agency for Research on Cancer</i> <i>NTP - National Toxicology Program</i>
<b>Reproductive Toxicity</b>	No information available.
<b>Neurological Effects</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Target organ(s)</b>	Liver, Central nervous system (CNS), Respiratory system, Kidney.
<b>Aspiration Hazard</b>	No information available.
<b><u>Numerical measures of toxicity - Product Information</u></b>	
<b>Unknown acute toxicity</b>	65.6% of the mixture consists of ingredient(s) of unknown toxicity.
<b>The following values are calculated based on chapter 3.1 of the GHS document .</b>	
ATEmix (oral)	2968 mg/kg
ATEmix (dermal)	2002 mg/kg
ATEmix (inhalation-vapor)	11.6 mg/L

## 12. ECOLOGICAL INFORMATION



**Ecotoxicity****Styrene**

Log Kow	2.95
Bioconcentration factor (BCF)	74
Algae	EC50 = 1.4 mg/L (Pseudokirchneriella subcapitata) (72h) EC50 0.46 - 4.3 mg/L (Pseudokirchneriella subcapitata) (72h)
Fish	LC50 3.24 - 4.99 mg/L (Pimephales promelas) (96 h) flow-through LC50 19.03 - 33.53 mg/L (Lepomis macrochirus) (96 h) static LC50 6.75 - 14.5 mg/L (Pimephales promelas) (96 h) static LC50 58.75 - 95.32 mg/L (Poecilia reticulata) (96 h) static
Water Flea	EC50 3.3 - 7.4 mg/L 48 h

**Cobalt compounds**

Algae	EC50 = 0.639 mg/L
-------	-------------------

**Unknown aquatic toxicity**

66.6% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

**Persistence/Degradability**

No information available.

**Bioaccumulation**

No information available.

**Other adverse effects**

No information available.

### 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods**

<b>Disposal Considerations</b>	Hazardous waste. Can be incinerated, when in compliance with local regulations.
<b>Contaminated packaging</b>	Empty containers should be taken for local recycling, recovery or waste disposal.
<b>US EPA Waste Number</b>	D001 (IGNITABLE): When discarded in its purchased form, this material would be regulated under 40 CFR 261.21 as EPA Hazardous Waste Number D001 based on the characteristic of ignitability.

### 14. TRANSPORT INFORMATION

**DOT**

UN-No	UN1866
Proper Shipping Name	RESIN SOLUTION
Hazard Class	3
Packing Group	III
NAERG:	127

**TDG**

UN-No	UN1866
Proper Shipping Name	RESIN SOLUTION
Hazard Class	CLASS 3
Packing Group	PG III
NAERG:	127

**MEX**

UN-No	UN1866
Proper Shipping Name	RESIN SOLUTION

**Hazard Class** CLASS 3  
**Packing Group** PG III  
**NAERG:** 127

**IATA**

**UN-No** UN1866  
**Proper Shipping Name** RESIN SOLUTION  
**Hazard Class** 3  
**Packing Group** III  
**Packing Instructions** 355; 366  
**NAERG:** 127

**IMDG/IMO**

**UN-No** UN1866  
**Proper Shipping Name** RESIN SOLUTION  
**Hazard Class** CLASS 3  
**Packing Group** PG III  
**EmS-No** F-E, S-E  
**NAERG:** 127

<b>15. REGULATORY INFORMATION</b>
-----------------------------------

**International Inventories**

**TSCA Inventory Status:** All components of this material are listed on the US Toxic Substances Control Act (TSCA) inventory.

**Canadian Inventory Status:** All components of this material are listed on the Canadian Domestic Substances List (DSL)

**Australian Inventory Status:** This product contains only chemicals which are currently listed on the Australian Inventory of Chemical Substances

**Korean Inventory Status:** This product contains only chemicals which are currently listed on the Korean Chemical Substances List

**Philippine Inventory:** All components of this material are listed on or are exempt from the Philippine Inventory of Chemicals and Chemical Substances

**Japan ENCS:** This product contains one or more chemicals currently not on the Japanese Inventory of Existing and New Chemical Substances

**Chinese IECS:** This product contains only chemicals that are currently listed on the Chinese Inventory of Existing Chemical Substances

**New Zealand Inventory:** This product contains only chemicals which are currently listed on the New Zealand Inventory of Chemicals

**Taiwan Existing Chemical Substances Inventory:** Not Determined

**US Federal Regulations****TSCA 12(b) - Export Notification:**

This material does not contain any components that are subject to the US Toxic Substances Control Act (TSCA) Section 12(b) Export Notification requirements.

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Component	CAS No	Weight-%	SARA 313 Status
Styrene	100-42-5	33	Listed
Cobalt compounds		< 0.15	Listed

**SARA 311/312 Hazardous Categorization**

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

**Clean Water Act**

This product contains the following listed substances:

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Styrene 100-42-5	1000 lb			Listed

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product contains the following HAPs:

Component	CAS No	Weight-%	HAPS data
Styrene	100-42-5	33	
Cobalt compounds		< 0.15	Listed

**CERCLA**

This product contains the following reportable quantities:

Component	40 CFR 302.4 RQ	40 CFR 355 EHS TPQs
Styrene	1000 lb 454 kg	

**Chemical Weapons Convention (CWC)**

This product contains a Schedule 3 Toxic chemical precursor.

**State Regulations****California Proposition 65**

WARNING: This material contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. The California Safe Drinking Water and Toxic Enforcement Act of 1986 requires that clear and reasonable warning be given prior to exposing any person to this chemical.

**Canada**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

<b>16. OTHER INFORMATION</b>
------------------------------

**NFPA Rating****Health 2****Flammability 3****Instability 1****Prepared By**

Reichhold Product Regulatory Department  
Phone Number: 919-990-7500

**Revision Date:**

24/Nov/2014

**Revision Summary:**

This data sheet contains changes from the previous version in section(s):  
2, 3, 4, 5, 11, 14

**Former date:**

31 May 2013

This information is provided in good faith and is correct to the best of Reichhold's knowledge as of the date hereof and is designed to assist our customers; however, Reichhold makes no representation as to its completeness or accuracy. Our products are intended for sale to industrial and commercial customers. We require customers to inspect and test our products before use and to satisfy themselves as to suitability for their specific applications. Any use which Reichhold customers or third parties make of this information, or any reliance on, or decisions made based upon it, are the responsibility of such customer or third party. Reichhold disclaims responsibility for damages, or liability, of any kind resulting from the use of this information. THERE ARE NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THIS INFORMATION OR TO THE PRODUCT IT DESCRIBES. IN NO EVENT SHALL REICHHOLD BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

**End of Safety Data Sheet**



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

29 CFR 1910.1200 (OSHA HazCom 2012)

## SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

### Product identifier

Trade name : Maxguard™ CG-SG-0010 SPRAY GRANITE  
GELCOAT  
™ Trademark, Ashland or its subsidiaries, registered in  
various countries

### Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Industrial chemical

<b>Details of the supplier of the safety data sheet</b>  Ashland P.O. Box 2219 Columbus, OH 43216 United States of America  EHSProductSafety@ashland.com	<b>Emergency telephone number</b> 1-800-ASHLAND (1-800-274-5263)  <b>Regulatory Information Number</b> 1-800-325-3751  <b>Product Information</b> 614-790-3333
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## SECTION 2. HAZARDS IDENTIFICATION

### GHS Classification

Flammable liquids : Category 2

Combustible Dust :

Skin irritation : Category 2

Eye irritation : Category 2A

Skin sensitization : Category 1

Reproductive toxicity : Category 2

Specific target organ systemic toxicity - single exposure : Category 3 (Respiratory system)

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

Specific target organ systemic toxicity - repeated exposure (Inhalation) : Category 1 (Auditory system)

**GHS label elements**

Hazard pictograms :



Signal Word : Danger

Hazard Statements : Highly flammable liquid and vapor.  
 May form combustible dust concentrations in air.  
 Causes skin irritation.  
 May cause an allergic skin reaction.  
 Causes serious eye irritation.  
 May cause respiratory irritation.  
 Suspected of damaging fertility or the unborn child.  
 Causes damage to organs (Auditory system) through prolonged or repeated exposure if inhaled.

Precautionary Statements : **Prevention:**  
 Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
 Keep container tightly closed.  
 Ground/bond container and receiving equipment.  
 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
 Use only non-sparking tools.  
 Take precautionary measures against static discharge.  
 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
 Wash skin thoroughly after handling.  
 Do not eat, drink or smoke when using this product.  
 Use only outdoors or in a well-ventilated area.



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Contaminated work clothing must not be allowed out of the workplace.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.  
Keep dust/air mixtures away from ignition sources.  
Hazardous polymerization can occur under certain conditions.  
Avoid excessive heat, direct sunlight, peroxides, and other polymerization catalysts. Store in a cool place and maintain proper concentrations of inhibitor and oxygen.

**Response:**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF exposed or concerned: Get medical advice/ attention.  
If skin irritation or rash occurs: Get medical advice/ attention.  
If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash before reuse.  
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage:**

Store in a well-ventilated place. Keep container tightly closed.  
Store in a well-ventilated place. Keep cool.  
Store locked up.

**Disposal:**

Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**

Static Accumulating liquid

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture  
Chemical nature : Static Accumulator  
Chemical nature : Defatter

**Hazardous components**

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

Chemical name	CAS-No.	Classification	Concentration (%)
STYRENE	100-42-5	Flam. Liq. 3; H226 Acute Tox. 4; H332 Skin Irrit. 2; H315 Eye Irrit. 2A; H319 STOT SE 3; H335 STOT RE 1; H372 Asp. Tox. 1; H304	31.0937
METHYLMETHACRYLATE	80-62-6	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Skin Sens. 1B; H317 STOT SE 3; H335	10.00
SILICA COLLOIDAL AMORPHOUS	112945-52-5	This material is not considered hazardous under the OSHA Hazard Communication Standard (HazCom 2012).	2.00
POTASSIUM 2- ETHYLHEXANOATE	3164-85-0	Skin Irrit. 2; H315 Repr. 2; H361	0.112

**SECTION 4. FIRST AID MEASURES**

General advice : Move out of dangerous area.  
 Call a POISON CENTRE or doctor/physician if exposed or





<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

you feel unwell.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.

- If inhaled : Move to fresh air.  
IF INHALED: Call a POISON CENTER/doctor if you feel unwell.  
Keep patient warm and at rest.  
If unconscious place in recovery position and seek medical advice.
- In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention.  
If on skin, rinse well with water.  
Wash contaminated clothing before re-use.  
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.  
Remove contact lenses.  
Protect unharmed eye.
- If swallowed : Obtain medical attention.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye irritation.  
May cause respiratory irritation.  
Suspected of damaging fertility or the unborn child.  
Causes damage to organs through prolonged or repeated exposure if inhaled.  
Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:  
stomach or intestinal upset (nausea, vomiting, diarrhea)  
irritation (nose, throat, airways)  
Cough  
effects on memory  
loss of appetite  
Shortness of breath  
confusion  
pain in the hands and feet  
Difficulty in breathing



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Notes to physician : No hazards which require special first aid measures.

## SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Water spray  
Foam  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : Organic dusts at sufficient concentration can form explosive mixtures in air.  
Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.  
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.  
Do not allow run-off from fire fighting to enter drains or water courses.
- Hazardous combustion products : Hydrocarbons  
carbon dioxide and carbon monoxide  
toxic fumes  
Nitrogen oxides (NO<sub>x</sub>)  
Sulphur oxides
- Specific extinguishing methods : Product is compatible with standard fire-fighting agents.
- Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.  
Use a water spray to cool fully closed containers.
- Polymerization will take place under fire conditions. If polymerization occurs in a closed container, there is a possibility it will rupture violently. Cool storage container with water, if exposed to fire.



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Special protective equipment : In the event of fire, wear self-contained breathing apparatus.  
for firefighters

## SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.  
Remove all sources of ignition.  
Use personal protective equipment.  
Ensure adequate ventilation.  
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.  
Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
- Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
- Other information : Comply with all applicable federal, state, and local regulations.  
Suppress (knock down) gases/vapours/mists with a water spray jet.

## SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Open drum carefully as content may be under pressure.  
Avoid formation of aerosol.  
Provide sufficient air exchange and/or exhaust in work rooms.  
Do not breathe vapours/dust.  
Do not smoke.  
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.  
Dispose of rinse water in accordance with local and national regulations.  
Container hazardous when empty.



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Take precautionary measures against static discharges.  
 Avoid exposure - obtain special instructions before use.  
 Avoid contact with skin and eyes.  
 Smoking, eating and drinking should be prohibited in the application area.  
 For personal protection see section 8.  
 Secondary operations, such as grinding and sanding, may produce dust.  
 Maintain good housekeeping. Do not permit dust layers to accumulate, for example, on floors, ledges, and equipment, in order to avoid any potential for dust explosion hazards.

For further guidance on prevention of dust explosions, refer to National Fire Protection Association (NFPA) 654: "Standard for the Prevention of Fire and Dust Explosions, from the Manufacturing, Processing and Handling of Combustible Particulate Solids".

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.  
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
 Observe label precautions.  
 No smoking.  
 Electrical installations / working materials must comply with the technological safety standards.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
STYRENE	100-42-5	TWA	20 ppm	ACGIH
		STEL	40 ppm	ACGIH
		REL	50 ppm 215 mg/m <sup>3</sup>	NIOSH/GUID E
		STEL	100 ppm 425 mg/m <sup>3</sup>	NIOSH/GUID E
		TWA	100 ppm	OSHA/Z2
		Ceiling	200 ppm	OSHA/Z2
		MAX. CONC	600 ppm	OSHA/Z2

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
GELCOAT  
™ Trademark, Ashland or its subsidiaries, registered  
in various countries  
851504

METHYLMETHACRYLATE	80-62-6	TWA	50 ppm	ACGIH
		STEL	100 ppm	ACGIH
		REL	100 ppm 410 mg/m3	NIOSH/GUID E
		PEL	100 ppm 410 mg/m3	OSHA_TRA NS
		TWA	50 ppm	ACGIHLIS_P
		STEL	100 ppm	ACGIHLIS_P
SILICA COLLOIDAL AMORPHOUS	112945-52-5	REL	6 mg/m3	NIOSH/GUID E
		TWA	0.8 mg/m3	Z3

Hazardous components without workplace control parameters

Hazardous components without workplace control parameters

**Biological occupational exposure limits**

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
STYRENE	100-42-5	Mandelic acid plus phenylglyoxylic acid	Urine	End of shift (As soon as possible after exposure ceases)	400 mg/g Creatinine	ZUS_A CGIHB
		Styrene	Urine	End of shift (As soon as possible after exposure ceases)	40 µg/l	ZUS_A CGIHB

**Engineering measures** : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.  
Provide appropriate exhaust ventilation at places where dust is formed.

**Personal protective equipment**

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

Hand protection Remarks	: The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Eye protection	: Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.
Skin and body protection	: Wear resistant gloves (consult your safety equipment supplier). Wear as appropriate: Impervious clothing Safety shoes Flame-resistant clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place. Discard gloves that show tears, pinholes, or signs of wear. Wear resistant gloves such as: polyvinyl alcohol
Hygiene measures	: Wash hands before breaks and at the end of workday. When using do not eat or drink. When using do not smoke.

---

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Odour	: pungent
Odour Threshold	: No data available
pH	: No data available
Melting point/freezing point	: No data available
Boiling point/boiling range	: 212.9 °F / 100.5 °C (1,013.25 hPa)

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

Flash point	: Calculated Phase Transition Liquid/Gas 12.8 °C Method: Seta closed cup
Evaporation rate	: No data available
Flammability (solid, gas)	: May form combustible dust concentrations in air (during processing).
Flammability (liquids)	: Static Accumulating liquid
Upper explosion limit	: Upper flammability limit 12.5 %(V) Method: Calculated Explosive Limit
Lower explosion limit	: lower flammability limit 1.1 %(V) Method: Calculated Explosive Limit
Vapour pressure	: 37.2 hPa (20 °C) Calculated Vapor Pressure
Relative vapour density	: No data available
Relative density	: No data available
Density	: 1.078 g/cm <sup>3</sup> (25 °C)
Solubility(ies)	
Water solubility	: insoluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Thermal decomposition	: No data available
Viscosity	
Viscosity, dynamic	: No data available
Viscosity, kinematic	: > 20.5 mm <sup>2</sup> /s (40 °C)
Oxidizing properties	: No data available



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

## SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Hazardous polymerisation may occur. Vapours may form explosive mixture with air. This product does not present a dust explosion hazard as delivered. However, fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source, is a potential dust explosion hazard.
Conditions to avoid	: Heat, flames and sparks.  Exposure to air. Exposure to sunlight. Exposure to moisture
Incompatible materials	: Acids aluminum aluminum chloride Amines Bases Copper Copper alloys halogens iron chloride metal salts nitrates reducing agents strong alkalis Strong oxidizing agents UV light. Peroxides
Hazardous decomposition products	carbon dioxide and carbon monoxide Hydrocarbons Nitrogen oxides (NO <sub>x</sub> ) Sulphur oxides toxic fumes





<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

## SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation  
Skin contact  
Eye Contact  
Ingestion

### Acute toxicity

Not classified based on available information.

#### Components:

##### STYRENE:

Acute oral toxicity : LD50 Oral (Rat): > 2,000 mg/kg

Acute inhalation toxicity : LC 50 (Rat): 11.8 mg/l, 2770 ppm  
Exposure time: 4 h  
Test atmosphere: vapour

No observed adverse effect level (Humans): 100 ppm  
Exposure time: 7 h  
Test atmosphere: vapour

Acute dermal toxicity : LD 50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: No adverse effect has been observed in acute dermal toxicity tests.

##### METHYLMETHACRYLATE:

Acute oral toxicity : LD 50 (Rat): 7,800 mg/kg

Acute inhalation toxicity : LC 50 (Rat): 29.8 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour

Acute dermal toxicity : LD 50 (Rabbit): > 5,000 mg/kg

##### SILICA COLLOIDAL AMORPHOUS:

Acute oral toxicity : LD 50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD 50 (Rabbit): > 2,000 mg/kg  
Assessment: Not classified as acutely toxic by dermal absorption under GHS.

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

**POTASSIUM 2-ETHYLHEXANOATE:**

Acute oral toxicity : LD50 (Rat): 3,640 mg/kg  
 Remarks: Information given is based on data obtained from similar substances.

Acute inhalation toxicity : LC50 (Rat): > 0.11 mg/l  
 Exposure time: 8 h  
 Test atmosphere: dust/mist  
 Assessment: Not classified as acutely toxic by inhalation under GHS.  
 Remarks: No mortality observed at this dose.  
 Information given is based on data obtained from similar substances.

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
 Assessment: Not classified as acutely toxic by dermal absorption under GHS.  
 Remarks: Information given is based on data obtained from similar substances.

**Skin corrosion/irritation**

Causes skin irritation.

**Product:**

Remarks: May cause skin irritation and/or dermatitis.

Remarks: Individuals with direct skin contact with methyl methacrylate have experienced temporary loss of feeling and mild nerve damage in the fingers.

Result: Repeated exposure may cause skin dryness or cracking.

**Components:****STYRENE:**

Species: Rabbit

Result: Irritating to skin.

Species: human skin

Result: No skin irritation

**METHYLMETHACRYLATE:**

Result: Irritating to skin.

**SILICA COLLOIDAL AMORPHOUS:**

Result: No skin irritation

**POTASSIUM 2-ETHYLHEXANOATE:**



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Irritating to skin.  
GLP: yes

**Serious eye damage/eye irritation**

Causes serious eye irritation.

**Product:**

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin., Causes serious eye irritation.

**Components:**

**STYRENE:**

Result: Irritating to eyes.

Remarks: Vapour during processing may be irritating to the respiratory tract and to the eyes.

**METHYLMETHACRYLATE:**

Result: Slightly irritating to eyes

**SILICA COLLOIDAL AMORPHOUS:**

Result: No eye irritation

**POTASSIUM 2-ETHYLHEXANOATE:**

Result: Possibly irritating to eyes

**Respiratory or skin sensitisation**

Skin sensitisation: May cause an allergic skin reaction.

Respiratory sensitisation: Not classified based on available information.

**Components:**

**STYRENE:**

Exposure routes: Skin contact

Species: Guinea pig

Assessment: Does not cause skin sensitisation.

Result: negative

Exposure routes: inhalation (vapour)

Species: Humans

Assessment: Does not cause respiratory sensitisation.

Result: negative

**METHYLMETHACRYLATE:**

Test Type: Local lymph node assay

Species: Mouse

Assessment: The product is a skin sensitiser, sub-category 1B.

Method: OECD Test Guideline 429



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Germ cell mutagenicity

Not classified based on available information.

**Carcinogenicity**

Not classified based on available information.

**Product:**

Carcinogenicity - Assessment : Styrene has been tested for carcinogenicity in rats and mice. Styrene caused lung tumors in mice only. These tumors are not considered to be relevant to humans.

**Reproductive toxicity**

Suspected of damaging fertility or the unborn child.

**Components:**

POTASSIUM 2-ETHYLHEXANOATE:

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

**STOT - single exposure**

May cause respiratory irritation.

**Components:**

STYRENE:

Assessment: May cause respiratory irritation.

METHYLMETHACRYLATE:

Target Organs: Upper respiratory tract

Assessment: May cause respiratory irritation.

**STOT - repeated exposure**

Causes damage to organs (Auditory system) through prolonged or repeated exposure if inhaled.

**Components:**

STYRENE:

Exposure routes: inhalation (vapour)

Target Organs: Auditory system

Assessment: Causes damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity**

**Components:**

STYRENE:

Species: Human

85 mg/m<sup>3</sup>

Application Route: inhalation (vapour)

Species: Human

615 mg/kg

Application Route: Skin contact

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

**Aspiration toxicity**

Not classified based on available information.

**Components:**

STYRENE:

May be fatal if swallowed and enters airways.

**Further information****Product:**

Remarks: Solvents may degrease the skin.

**Carcinogenicity:****IARC**

Group 2B: Possibly carcinogenic to humans

STYRENE

100-42-5

**OSHA**

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**NTP**

Reasonably anticipated to be a human carcinogen

STYRENE

100-42-5

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Product:**

Ecotoxicology Assessment

Acute aquatic toxicity : Acute aquatic toxicity Category 2; Toxic to aquatic life.

Chronic aquatic toxicity : Chronic aquatic toxicity Category 3; Harmful to aquatic life with long lasting effects.

**Components:**

STYRENE:

Toxicity to fish : LC 50 (Pimephales promelas (fathead minnow)): 4.02 mg/l  
Exposure time: 96 hToxicity to daphnia and other aquatic invertebrates : EC 50 (Water flea (Daphnia magna)): 4.7 mg/l  
Exposure time: 48 hToxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 4.9 mg/l  
Exposure time: 72 h

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Water flea (*Daphnia magna*)): 1.01 mg/l  
 Exposure time: 21 d
- Toxicity to bacteria : EC 50 (activated sludge): ca. 500 mg/l  
 Exposure time: 0.5 h
- Toxicity to soil dwelling organisms : NOEC (*Eisenia fetida* (earthworms)): 34 mg/kg  
 Exposure time: 14 d  
 Method: OECD Test Guideline 207
- METHYLMETHACRYLATE:**
- Toxicity to fish : LC 50 (Fathead minnow (*Pimephales promelas*)): 130 mg/l  
 Exposure time: 96 h  
 Method: Static
- LC 50 (*Oncorhynchus mykiss* (rainbow trout)): > 79 mg/l  
 Exposure time: 96 h  
 Test Type: flow-through test
- Toxicity to daphnia and other aquatic invertebrates : EC 50 (Water flea (*Daphnia magna*)): 69 mg/l  
 Exposure time: 48 h  
 Test Type: flow-through test
- Toxicity to algae : EC 50 (*Pseudokirchneriella subcapitata* (algae)): > 110 mg/l  
 Exposure time: 72 h  
 Test Type: static test
- Toxicity to fish (Chronic toxicity) : LC 50 (*Danio rerio* (zebra fish)): 33.7 mg/l  
 Exposure time: 35 d  
 Test Type: flow-through test  
 Method: OECD Test Guideline 210
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Water flea (*Daphnia magna*)): 37 mg/l  
 Exposure time: 21 d  
 Test Type: flow-through test  
 Method: OECD Test Guideline 211
- SILICA COLLOIDAL AMORPHOUS:**
- Toxicity to fish : LC50 (*Brachydanio rerio* (zebrafish)): > 10,000 mg/l  
 Exposure time: 96 h  
 Method: OECD Test Guideline 203
- Ecotoxicology Assessment  
 Acute aquatic toxicity : Not classified based on available information.



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

Chronic aquatic toxicity : Not classified based on available information.

**POTASSIUM 2-ETHYLHEXANOATE:**

Toxicity to fish : LC50 (Fish): > 100 mg/l  
Exposure time: 96 h  
Remarks: Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 106 mg/l  
Exposure time: 48 h  
Test Type: static test  
Remarks: Information given is based on data obtained from similar substances.

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 49.3 mg/l  
End point: Growth inhibition  
Exposure time: 72 h  
Test Type: static test  
Remarks: Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 25 mg/l  
Exposure time: 21 d  
Test Type: static test  
Remarks: Information given is based on data obtained from similar substances.

**Persistence and degradability**

**Components:**

**STYRENE:**

Biodegradability : Result: Readily biodegradable  
Biodegradation: > 60 %  
Exposure time: 10 d

**METHYLMETHACRYLATE:**

Biodegradability : Result: Readily biodegradable  
Biodegradation: 94.3 %  
Exposure time: 14 d  
Method: OECD Test Guideline 301C

**SILICA COLLOIDAL AMORPHOUS:**

Biodegradability : Result: The methods for determining biodegradability are not applicable to inorganic substances.

**POTASSIUM 2-ETHYLHEXANOATE:**

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

Biodegradability : Result: Readily biodegradable  
 Biodegradation: 99 %  
 Exposure time: 28 d  
 Remarks: Information given is based on data obtained from  
 similar substances.

No data available

**Bioaccumulative potential****Components:****STYRENE:**

Bioaccumulation : Bioconcentration factor (BCF): &lt; 100

Partition coefficient: n-  
octanol/water : log Pow: 2.96 (25 °C)**METHYLMETHACRYLATE:**Partition coefficient: n-  
octanol/water : log Pow: 1.38

No data available

**Mobility in soil****Components:****STYRENE:**Distribution among  
environmental compartments : Koc: 352

No data available

**Other adverse effects****Product:**Additional ecological  
information : An environmental hazard cannot be excluded in the event of  
unprofessional handling or disposal., Toxic to aquatic life.**Components:****STYRENE:**Results of PBT and vPvB  
assessment : This substance is not considered to be persistent,  
bioaccumulating and toxic (PBT). This substance is not  
considered to be very persistent and very bioaccumulating  
(vPvB).**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**General advice : Dispose of in accordance with all applicable local, state and  
federal regulations.



**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
GELCOAT  
™ Trademark, Ashland or its subsidiaries, registered  
in various countries  
851504

**SECTION 14. TRANSPORT INFORMATION****International transport regulations****REGULATION**

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
-----------	----------------------	---------------	--------------------	---------------	------------------------------

**MX\_DG**

UN 1866	RESINA, SOLUCIONES DE	3		II	
---------	-----------------------	---	--	----	--

**INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER**

UN 1866	Resin solution	3		II	
---------	----------------	---	--	----	--

**INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO**

UN 1866	Resin solution	3		II	
---------	----------------	---	--	----	--

**INTERNATIONAL MARITIME DANGEROUS GOODS**

UN 1866	RESIN SOLUTION	3		II	MARINE POLLUTANT:( ALIPHATIC PETROLEUM DISTILLATES, DI-TERT- BUTYLHYDRO QUINONE-2,5)
---------	----------------	---	--	----	--------------------------------------------------------------------------------------------------------

**TDG\_INWT\_C**

UN 1866	RESIN SOLUTION	3		II	
---------	----------------	---	--	----	--

**TDG\_RAIL\_C**

UN 1866	RESIN SOLUTION	3		II	
---------	----------------	---	--	----	--

**TDG\_ROAD\_C**

UN 1866	RESIN SOLUTION	3		II	
---------	----------------	---	--	----	--

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

**U.S. DOT - INLAND WATERWAYS**

UN	1866	Resin solution	3	II
----	------	----------------	---	----

**CFR\_RAIL\_C**

UN	1866	Resin solution	3	II
----	------	----------------	---	----

**U.S. DOT - ROAD**

UN	1866	Resin solution	3	II
----	------	----------------	---	----

**\*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant	yes
------------------	-----

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

**SECTION 15. REGULATORY INFORMATION**

**EPCRA - Emergency Planning and Community Right-to-Know Act  
 CERCLA Reportable Quantity**

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
STYRENE	100-42-5	1000	3216.085574

**SARA 311/312 Hazards** : Reactivity Hazard  
 Fire Hazard  
 Acute Health Hazard  
 Chronic Health Hazard

**SARA 313 Component(s)**

STYRENE	100-42-5	31.09 %
METHYLMETHACRYLAT E	80-62-6	10.00 %

**California Prop 65** WARNING! This product contains a chemical known to the State of California to cause cancer.  
 ETHYL BENZENE 100-41-4



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

BENZENE 71-43-2

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

ETHYLENE GLYCOL 107-21-1

TOLUENE 108-88-3

BENZENE 71-43-2

METHYL CHLORIDE 74-87-3

**The components of this product are reported in the following inventories:**

- TSCA : On TSCA Inventory
- DSL : All components of this product are on the Canadian DSL
- AICS : On the inventory, or in compliance with the inventory
- ENCS : On the inventory, or in compliance with the inventory
- KECI : On the inventory, or in compliance with the inventory
- PICCS : On the inventory, or in compliance with the inventory
- IECSC : On the inventory, or in compliance with the inventory

**Inventories**

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

---

**SECTION 16. OTHER INFORMATION**

**Further information**

Revision Date: 11/07/2016

<b>NFPA:</b>	<b>HMIS III:</b>
--------------	------------------

**SAFETY DATA SHEET**

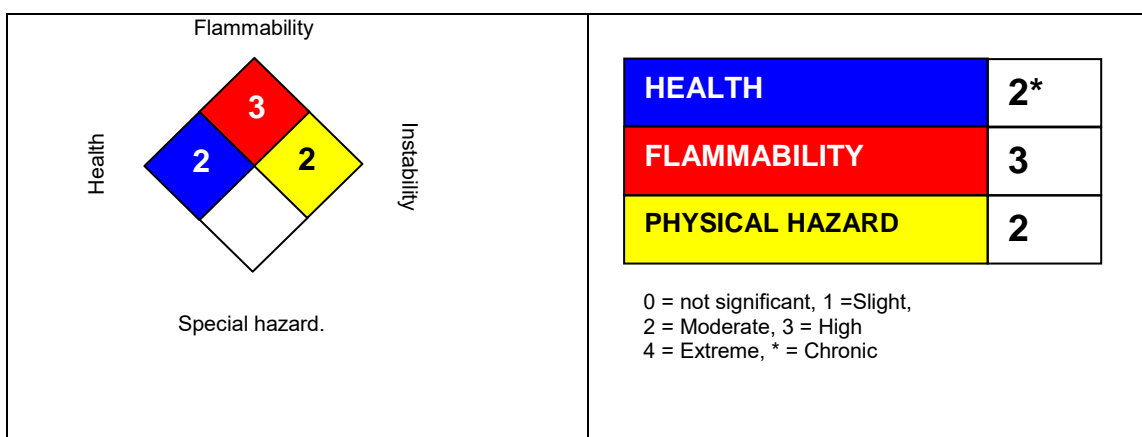
Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
 GELCOAT  
 ™ Trademark, Ashland or its subsidiaries, registered  
 in various countries  
 851504

**NFPA Flammable and Combustible Liquids Classification**

Flammable Liquid Class IB

**Full text of H-Statements**

H225	Highly flammable liquid and vapor.
H226	Flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure if inhaled.

Sources of key data used to compile the Safety Data Sheet

Ashland internal data including own and sponsored test reports

The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This SDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).



<b>SAFETY DATA SHEET</b>	Revision Date: 11/07/2016
	Print Date: 12/7/2017
	SDS Number: R0402806
Maxguard™ CG-SG-0010 SPRAY GRANITE GELCOAT ™ Trademark, Ashland or its subsidiaries, registered in various countries 851504	Version: 1.3

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :

ACGIH : American Conference of Industrial Hygienists

BEI : Biological Exposure Index

CAS : Chemical Abstracts Service (Division of the American Chemical Society).

CMR : Carcinogenic, Mutagenic or Toxic for Reproduction

FG : Food grade

GHS : Globally Harmonized System of Classification and Labeling of Chemicals.

H-statement : Hazard Statement

IATA : International Air Transport Association.

IATA-DGR : Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO : International Civil Aviation Organization

ICAO-TI (ICAO) : Technical Instructions by the "International Civil Aviation Organization"

IMDG : International Maritime Code for Dangerous Goods

ISO : International Organization for Standardization

logPow : octanol-water partition coefficient

LCxx : Lethal Concentration, for xx percent of test population

LDxx : Lethal Dose, for xx percent of test population.

ICxx : Inhibitory Concentration for xx of a substance

Ecxx : Effective Concentration of xx

N.O.S.: Not Otherwise Specified

OECD : Organization for Economic Co-operation and Development

OEL : Occupational Exposure Limit

P-Statement : Precautionary Statement

PBT : Persistent , Bioaccumulative and Toxic

PPE : Personal Protective Equipment

STEL : Short-term exposure limit

STOT : Specific Target Organ Toxicity

TLV : Threshold Limit Value

TWA : Time-weighted average

vPvB : Very Persistent and Very Bioaccumulative

WEL : Workplace Exposure Level

CERCLA : Comprehensive Environmental Response, Compensation, and Liability Act

DOT : Department of Transportation

FIFRA : Federal Insecticide, Fungicide, and Rodenticide Act

HMIRC : Hazardous Materials Information Review Commission

HMIS : Hazardous Materials Identification System

NFPA : National Fire Protection Association

NIOSH : National Institute for Occupational Safety and Health

OSHA : Occupational Safety and Health Administration

PMRA : Health Canada Pest Management Regulatory Agency

RTK : Right to Know

**SAFETY DATA SHEET**

Revision Date: 11/07/2016

Print Date: 12/7/2017

SDS Number: R0402806

Version: 1.3

Maxguard™ CG-SG-0010 SPRAY GRANITE  
GELCOAT  
™ Trademark, Ashland or its subsidiaries, registered  
in various countries  
851504

WHMIS : Workplace Hazardous Materials Information System



## Safety Data Sheet

FOR INDUSTRIAL USE ONLY

OFF WHITE

Revision Date 6/21/2017

### 1. Identification

**Product Name:** OFF WHITE

**SDS Number:** POLYCOR  
944WP506

**Product Use:** Industrial

**Manufacturer, Importer, Supplier:** Polynt Composites USA, Inc.  
99 East Cottage Avenue  
Carpentersville IL 60110  
E-Mail: MSDS@polynt.com

**Telephone**

**For Emergency Transportation Information**  
CHEMTREC US Domestic (800) 424-9300  
CHEMTREC International (703) 527-3887

For additional health, safety or regulatory information, call (847) 836-3659

### 2. Hazard identification

**EMERGENCY OVERVIEW:** May cause sensitization by inhalation and skin contact. Risk of serious damage to the lungs (by aspiration).

**GHS Classification**

Acute Tox. 4 Inhalation, Carc. 2, Eye Irrit. 2, Flam. Liq. 3, Repr. 2, Skin Irrit. 2, Skin Sens. 1, STOT RE 1

**Symbol(s) of Product**



**Signal Word**

Danger

**Possible Hazards**

14% of the mixture consists of ingredient(s) of unknown acute toxicity

**GHS HAZARD STATEMENTS**

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Skin Irritation, category 2	H315	Causes skin irritation.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.
Eye Irritation, category 2	H319	Causes serious eye irritation.

Acute Toxicity, Inhalation, category 4	H332	Harmful if inhaled.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
Reproductive Toxicity, category 2	H361	Suspected of damaging fertility or the unborn child.
STOT, repeated exposure, category 1	H372	Causes damage to organs through prolonged or repeated exposure.

**GHS LABEL PRECAUTIONARY STATEMENTS**

P201	Obtain special instructions before use.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash ... thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P321	Specific treatment (see ... on this label).
P332+P313	If skin irritation occurs: Get medical advice/attention.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use dry chemical, foam, water spray to extinguish.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to in accordance with local/regional/national/international regulations.

**GHS SDS PRECAUTIONARY STATEMENTS**

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do not eat, drink or smoke when using this product.
P363	Wash contaminated clothing before reuse.

**3. Composition/Information on ingredients**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
STYRENE MONOMER	100-42-5	30.36	GHS02-GHS07-GHS08	H226-302-304-315-319-332-351-361-372
TITANIUM DIOXIDE	13463-67-7	10 - 20	No Information	No Information
METHYL METHACRYLATE	80-62-6	1.0-5.0	GHS02-GHS07	H225-315-317-332-335

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

**4. First-aid measures**

**FIRST AID - EYE CONTACT:** If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**FIRST AID - INGESTION:** Aspiration hazard if swallowed - can enter lungs and cause damage. If ingested, consult a physician. Do NOT induce vomiting.

**FIRST AID - INHALATION:** Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

**FIRST AID - SKIN CONTACT:** Wash with soap and water. Remove contaminated clothes and shoes. Get medical attention if



irritation develops.

## 5. Fire-fighting measures

### Extinguishing Media:

**Suitable** Carbon Dioxide, Dry Chemical, Foam, Water Fog  
**Not suitable** Water Jet

**SPECIAL FIREFIGHTING PROCEDURES:** Use full protective clothing. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Do not use a solid water stream as it may scatter and spread fire. Cool containers / tanks with water spray. In case of fire: Use carbon dioxide, dry chemical, foam, water fog to extinguish. Vapors may be ignited by heat, pilot lights, other flames and ignition sources. Self-accelerating decomposition may occur if the specific control temperature is not maintained. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

## 6. Accidental release measures

**ENVIRONMENTAL MEASURES:** Prevent entry into waterways, sewers, basements or confined areas. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Avoid breathing vapors or mists. Use non-sparking tools and equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Do not flush into surface water or sanitary sewer system. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**PRECAUTIONARY MEASURES:** No Information

## 7. Handling and storage



**HANDLING:** Wash contaminated clothing before reuse. Avoid contact with skin, eyes and clothing. Ground/bond container and equipment. Wear personal protective equipment. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Do not breathe vapors, mist or gas.

**STORAGE:** Store contents under 100F (37.8C). Store drums with bung in the upright position. Electrical equipment must be grounded; suitable for the classification of the area where it is installed and conform to the National Electric Code (see NFPA 70). Store in cool well ventilated space away from incompatible materials. Keep container closed when not in use. Store and dispose according to national, state and local regulations.

**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**WORK PRACTICES:** Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

**SPECIAL HANDLING PROCEDURES:** Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

## 8. Exposure controls/personal protection

### Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA CEILING</u>
STYRENE MONOMER	20 ppm	40 ppm	100 ppm	200 ppm
TITANIUM DIOXIDE	10 mg/m <sup>3</sup>	N.E.	15 mg/m <sup>3</sup>	N.E.
METHYL METHACRYLATE	50 ppm	100 ppm	100 ppm	N.E.

**Further Advice:** MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation  
 Sk = Skin Sensitizer N.E. = Not Established

## Personal Protection



**RESPIRATORY PROTECTION:** When concentrations exceed the exposure limits specified, use of a NIOSH-approved dust, mist and fume respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a full facepiece, supplied air, or Self Contained Breathing Apparatus (SCBA) may be necessary. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



**SKIN PROTECTION:** Wear suitable protective equipment. Wear chemical resistant footwear and clothing such as gloves, an apron or a whole body suit as appropriate.



**EYE PROTECTION:** Ensure that eyewash stations and safety showers are close to the workstation location. Safety glasses with side-shields. Wear chemical-resistant glasses and/or goggles and a face shield when eye and face contact is possible due to splashing or spraying of material.



**OTHER PROTECTIVE EQUIPMENT:** Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.



**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

## 9. Physical and chemical properties

Color:	White	Physical State:	Liquid
Odor:	Moderate aromatic	Odor Threshold:	Not Available
Density, g/cm <sup>3</sup> :	1.310	pH:	Not Available
Freeze Point, °C:	Not Available	Viscosity:	Not Available
Solubility in Water:	Insoluble	Partition Coefficient, n-octanol/ water:	Not Available
Decomposition Temp., °C:	Not Available	Flash Point, °C / F°	28 / 82
Boiling Range, °C:	100	Explosive Limits, vol%:	Not Available
Vapor Pressure:	Not Available	Auto-ignition Temp., °C:	Not Available

(See "Other information" Section for abbreviation legend)

## 10. Stability and reactivity

**STABILITY:** The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution. Stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid improper addition of promotor and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If adding accelerator like cobalt drier, mix accelerator with base material before adding catalyst. Burning may produce obnoxious and toxic fumes. Hazardous polymerization may occur. Keep product away from heat, sparks, pilot lights, static electricity, and open flame.

**INCOMPATIBILITY:** Aluminum. Free radical initiators. Bases. Copper. Strong acids. Strong acids, strong bases, strong oxidizing agents. Strong oxidizing and reducing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal use.

## 11. Toxicological information



### Practical Experiences

**EFFECT OF OVEREXPOSURE - EYE CONTACT:** Exposure may cause mild irritation. Symptoms may include stinging, tearing, and redness.

**EFFECT OF OVEREXPOSURE - INGESTION:** May cause severe gastrointestinal disturbance with headache, nausea, vomiting and

diarrhea.

**EFFECT OF OVEREXPOSURE - INHALATION:** Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). Prolonged, repeated or high exposures may cause central nervous system depression leading to headaches, nausea, drowsiness, dizziness, and possibly narcosis. In extreme cases, may cause loss of consciousness. Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effect, such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Ingestion of large doses may cause headaches, dizziness, nausea, vomiting, and drowsiness. Irritating to skin.

**EFFECT OF OVEREXPOSURE - SKIN CONTACT:** Prolonged skin contact may defat the skin and produce dermatitis.

**EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS:** Repeated or prolonged exposure may cause central nervous system damage. Prolonged skin contact may defat the skin and produce dermatitis. Prolonged or repeated exposure may cause liver and kidney effects.

**CARCINOGENICITY:** \* This product contains the following chemicals classified by the International Agency for Research on Cancer (IARC) as 1, 2A, or 2B carcinogens:

\*This product may contain a chemical which is listed in the NTP report on carcinogens.

This product may contain Titanium Dioxide, which is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. This classification is relevant when exposed to titanium dioxide in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities.

**PRIMARY ROUTE(S) OF ENTRY:** Eye Contact, Ingestion, Inhalation, Skin Contact

#### Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name according to EEC</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
100-42-5	STYRENE MONOMER	1000 mg/kg Rat	N.I.	11.7 mg/L Rat
13463-67-7	TITANIUM DIOXIDE	>10000 mg/kg Rat	N.I.	N.I.
80-62-6	METHYL METHACRYLATE	8420 - 10000 mg/kg Rat	5000 - 7500 mg/kg Rabbit	78000 mg/l Rat

N.I. = No Information

## 12. Ecological information

**ECOLOGICAL INFORMATION:** Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits. Discharge into the environment must be avoided.

## 13. Disposal considerations



**DISPOSAL METHOD:** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

## 14. Transport information

**SPECIAL TRANSPORT PRECAUTIONS:** No Information

### International transport regulations

<b>Regulatory Information:</b>	<b>UN/NA Number</b>	<b>Proper Shipping Name</b>	<b>Classes/ *PG</b>	<b>Reportable Quantity (RQ)</b>
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/IMDG	UN1866	RESIN SOLUTION	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION	Class 3 PGIII	

## 15. Regulatory information

### U.S. Federal Regulations:

#### CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6

#### SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
ALUMINA (ALUMINUM OXIDE)	1344-28-1

#### TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

### U.S. State Regulations:

#### NEW JERSEY RIGHT-TO-KNOW:

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
METHYL METHACRYLATE	80-62-6
DIPROPYLENE GLYCOL MONOMETHYL ETHER	34590-94-8
MINERAL SPIRITS(PETROLEUM NAPHTHA)	64742-88-7
ISOPROPYL ALCOHOL	67-63-0
ETHYLBENZENE	100-41-4
SILICA, CRYSTALLINE-QUARTZ	14808-60-7
MINERAL SPIRITS	8032-32-4
METHYL ALCOHOL	67-56-1
HYDROQUINONE	123-31-9

#### PENNSYLVANIA RIGHT-TO-KNOW

The following hazardous ingredients are present:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
METHYL METHACRYLATE	80-62-6
DIPROPYLENE GLYCOL MONOMETHYL ETHER	34590-94-8
ISOPROPYL ALCOHOL	67-63-0
ETHYLBENZENE	100-41-4
SILICA, CRYSTALLINE-QUARTZ	14808-60-7
MINERAL SPIRITS	8032-32-4
DIETHYLENE GLYCOL	111-46-6
T-BUTYL CATECHOL	98-29-3
METHYL ALCOHOL	67-56-1
HYDROQUINONE	123-31-9

**U.S. State Regulations:****MASSACHUSETTS RIGHT-TO-KNOW:**

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
METHYL METHACRYLATE	80-62-6
DIPROPYLENE GLYCOL MONOMETHYL ETHER	34590-94-8
ISOPROPYL ALCOHOL	67-63-0
ETHYLBENZENE	100-41-4
SILICA, CRYSTALLINE-QUARTZ	14808-60-7
T-BUTYL CATECHOL	98-29-3
METHYL ALCOHOL	67-56-1
HYDROQUINONE	123-31-9

**CALIFORNIA PROPOSITION 65 CARCINOGENS**

Warning: This product contains a chemical known to the state of California to cause cancer.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
ETHYLBENZENE	100-41-4
CARBON BLACK	1333-86-4

**CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS**

Warning: This product contains a chemical known to the state of California to cause birth defects or other reproductive harm.

<u>Chemical Name</u>	<u>CAS-No.</u>
METHYL ALCOHOL	67-56-1

**International Regulations**

<b>Chemical Inventories</b>	<b>Australia inventory (AICS)</b>	Not Determined
	<b>Canada inventory (DSL)</b>	Not Determined
	<b>Japan Inventory (ENCSC)</b>	Not Determined
	<b>China Inventory (IECSC)</b>	Not Determined
	<b>Korea Inventory (KECI)</b>	Not Determined
	<b>New Zealand (NZIoC)</b>	Not Determined
	<b>Philippines (PICCS)</b>	Not Determined
	<b>United States Inventory (TSCA 8b)</b>	All components are listed or exempted

**16. Other information**

<b>Revision Date:</b>	6/21/2017	<b>Supersedes Date:</b>	11/21/2015
<b>Reason for revision:</b>	Updated SDS Information		
<b>Datasheet produced by:</b>	Regulatory Department		

**HMIS Ratings:**

<b>Health:</b>	2*	<b>Flammability:</b>	3	<b>Reactivity:</b>	2	<b>Personal Protection:</b>	N.I.	<b>Chronic Rating:</b>	*
----------------	----	----------------------	---	--------------------	---	-----------------------------	------	------------------------	---

**Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

**Icons for GHS Pictograms shown in Section 3 describing each ingredient:**

GHS02	
GHS07	
GHS08	

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polynt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polynt Composites USA, Inc. are subject to Polynt Composites USA, Inc terms and conditions of sale. Polynt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polynt Composites USA, Inc, except that the product shall conform to Polynt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.



## Safety Data Sheet

FOR INDUSTRIAL USE ONLY

### HAP37 TAN

#### Section 1. Product and company identification

**Product Name:** HAP37 TAN

**SDS Number:** POLYCOR  
964NP451

**Product Use:** Industrial

**Manufacturer, Importer, Supplier:** Polynt Composites USA, Inc.  
99 East Cottage Avenue  
Carpentersville IL 60110

E-Mail: MSDS@pccrusa.com

**Telephone:** For Emergency Transportation Information  
CHEMTREC US Domestic (800) 424-9300  
CHEMTREC International (703) 527-3887

For additional health and safety or regulatory information, call 1 847-836-3627.

#### Section 2. Hazard(s) identification

**EMERGENCY OVERVIEW:** May cause sensitization by inhalation and skin contact. Risk of serious damage to the lungs (by aspiration).

##### GHS Classification

Acute Tox. 4 Inhalation, Carc. 2, Eye Irrit. 2, Flam. Liq. 3, Repr. 2, Skin Irrit. 2, Skin Sens. 1, STOT RE 1

##### Symbol(s) of Product



##### Signal Word

Danger

##### Possible Hazards

4% of the mixture consists of ingredient(s) of unknown acute toxicity

##### GHS HAZARD STATEMENTS

Acute Toxicity, Inhalation, category 4	H332	Harmful if inhaled.
Carcinogenicity, category 2	H351	Suspected of causing cancer. Classified as Category 2 based on limited evidence on human and/or animal studies. Routes of exposure are dependant on ingredient form.
Eye Irritation, category 2	H319	Causes serious eye irritation.

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Reproductive Toxicity, category 2	H361	Suspected of damaging fertility or the unborn child. Classified Category 2 suspected human reproductive toxicant.
STOT, repeated exposure, category 1	H372	Causes damage to organs through prolonged or repeated exposure.
Skin Irritation, category 2	H315	Causes skin irritation.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.

**GHS LABEL PRECAUTIONARY STATEMENTS**

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362	Take off contaminated clothing.

**GHS SDS PRECAUTIONARY STATEMENTS**

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do no eat, drink or smoke when using this product.
P363	Wash contaminated clothing before reuse.

**Section 3. Composition/Information on ingredients**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
STYRENE MONOMER	100-42-5	30.80	GHS02-GHS07-GHS08	H226-302-315-319-332-351-361-372
METHYL METHACRYLATE	80-62-6	1.0-5.0	GHS02-GHS07	H225-315-317-332-335
TITANIUM DIOXIDE	13463-67-7	1.0-5.0	No Information	No Information
COBALT 2-ETHYLHEXANOATE, 12% COBALT	136-52-7	0.1-1.0	GHS06-GHS08	H302-312-331-361
ETHYLBENZENE	100-41-4	0.1-1.0	GHS02-GHS07-GHS08	H225-304-332-373

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

**Section 4. First-aid measures**

**FIRST AID - EYE CONTACT:** If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**FIRST AID - INGESTION:** Aspiration hazard if swallowed - can enter lungs and cause damage. If ingested, consult a physician. Do NOT induce vomiting.

**FIRST AID - INHALATION:** Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effect, such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Give oxygen or artificial respiration if needed. Move to fresh air in case of accidental inhalation of vapours. Remove person to fresh air. If signs/symptoms continue, get medical attention.

**FIRST AID - SKIN CONTACT:** Wash contaminated clothing before reuse. Wash skin with soap and water for several minutes. Get medical attention if irritation develops. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Prolonged skin contact may defat the skin and produce dermatitis.

**Section 5. Fire-fighting measures**



**Extinguishing Media:**

**Suitable** Carbon Dioxide, Dry Chemical, Foam, Water Fog  
**Not suitable** Water Jet

**SPECIAL FIREFIGHTING PROCEDURES:** Use full protective clothing. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Water spray. Dry powder. Carbon dioxide (CO<sub>2</sub>). Do not use a solid water stream as it may scatter and spread fire. Cool containers / tanks with water spray. Vapors may be ignited by heat, pilot lights, other flames and ignition sources. Self-accelerating decomposition may occur if the specific control temperature is not maintained. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

## Section 6. Accidental release measures

**ENVIRONMENTAL MEASURES:** Prevent entry into waterways, sewers, basements or confined areas. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Avoid breathing vapors or mists. Use non-sparking tools and equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Do not flush into surface water or sanitary sewer system. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**PRECAUTIONARY MEASURES:** No Information

## Section 7. Handling and storage



**HANDLING:** Avoid contact with skin, eyes and clothing. Ground/bond container and equipment. Wear personal protective equipment. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Do not breathe vapors, mist or gas.

**STORAGE:** Store contents under 100F (37.8C). Store drums with bung in the upright position. Electrical equipment must be grounded; suitable for the classification of the area where it is installed and conform to the National Electric Code (see NFPA 70). Store in cool well ventilated space away from incompatible materials. Keep container closed when not in use. Store and dispose according to national, state and local regulations.

**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**WORK PRACTICES:** Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

**SPECIAL HANDLING PROCEDURES:** Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

## Section 8. Exposure controls/personal protection

### Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA CEILING</u>
STYRENE MONOMER	20 ppm	40 ppm	100 ppm	200 ppm
METHYL METHACRYLATE	50 ppm	100 ppm	100 ppm	N.E.
TITANIUM DIOXIDE	10 mg/m <sup>3</sup>	N.E.	15 mg/m <sup>3</sup>	N.E.
COBALT 2-ETHYLHEXANOATE, 12%	N.E.	N.E.	N.E.	N.E.
COBALT				
ETHYLBENZENE	20 ppm	N.E.	100 ppm	N.E.

**Further Advice:** MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation  
 Sk = Skin Sensitizer N.E. = Not Established

## Personal Protection



**RESPIRATORY PROTECTION:** When concentrations exceed the exposure limits specified, use of a NIOSH-approved dust, mist and fume respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a full facepiece, supplied air, or Self Contained Breathing Apparatus (SCBA) may be necessary. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



**SKIN PROTECTION:** Wear suitable protective equipment. Wear chemical resistant footwear and clothing such as gloves, an apron or a whole body suit as appropriate.



**EYE PROTECTION:** Ensure that eyewash stations and safety showers are close to the workstation location. Safety glasses with side-shields. Wear chemical-resistant glasses and/or goggles and a face shield when eye and face contact is possible due to splashing or spraying of material.



**OTHER PROTECTIVE EQUIPMENT:** Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.



**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

## Section 9. Physical and chemical properties

Color:	Tan	Physical State:	Liquid
Odor:	Moderate aromatic	Odor Threshold:	Not Available
Density, g/cm <sup>3</sup> :	1.231	pH:	Not Available
Freeze Point, °C:	Not Available	Viscosity:	Not Available
Solubility in Water:	Not Available	Partition Coefficient, n-octanol/ water:	Not Available
Decomposition Temp., °C:	Not Available	Flash Point, °C / F°	31 / 88
Boiling Range, °C:	145	Explosive Limits, vol%:	Not Available
Vapor Pressure:	Not Available	Auto-ignition Temp., °C:	Not Available

(See "Other information" Section for abbreviation legend)

## Section 10. Stability and reactivity

**STABILITY:** The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution. Stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid improper addition of promotor and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If adding accelerator like cobalt drier, mix accelerator with base material before adding catalyst. Burning may produce obnoxious and toxic fumes. Hazardous polymerization may occur. Keep product away from heat, sparks, pilot lights, static electricity, and open flame.

**INCOMPATIBILITY:** Aluminium. Free radical initiators. Bases. Copper. Strong acids. Strong acids, strong bases, strong oxidizing agents. Strong oxidizing and reducing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal use.

## Section 11. Toxicological information



### Practical Experiences

**EFFECT OF OVEREXPOSURE - EYE CONTACT:** Presumed to be moderately irritating to the eyes. Exposure may cause mild irritation. Symptoms may include stinging, tearing, and redness.

**EFFECT OF OVEREXPOSURE - INGESTION:** May cause severe gastrointestinal disturbance with headache, nausea, vomiting and

diarrhea.

**EFFECT OF OVEREXPOSURE - INHALATION:** Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). Prolonged, repeated or high exposures may cause central nervous system depression leading to headaches, nausea, drowsiness, dizziness, and possibly narcosis. In extreme cases, may cause loss of consciousness. Ingestion of large doses may cause headaches, dizziness, nausea, vomiting, and drowsiness. Irritating to skin.

**EFFECT OF OVEREXPOSURE - SKIN CONTACT:** No Information

**EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS:** Repeated or prolonged exposure may cause central nervous system damage. Prolonged skin contact may defat the skin and produce dermatitis. Prolonged or repeated exposure may cause liver and kidney effects.

**CARCINOGENICITY:** \* This product contains the following chemicals classified by the International Agency for Research on Cancer (IARC) as 1, 2A, or 2B carcinogens:

\*This product may contain a chemical which is listed in the NTP report on carcinogens.

This product may contain Titanium Dioxide, which is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. This classification is relevant when exposed to titanium dioxide in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities.

**PRIMARY ROUTE(S) OF ENTRY:** Eye Contact, Ingestion, Inhalation, Skin Contact

#### Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name according to EEC</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
100-42-5	STYRENE MONOMER	1000 mg/kg Rat	N.I.	11.7 mg/L Rat
80-62-6	METHYL METHACRYLATE	7900 mg/kg Rat	N.I.	N.I.
13463-67-7	TITANIUM DIOXIDE	>10000 mg/kg Rat	N.I.	N.I.
100-41-4	ETHYLBENZENE	3500 mg/kg Rat	15400 mg/kg Rabbit	17.2 mg/L Rat

N.I. - No Information

## Section 12. Ecological information

**ECOLOGICAL INFORMATION:** Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits. Discharge into the environment must be avoided.

## Section 13. Disposal considerations



**DISPOSAL METHOD:** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

## Section 14. Transport information

**SPECIAL TRANSPORT PRECAUTIONS:** No Information

### International transport regulations

Regulatory Information:	UN/NA Number	Proper Shipping Name	Classes/ *PG	Reportable Quantity (RQ)
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/IMDG	UN1866	RESIN SOLUTION	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION	Class 3 PGIII	

## Section 15. Regulatory information

### U.S. Federal Regulations:

#### CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
BENZOIC ACID	65-85-0
ETHYLBENZENE	100-41-4

#### SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
ALUMINA (ALUMINUM OXIDE)	1344-28-1
ETHYLBENZENE	100-41-4

#### TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

### U.S. State Regulations:

#### NEW JERSEY RIGHT-TO-KNOW:

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
TITANIUM DIOXIDE	13463-67-7
ETHYLBENZENE	100-41-4
MINERAL SPIRITS(PETROLEUM NAPHTHA)	64742-88-7
ISOPROPYL ALCOHOL	67-63-0
MINERAL SPIRITS	8032-32-4
HYDROQUINONE	123-31-9
METHYL ALCOHOL	67-56-1

#### PENNSYLVANIA RIGHT-TO-KNOW

The following hazardous ingredients are present:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
TITANIUM DIOXIDE	13463-67-7
ETHYLBENZENE	100-41-4
DIETHYLENE GLYCOL	111-46-6
ISOPROPYL ALCOHOL	67-63-0
MINERAL SPIRITS	8032-32-4
HYDROQUINONE	123-31-9
METHYL ALCOHOL	67-56-1

**U.S. State Regulations:****MASSACHUSETTS RIGHT-TO-KNOW:**

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
TITANIUM DIOXIDE	13463-67-7
ETHYLBENZENE	100-41-4
ISOPROPYL ALCOHOL	67-63-0
HYDROQUINONE	123-31-9
METHYL ALCOHOL	67-56-1

**CALIFORNIA PROPOSITION 65 CARCINOGENS**

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

<u>Chemical Name</u>	<u>CAS-No.</u>
TITANIUM DIOXIDE	13463-67-7
ETHYLBENZENE	100-41-4
CARBON BLACK	1333-86-4
"SILICA, CRYSTALLINE-QUARTZ"	14808-60-7

**CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS**

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

<u>Chemical Name</u>	<u>CAS-No.</u>
METHYL ALCOHOL	67-56-1

**International Regulations****CANADIAN WHMIS:**

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

**WHMIS Class:** B2,D2A

<b>Chemical Inventories</b>	<b>Australia inventory (AICS)</b>	Not Determined
	<b>Canada inventory (DSL)</b>	Not Determined
	<b>Japan Inventory (ENCSC)</b>	Not Determined
	<b>China Inventory (IECSC)</b>	Not Determined
	<b>Korea Inventory (KECI)</b>	Not Determined
	<b>New Zealand (NZIoC)</b>	Not Determined
	<b>Philippines (PICCS)</b>	Not Determined
	<b>United States Inventory (TSCA 8b)</b>	All components are listed or exempted

**Section 16. Other information, including date of preparation of the last revision**

<b>Revision Date:</b>	5/2/2016	<b>Supersedes Date:</b>	New SDS
<b>Reason for revision:</b>	No Information		
<b>Datasheet produced by:</b>	Regulatory Department		

**HMIS Ratings:**

<b>Health:</b>	2*	<b>Flammability:</b>	3	<b>Reactivity:</b>	2	<b>Personal Protection:</b>	N.I.	<b>Chronic Rating:</b>	*
----------------	----	----------------------	---	--------------------	---	-----------------------------	------	------------------------	---

**Volatile Organic Compounds, gr/ltr:** Not Determined

**Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H225 Highly flammable liquid and vapour.

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer. Classified as Category 2 based on limited evidence on human and/or animal studies. Routes of exposure are dependant on ingredient form.
H361	Suspected of damaging fertility or the unborn child. Classified Category 2 suspected human reproductive toxicant.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.

**Icons for GHS Pictograms shown in Section 3 describing each ingredient:**

GHS02



GHS06



GHS07



GHS08



Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polynt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polynt Composites USA, Inc. are subject to Polynt Composites USA, Inc terms and conditions of sale. Polynt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polynt Composites USA, Inc, except that the product shall conform to Polynt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.



## Safety Data Sheet

FOR INDUSTRIAL USE ONLY

### HAP37 LIGHT GRAY

#### Section 1. Product and company identification

**Product Name:** HAP37 LIGHT GRAY  
**SDS Number:** POLYCOR  
 964AP416  
**Product Use:** Industrial  
**Manufacturer, Importer, Supplier:** Polynt Composites USA, Inc.  
 99 East Cottage Avenue  
 Carpentersville IL 60110  
 E-Mail: MSDS@pccrusa.com

**Telephone:** For Emergency Transportation Information  
 CHEMTREC US Domestic (800) 424-9300  
 CHEMTREC International (703) 527-3887

For additional health and safety or regulatory information, call 1 847-836-3627.

#### Section 2. Hazard(s) identification

**EMERGENCY OVERVIEW:** May cause sensitization by inhalation and skin contact. Risk of serious damage to the lungs (by aspiration).

##### GHS Classification

Acute Tox. 4 Inhalation, Carc. 2, Eye Irrit. 2, Flam. Liq. 3, Repr. 2, Skin Irrit. 2, Skin Sens. 1, STOT RE 1

##### Symbol(s) of Product



##### Signal Word

Danger

##### Possible Hazards

6% of the mixture consists of ingredient(s) of unknown acute toxicity

##### GHS HAZARD STATEMENTS

Acute Toxicity, Inhalation, category 4	H332	Harmful if inhaled.
Carcinogenicity, category 2	H351	Suspected of causing cancer. Classified as Category 2 based on limited evidence on human and/or animal studies. Routes of exposure are dependant on ingredient form.
Eye Irritation, category 2	H319	Causes serious eye irritation.

Flammable Liquid, category 3	H226	Flammable liquid and vapour.
Reproductive Toxicity, category 2	H361	Suspected of damaging fertility or the unborn child. Classified Category 2 suspected human reproductive toxicant.
STOT, repeated exposure, category 1	H372	Causes damage to organs through prolonged or repeated exposure.
Skin Irritation, category 2	H315	Causes skin irritation.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.

**GHS LABEL PRECAUTIONARY STATEMENTS**

P201	Obtain special instructions before use.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362	Take off contaminated clothing.

**GHS SDS PRECAUTIONARY STATEMENTS**

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do no eat, drink or smoke when using this product.
P363	Wash contaminated clothing before reuse.

**Section 3. Composition/Information on ingredients**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>	<u>GHS Symbols</u>	<u>GHS Statements</u>
STYRENE MONOMER	100-42-5	30.14	GHS02-GHS07-GHS08	H226-302-315-319-332-351-361-372
TITANIUM DIOXIDE	13463-67-7	5.0 - 10	No Information	No Information
METHYL METHACRYLATE	80-62-6	1.0-5.0	GHS02-GHS07	H225-315-317-332-335
COBALT 2-ETHYLHEXANOATE, 12% COBALT	136-52-7	0.1-1.0	GHS06-GHS08	H302-312-331-361
ETHYLBENZENE	100-41-4	0.1-1.0	GHS02-GHS07-GHS08	H225-304-332-373

The text for GHS Hazard Statements shown above (if any) is given in the "Other information" Section.

**Section 4. First-aid measures**

**FIRST AID - EYE CONTACT:** If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**FIRST AID - INGESTION:** Aspiration hazard if swallowed - can enter lungs and cause damage. If ingested, consult a physician. Do NOT induce vomiting.

**FIRST AID - INHALATION:** Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effect, such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Give oxygen or artificial respiration if needed. Move to fresh air in case of accidental inhalation of vapours. Remove person to fresh air. If signs/symptoms continue, get medical attention.

**FIRST AID - SKIN CONTACT:** Wash contaminated clothing before reuse. Wash skin with soap and water for several minutes. Get medical attention if irritation develops. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Prolonged skin contact may defat the skin and produce dermatitis.

**Section 5. Fire-fighting measures**



**Extinguishing Media:**

**Suitable** Carbon Dioxide, Dry Chemical, Foam, Water Fog  
**Not suitable** Water Jet

**SPECIAL FIREFIGHTING PROCEDURES:** Use full protective clothing. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Water spray. Dry powder. Carbon dioxide (CO<sub>2</sub>). Do not use a solid water stream as it may scatter and spread fire. Cool containers / tanks with water spray. Vapors may be ignited by heat, pilot lights, other flames and ignition sources. Self-accelerating decomposition may occur if the specific control temperature is not maintained. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

## Section 6. Accidental release measures

**ENVIRONMENTAL MEASURES:** Prevent entry into waterways, sewers, basements or confined areas. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Avoid breathing vapors or mists. Use non-sparking tools and equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Do not flush into surface water or sanitary sewer system. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**PRECAUTIONARY MEASURES:** No Information

## Section 7. Handling and storage



**HANDLING:** Avoid contact with skin, eyes and clothing. Ground/bond container and equipment. Wear personal protective equipment. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Do not breathe vapors, mist or gas.

**STORAGE:** Store contents under 100F (37.8C). Store drums with bung in the upright position. Electrical equipment must be grounded; suitable for the classification of the area where it is installed and conform to the National Electric Code (see NFPA 70). Store in cool well ventilated space away from incompatible materials. Keep container closed when not in use. Store and dispose according to national, state and local regulations.

**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**WORK PRACTICES:** Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

**SPECIAL HANDLING PROCEDURES:** Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

## Section 8. Exposure controls/personal protection

### Ingredients with Occupational Exposure Limits

<u>Chemical Name</u>	<u>ACGIH TLV-TWA</u>	<u>ACGIH-TLV STEL</u>	<u>OSHA PEL-TWA</u>	<u>OSHA CEILING</u>
STYRENE MONOMER	20 ppm	40 ppm	100 ppm	200 ppm
TITANIUM DIOXIDE	10 mg/m <sup>3</sup>	N.E.	15 mg/m <sup>3</sup>	N.E.
METHYL METHACRYLATE	50 ppm	100 ppm	100 ppm	N.E.
COBALT 2-ETHYLHEXANOATE, 12%	N.E.	N.E.	N.E.	N.E.
COBALT				
ETHYLBENZENE	20 ppm	N.E.	100 ppm	N.E.

**Further Advice:** MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation  
 Sk = Skin Sensitizer N.E. = Not Established

## Personal Protection



**RESPIRATORY PROTECTION:** When concentrations exceed the exposure limits specified, use of a NIOSH-approved dust, mist and fume respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a full facepiece, supplied air, or Self Contained Breathing Apparatus (SCBA) may be necessary. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



**SKIN PROTECTION:** Wear suitable protective equipment. Wear chemical resistant footwear and clothing such as gloves, an apron or a whole body suit as appropriate.



**EYE PROTECTION:** Ensure that eyewash stations and safety showers are close to the workstation location. Safety glasses with side-shields. Wear chemical-resistant glasses and/or goggles and a face shield when eye and face contact is possible due to splashing or spraying of material.



**OTHER PROTECTIVE EQUIPMENT:** Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.



**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

## Section 9. Physical and chemical properties

Color:	Gray	Physical State:	Liquid
Odor:	Moderate aromatic	Odor Threshold:	Not Available
Density, g/cm <sup>3</sup> :	1.283	pH:	Not Available
Freeze Point, °C:	Not Available	Viscosity:	Not Available
Solubility in Water:	Not Available	Partition Coefficient, n-octanol/ water:	Not Available
Decomposition Temp., °C:	Not Available	Flash Point, °C / F°	28 / 82
Boiling Range, °C:	100	Explosive Limits, vol%:	Not Available
Vapor Pressure:	Not Available	Auto-ignition Temp., °C:	Not Available

(See "Other information" Section for abbreviation legend)

## Section 10. Stability and reactivity

**STABILITY:** The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution. Stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid improper addition of promotor and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If adding accelerator like cobalt drier, mix accelerator with base material before adding catalyst. Burning may produce obnoxious and toxic fumes. Hazardous polymerization may occur. Keep product away from heat, sparks, pilot lights, static electricity, and open flame.

**INCOMPATIBILITY:** Aluminium. Free radical initiators. Bases. Copper. Strong acids. Strong acids, strong bases, strong oxidizing agents. Strong oxidizing and reducing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal use.

## Section 11. Toxicological information



### Practical Experiences

**EFFECT OF OVEREXPOSURE - EYE CONTACT:** Presumed to be moderately irritating to the eyes. Exposure may cause mild irritation. Symptoms may include stinging, tearing, and redness.

**EFFECT OF OVEREXPOSURE - INGESTION:** May cause severe gastrointestinal disturbance with headache, nausea, vomiting and

diarrhea.

**EFFECT OF OVEREXPOSURE - INHALATION:** Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). Prolonged, repeated or high exposures may cause central nervous system depression leading to headaches, nausea, drowsiness, dizziness, and possibly narcosis. In extreme cases, may cause loss of consciousness. Ingestion of large doses may cause headaches, dizziness, nausea, vomiting, and drowsiness. Irritating to skin.

**EFFECT OF OVEREXPOSURE - SKIN CONTACT:** No Information

**EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS:** Repeated or prolonged exposure may cause central nervous system damage. Prolonged skin contact may defat the skin and produce dermatitis. Prolonged or repeated exposure may cause liver and kidney effects.

**CARCINOGENICITY:** \* This product contains the following chemicals classified by the International Agency for Research on Cancer (IARC) as 1, 2A, or 2B carcinogens:

\*This product may contain a chemical which is listed in the NTP report on carcinogens.

This product may contain Titanium Dioxide, which is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. This classification is relevant when exposed to titanium dioxide in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities.

**PRIMARY ROUTE(S) OF ENTRY:** Eye Contact, Ingestion, Inhalation, Skin Contact

#### Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

<u>CAS-No.</u>	<u>Name according to EEC</u>	<u>Oral LD50</u>	<u>Dermal LD50</u>	<u>Vapor LC50</u>
100-42-5	STYRENE MONOMER	1000 mg/kg Rat	N.I.	11.7 mg/L Rat
13463-67-7	TITANIUM DIOXIDE	>10000 mg/kg Rat	N.I.	N.I.
80-62-6	METHYL METHACRYLATE	7900 mg/kg Rat	N.I.	N.I.
100-41-4	ETHYLBENZENE	3500 mg/kg Rat	15400 mg/kg Rabbit	17.2 mg/L Rat

N.I. - No Information

## Section 12. Ecological information

**ECOLOGICAL INFORMATION:** Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits. Discharge into the environment must be avoided.

## Section 13. Disposal considerations



**DISPOSAL METHOD:** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

## Section 14. Transport information

**SPECIAL TRANSPORT PRECAUTIONS:** No Information

### International transport regulations

Regulatory Information:	UN/NA Number	Proper Shipping Name	Classes/ *PG	Reportable Quantity (RQ)
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/IMDG	UN1866	RESIN SOLUTION	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION	Class 3 PGIII	

## Section 15. Regulatory information

### U.S. Federal Regulations:

#### CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
BENZOIC ACID	65-85-0
ETHYLBENZENE	100-41-4

#### SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
METHYL METHACRYLATE	80-62-6
ALUMINA (ALUMINUM OXIDE)	1344-28-1
ETHYLBENZENE	100-41-4

#### TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA components exist in this product.

### U.S. State Regulations:

#### NEW JERSEY RIGHT-TO-KNOW:

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
METHYL METHACRYLATE	80-62-6
ETHYLBENZENE	100-41-4
MINERAL SPIRITS(PETROLEUM NAPHTHA)	64742-88-7
ISOPROPYL ALCOHOL	67-63-0
MINERAL SPIRITS	8032-32-4
HYDROQUINONE	123-31-9
METHYL ALCOHOL	67-56-1

#### PENNSYLVANIA RIGHT-TO-KNOW

The following hazardous ingredients are present:

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
METHYL METHACRYLATE	80-62-6
ETHYLBENZENE	100-41-4
DIETHYLENE GLYCOL	111-46-6
ISOPROPYL ALCOHOL	67-63-0
MINERAL SPIRITS	8032-32-4
HYDROQUINONE	123-31-9
METHYL ALCOHOL	67-56-1

**U.S. State Regulations:****MASSACHUSETTS RIGHT-TO-KNOW:**

The following hazardous materials are listed.

<u>Chemical Name</u>	<u>CAS-No.</u>
STYRENE MONOMER	100-42-5
TITANIUM DIOXIDE	13463-67-7
METHYL METHACRYLATE	80-62-6
ETHYLBENZENE	100-41-4
ISOPROPYL ALCOHOL	67-63-0
HYDROQUINONE	123-31-9
METHYL ALCOHOL	67-56-1

**CALIFORNIA PROPOSITION 65 CARCINOGENS**

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

<u>Chemical Name</u>	<u>CAS-No.</u>
TITANIUM DIOXIDE	13463-67-7
ETHYLBENZENE	100-41-4
CARBON BLACK	1333-86-4
"SILICA, CRYSTALLINE-QUARTZ"	14808-60-7

**CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS**

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards.

<u>Chemical Name</u>	<u>CAS-No.</u>
METHYL ALCOHOL	67-56-1

**International Regulations****CANADIAN WHMIS:**

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

**WHMIS Class:** B2,D2A

<b>Chemical Inventories</b>	<b>Australia inventory (AICS)</b>	Not Determined
	<b>Canada inventory (DSL)</b>	Not Determined
	<b>Japan Inventory (ENCSC)</b>	Not Determined
	<b>China Inventory (IECSC)</b>	Not Determined
	<b>Korea Inventory (KECI)</b>	Not Determined
	<b>New Zealand (NZIoC)</b>	Not Determined
	<b>Philippines (PICCS)</b>	Not Determined
	<b>United States Inventory (TSCA 8b)</b>	All components are listed or exempted

**Section 16. Other information, including date of preparation of the last revision**

<b>Revision Date:</b>	5/2/2016	<b>Supersedes Date:</b>	New SDS
<b>Reason for revision:</b>	No Information		
<b>Datasheet produced by:</b>	Regulatory Department		

**HMIS Ratings:**

<b>Health:</b>	2*	<b>Flammability:</b>	3	<b>Reactivity:</b>	2	<b>Personal Protection:</b>	N.I.	<b>Chronic Rating:</b>	*
----------------	----	----------------------	---	--------------------	---	-----------------------------	------	------------------------	---


**Volatile Organic Compounds, gr/ltr:** Not Determined

**Text for GHS Hazard Statements shown in Section 3 describing each ingredient:**

H225 Highly flammable liquid and vapour.

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer. Classified as Category 2 based on limited evidence on human and/or animal studies. Routes of exposure are dependant on ingredient form.
H361	Suspected of damaging fertility or the unborn child. Classified Category 2 suspected human reproductive toxicant.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.

**Icons for GHS Pictograms shown in Section 3 describing each ingredient:**

GHS02	
GHS06	
GHS07	
GHS08	

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polynt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polynt Composites USA, Inc. are subject to Polynt Composites USA, Inc terms and conditions of sale. Polynt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polynt Composites USA, Inc, except that the product shall conform to Polynt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.



## Safety Data Sheet

FOR INDUSTRIAL USE ONLY

### HAP37 OXFORD GRAY-BC

#### 1. Identification

**Product Name:** HAP37 OXFORD GRAY-BC

POLYCOR

**SDS Number:** 964AP620

**Product Use:** Industrial

**Manufacturer, Importer, Supplier** Polynt Composites USA, Inc.  
99 East Cottage Avenue  
Carpentersville IL 60110

E-Mail: MSDS@polynt.com

**Telephone**

**For Emergency Transportation Information**  
**CHEMTREC US Domestic (800) 424-9300**  
**CHEMTREC International (703) 527-3887**

For additional health, safety or regulatory information, call (847) 836-3659

#### 2. Hazard identification

**EMERGENCY OVERVIEW:** May cause sensitization by inhalation and skin contact. Risk of serious damage to the lungs (by aspiration).

##### GHS Classification

Acute Tox. 4 Inhalation, Carc. 2, Eye Irrit. 2, Flam. Liq. 3, Skin Irrit. 2, Skin Sens. 1, STOT RE 1, STOT SE 3 NE, STOT SE 3 RTI

##### Symbol(s) of Product



##### Signal Word

Danger

##### Possible Hazards

4% of the mixture consists of ingredient(s) of unknown acute toxicity

##### GHS HAZARD STATEMENTS

Acute Toxicity, Inhalation, category 4	H332	Harmful if inhaled.
Carcinogenicity, category 2	H351	Suspected of causing cancer.
Eye Irritation, category 2	H319	Causes serious eye irritation.
Flammable Liquid, category 3	H226	Flammable liquid and vapour.

STOT, repeated exposure, category 1	H372	Causes damage to organs through prolonged or repeated exposure.
STOT, single exposure, category 3, NE	H336	May cause drowsiness or dizziness.
STOT, single exposure, category 3, RTI	H335	May cause respiratory irritation.
Skin Irritation, category 2	H315	Causes skin irritation.
Skin Sensitizer, category 1	H317	May cause an allergic skin reaction.

**GHS LABEL PRECAUTIONARY STATEMENTS**

P201	Obtain special instructions before use.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash ... thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P281	Use personal protective equipment as required.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P321	Specific treatment (see ... on this label).
P332+P313	If skin irritation occurs: Get medical advice/attention.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use dry chemical, foam, water spray to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to in accordance with local/regional/national/international regulations.

**GHS SDS PRECAUTIONARY STATEMENTS**

P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/.../ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P270	Do not eat, drink or smoke when using this product.
P363	Wash contaminated clothing before reuse.

**3. Composition/Information on ingredients**

<u>Chemical Name</u>	<u>CAS-No.</u>	<u>Wt. %</u>
Styrene	100-42-5	31.79
Methacrylic acid, methyl ester	80-62-6	1.0-5.0
Titanium oxide	13463-67-7	1.0-5.0
Hexanoic acid, 2-ethyl-, cobalt(2+) salt (2:1)	136-52-7	0.1-1.0

**4. First-aid measures**

**FIRST AID - EYE CONTACT:** If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**FIRST AID - INGESTION:** Aspiration hazard if swallowed - can enter lungs and cause damage. If ingested, consult a physician. Do NOT induce vomiting.

**FIRST AID - INHALATION:** Give oxygen or artificial respiration if needed. Remove person to fresh air. If signs/symptoms continue, get medical attention.

**FIRST AID - SKIN CONTACT:** Wash with soap and water. Remove contaminated clothes and shoes. Get medical attention if irritation develops.



## 5. Fire-fighting measures

### Extinguishing Media:

**Suitable** Carbon Dioxide, Dry Chemical, Foam, Water Fog  
**Not suitable** Water Jet

**SPECIAL FIREFIGHTING PROCEDURES:** Use full protective clothing. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Do not use a solid water stream as it may scatter and spread fire. Cool containers / tanks with water spray. In case of fire: Use carbon dioxide, dry chemical, foam, water fog to extinguish. Vapors may be ignited by heat, pilot lights, other flames and ignition sources. Self-accelerating decomposition may occur if the specific control temperature is not maintained. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** No Information

## 6. Accidental release measures

**ENVIRONMENTAL MEASURES:** Prevent entry into waterways, sewers, basements or confined areas. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Dike to prevent entering any sewer or waterway. Transfer liquid to a holding container. Avoid breathing vapors or mists. Use non-sparking tools and equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Remove all sources of ignition. Do not flush into surface water or sanitary sewer system. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

**PRECAUTIONARY MEASURES:** No Information

## 7. Handling and storage



**HANDLING:** Wash contaminated clothing before reuse. Avoid contact with skin, eyes and clothing. Ground/bond container and equipment. Wear personal protective equipment. Use only in well-ventilated areas. Keep away from heat and sources of ignition. Do not breathe vapors, mist or gas.

**STORAGE:** Store contents under 100F (37.8C). Store drums with bung in the upright position. Electrical equipment must be grounded; suitable for the classification of the area where it is installed and conform to the National Electric Code (see NFPA 70). Store in cool well ventilated space away from incompatible materials. Keep container closed when not in use. Store and dispose according to national, state and local regulations.

**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**WORK PRACTICES:** Put on appropriate personal protective equipment. Wash hands after handling chemicals and before eating, drinking, or smoking. Read and understand entire SDS before handling chemical.

**SPECIAL HANDLING PROCEDURES:** Put on appropriate personal protective equipment. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, and processed. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

## 8. Exposure controls/personal protection

### Ingredients with Occupational Exposure Limits

Chemical Name	ACGIH TLV-TWA	ACGIH-TLV STEL	OSHA PEL-TWA	OSHA CEILING
Styrene	20 ppm	40 ppm	100 ppm	200 ppm
Methacrylic acid, methyl ester	50 ppm	100 ppm	100 ppm	N.E.
Titanium oxide	10 mg/m3	N.E.	15 mg/m3	N.E.
Hexanoic acid, 2-ethyl-, cobalt(2+) salt (2:1)	N.E.	N.E.	N.E.	N.E.

**Further Advice:** MEL = Maximum Exposure Limit OES = Occupational Exposure Standard SUP = Supplier's Recommendation  
 Sk = Skin Sensitizer N.E. = Not Established

**Personal Protection**

**RESPIRATORY PROTECTION:** When concentrations exceed the exposure limits specified, use of a NIOSH-approved dust, mist and fume respirator is recommended. Where the protection factor of the respirator may be exceeded, use of a full facepiece, supplied air, or Self Contained Breathing Apparatus (SCBA) may be necessary. Use a properly-fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



**SKIN PROTECTION:** Wear suitable protective equipment. Wear chemical resistant footwear and clothing such as gloves, an apron or a whole body suit as appropriate.



**EYE PROTECTION:** Ensure that eyewash stations and safety showers are close to the workstation location. Safety glasses with side-shields. Wear chemical-resistant glasses and/or goggles and a face shield when eye and face contact is possible due to splashing or spraying of material.



**OTHER PROTECTIVE EQUIPMENT:** Use good hygiene practices. Wash face and hands before eating, drinking, and smoking. Eye wash and safety showers should be readily available.



**HYGIENIC PRACTICES:** When using, do not eat, drink or smoke. Regular cleaning of equipment, work area and clothing. General industrial hygiene practice. Wash hands before eating, drinking, or smoking.

**9. Physical and chemical properties**

<b>Color:</b>	Gray	<b>Physical State:</b>	Liquid
<b>Odor:</b>	Moderate aromatic	<b>Odor Threshold:</b>	Not Available
<b>Density, g/cm<sup>3</sup>:</b>	1.258	<b>pH:</b>	Not Available
<b>Freeze Point, °C:</b>	Not Available	<b>Viscosity:</b>	Not Available
<b>Solubility in Water:</b>	Insoluble	<b>Partition Coefficient, n-octanol/water:</b>	Not Available
<b>Decomposition Temp., °C:</b>	Not Available	<b>Flash Point, °C / F°</b>	28 / 82
<b>Boiling Range, °C:</b>	100	<b>Explosive Limits, vol%:</b>	Not Available
<b>Vapor Pressure:</b>	Not Available	<b>Auto-ignition Temp., °C:</b>	Not Available

(See "Other information" Section for abbreviation legend)

**10. Stability and reactivity**

**STABILITY:** The product is normally supplied in a stabilized form. If the permissible storage period and/or storage temperature is noticeably exceeded, the product may polymerise with heat evolution. Stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid improper addition of promotor and/or catalyst. Avoid direct contact of MEKP catalyst with accelerator. If adding accelerator like cobalt drier, mix accelerator with base material before adding catalyst. Burning may produce obnoxious and toxic fumes. Hazardous polymerization may occur. Keep product away from heat, sparks, pilot lights, static electricity, and open flame.

**INCOMPATIBILITY:** Free radical initiators. Copper. Strong acids. Metal salts. Strong oxidizing and reducing agents.

**HAZARDOUS DECOMPOSITION PRODUCTS:** None under normal use.

**11. Toxicological information****Practical Experiences**

**EFFECT OF OVEREXPOSURE - EYE CONTACT:** Exposure may cause mild irritation. Symptoms may include stinging, tearing, and redness.

**EFFECT OF OVEREXPOSURE - INGESTION:** May cause severe gastrointestinal disturbance with headache, nausea, vomiting and diarrhea.

**EFFECT OF OVEREXPOSURE - INHALATION:** Inhalation may cause irritation to the respiratory tract (nose, mouth, mucous membranes). Prolonged, repeated or high exposures may cause central nervous system depression leading to headaches, nausea, drowsiness, dizziness, and possibly narcosis. In extreme cases, may cause loss of consciousness. Exposure to component solvent vapor concentrations in excess of the stated occupational exposure limit may result in adverse health effect, such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Ingestion of large doses may cause headaches, dizziness, nausea, vomiting, and drowsiness. Irritating to skin.

**EFFECT OF OVEREXPOSURE - SKIN CONTACT:** Prolonged skin contact may defat the skin and produce dermatitis.

**EFFECT OF OVEREXPOSURE - CHRONIC HAZARDS:** Repeated or prolonged exposure may cause central nervous system damage. Prolonged skin contact may defat the skin and produce dermatitis. Prolonged or repeated exposure may cause liver and kidney effects.

**CARCINOGENICITY:** This product contains styrene classified by the International Agency for Research on Cancer (IARC) as 2A carcinogen.

This product contains styrene, which is listed in the NTP report on carcinogens.

This product may contain Titanium Dioxide, which is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in experimental animals. This classification is relevant when exposed to titanium dioxide in dust or powder form only, including cured product that is subject to sanding, grinding, cutting, or other surface preparation activities.

**PRIMARY ROUTE(S) OF ENTRY:** Eye Contact, Ingestion, Inhalation, Skin Contact

#### Acute Toxicity Values

The acute effects of this product have not been tested. Data on individual components are tabulated below:

CAS-No.	Name according to EEC	Oral LD50	Dermal LD50	Vapor LC50
100-42-5	Styrene	1000 mg/kg Rat	N.I.	11.7 mg/L Rat
80-62-6	Methacrylic acid, methyl ester	8420 - 10000 mg/kg Rat	5000 - 7500 mg/kg Rabbit	N.I.
13463-67-7	Titanium oxide	>10000 mg/kg Rat	N.I.	N.I.
136-52-7	Hexanoic acid, 2-ethyl-, cobalt(2+) salt (2:1)	N.I.	>5000 mg/kg Rabbit	N.I.

N.I. = No Information

## 12. Ecological information

**ECOLOGICAL INFORMATION:** Ecological evaluation of this material has not been performed; however, do not allow the product to be released to the environment without governmental approval/permits. Discharge into the environment must be avoided.

## 13. Disposal considerations



**DISPOSAL METHOD:** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should always comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

## 14. Transport information

**SPECIAL TRANSPORT PRECAUTIONS:** No Information

### International transport regulations

Regulatory Information:	UN/NA Number	Proper Shipping Name	Classes/ *PG	Reportable Quantity (RQ)
CFR	UN1866	RESIN SOLUTION	Class 3 PGIII	
IMO/IMDG	UN1866	RESIN SOLUTION	Class 3 PGIII	
IATA	UN1866	RESIN SOLUTION	Class 3 PGIII	

## 15. Regulatory information

### U.S. Federal Regulations:

#### CERCLA - SARA Hazard Category

This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Flammable (gases, aerosols, liquids, or solids), Carcinogenicity, Acute Toxicity (any route of exposure), Skin Corrosion or Irritation, Respiratory or Skin Sensitization, Serious eye damage or eye irritation, Specific target organ toxicity (single or repeated exposure)

<u>Chemical Name</u>	<u>CAS-No.</u>
Styrene	100-42-5
Methacrylic acid, methyl ester	80-62-6
BENZOIC ACID	65-85-0

#### SARA SECTION 313:

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

<u>Chemical Name</u>	<u>CAS-No.</u>
Styrene	100-42-5
Methacrylic acid, methyl ester	80-62-6
Aluminum oxide	1344-28-1

#### TOXIC SUBSTANCES CONTROL ACT:

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

No TSCA 12(b) regulated components exist in this product.

#### CALIFORNIA PROPOSITION 65 CARCINOGENS



WARNING: Cancer - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

<u>Chemical Name</u>	<u>CAS-No.</u>
Styrene	100-42-5
Ethylbenzene	100-41-4

#### CALIFORNIA PROPOSITION 65 REPRODUCTIVE TOXINS



WARNING: Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

<u>Chemical Name</u>	<u>CAS-No.</u>
Methanol	67-56-1

### International Regulations

<b>Chemical Inventories</b>	<b>Australia inventory (AICS)</b>	Not listed
	<b>Canada inventory (DSL)</b>	Not listed
	<b>Canada inventory (NDSL)</b>	Not listed
	<b>Japan Inventory (ENCSC)</b>	Not listed
	<b>China Inventory (IECSC)</b>	Not listed
	<b>Korea Inventory (KECI)</b>	All components are listed or exempted
	<b>New Zealand (NZIoC)</b>	All components are listed or exempted
	<b>Philippines (PICCS)</b>	Not listed
	<b>United States Inventory (TSCA 8b)</b>	All components are listed or exempted

## 16. Other information

<b>Revision Date:</b>	4/1/2019	<b>Supersedes Date:</b>	New SDS
<b>Reason for revision:</b>	No Information		
<b>Datasheet produced by:</b>	Regulatory Department		

### HMIS Ratings:

<b>Health:</b>	2*	<b>Flammability:</b>	3	<b>Reactivity:</b>	2	<b>Personal Protection:</b>	N.I.	<b>Chronic Rating:</b>	*
----------------	----	----------------------	---	--------------------	---	-----------------------------	------	------------------------	---

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined, N.I. - No Information

The information provided herein was believed by Polynt Composites USA, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Polynt Composites USA, Inc. are subject to Polynt Composites USA, Inc terms and conditions of sale. Polynt Composites USA, Inc. MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY Polynt Composites USA, Inc, except that the product shall conform to Polynt Composites USA, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.





**MACT WWWW Compliance**  
Great Lakes Composites, LLC (SRN: N2430)  
Year 2021

MACT Subpart WWWW

Month	Facility Weighted Average Open Molding Emission Limit (lb/ton)	CR/HS Resin		Non CR/HS Resin		White/off white Pigmented Gel Coat		Pigmented Gel Coat		Clear Production Gel Coat		Facility Weighted Average Open Molding Emission Actual HAP Emission Factor (lb/ton)	In compliance (< Facility Weighted Average Emission Limit)
		Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)	Actual HAP Emission Factor (lb/ton)	12 month Rolling Usage (tons)		
Jan-19	189.59			68.48	99.48	362.06	5.72	363.05	37.83	441.67	7.74	172.69	compliant
Feb-19	193.93			68.48	98.59	362.06	5.12	343.84	39.83	413.74	8.47	169.75	compliant
Mar-19	194.04			68.48	99.77	353.89	4.80	333.27	40.21	396.31	8.76	165.45	compliant
Apr-19	192.58			68.48	103.31	341.19	4.62	319.92	41.14	384.14	8.72	159.47	compliant
May-19	193.99			68.48	98.35	338.31	4.06	307.93	39.70	370.30	8.73	156.23	compliant
Jun-19	197.16			68.48	91.99	323.81	3.29	296.87	38.80	359.45	8.72	154.19	compliant
Jul-19	194.93			68.48	91.69	316.81	2.78	288.18	37.38	342.60	8.55	148.59	compliant
Aug-19	192.87			68.48	91.51	307.86	2.34	275.65	35.97	325.96	8.51	142.23	compliant
Sep-19	188.55			68.48	92.10	298.90	2.04	264.38	34.30	315.73	7.91	135.55	compliant
Oct-19	191.16			68.48	89.08	280.16	2.75	251.84	33.59	299.91	8.28	133.23	compliant
Nov-19	191.92			68.48	86.66	260.42	2.34	239.81	33.37	283.72	8.04	129.04	compliant
Dec-19	189.84			68.48	85.57	225.96	2.16	224.52	31.71	269.34	7.87	122.43	compliant
Jan-20	196.99			68.48	92.30	319.47	2.61	300.49	33.97	346.15	10.44	151.06	compliant
Feb-20	205.15			68.48	89.44	311.10	3.06	293.17	35.39	332.37	12.24	154.02	compliant
Mar-20	198.93			68.48	88.23	305.45	3.21	288.00	32.74	326.46	11.58	149.02	compliant
Apr-20	198.76			68.48	81.23	300.66	2.93	284.04	29.94	322.34	10.71	147.41	compliant
May-20	198.16			68.48	77.26	293.28	2.71	276.62	27.31	316.41	10.62	144.20	compliant
Jun-20	198.90			68.48	76.06	279.60	2.92	269.17	27.30	311.42	10.44	142.44	compliant
Jul-20	202.93			68.48	70.69	270.43	2.90	262.46	27.95	303.44	10.48	144.09	compliant
Aug-20	213.54	70.54	3.00	68.48	63.28	262.03	2.98	254.20	29.40	295.09	10.90	146.18	compliant
Sep-20	221.62	70.55	3.82	68.48	56.08	255.16	3.07	246.64	30.85	289.60	10.20	148.59	compliant
Oct-20	234.76	70.56	4.64	68.48	48.31	253.79	3.31	239.70	31.80	283.42	10.66	153.15	compliant
Nov-20	241.01	70.56	4.94	68.48	42.71	241.89	2.83	231.52	32.26	276.04	9.70	152.58	compliant
Dec-20	250.53	70.56	5.09	68.48	37.93	225.96	2.95	221.80	32.59	269.34	10.22	153.23	compliant
Jan-21	254.24	70.57	5.67	68.48	31.65	208.33	3.18	221.05	31.02	269.34	8.46	154.65	compliant
Feb-21	239.13	70.57	6.15	68.48	37.10	206.11	3.87	218.83	29.69	269.34	7.79	146.18	compliant
Mar-21	231.09	70.57	6.31	68.48	47.33	207.08	4.35	218.74	31.61	269.34	9.51	141.89	compliant
Apr-21	226.66	70.62	6.46	68.48	54.62	203.03	5.36	220.81	34.15	269.34	9.83	140.13	compliant
May-21	225.81	70.62	5.98	68.48	60.17	203.38	5.61	219.40	37.02	269.34	10.42	139.37	compliant
Jun-21	230.97	70.62	5.52	68.48	61.47	204.95	6.46	220.91	39.54	269.34	11.46	142.58	compliant



