



thermaseal
INC.
141 Peyerck Ct, Unit A
Romeo, MI 48065

January 27, 2022
Project No. 211001

Adam Bognar
Warren District Office
Air Quality Division
Michigan Department of Environment, Great Lakes, and Energy
27700 Donald Court
Warren, MI 48092

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Response to the Violation Notice Dated January 7, 2022
Thermaseal, Inc. (SRN ~~B1678~~ P1198)
Romeo, Michigan

Dear Adam:

This letter is in response to the EGLE-AQD Violation Notice dated January 7, 2022 (VN). We appreciate you taking the time to meet with us on January 7 and have incorporated your suggestions in this letter and our record keeping system. The NV suggests that Thermaseal, Inc. is in violation of several air quality regulations. The allegations cited in the VN are as follows.

Process Description	Rule/Permit Condition Violated	Comments
Rotogravure printing operation	Rule 201	Thermaseal installed and commenced operation of this equipment without a permit to install. This unit is excluded from the permit to install exemptions specified in Rules 280 to 291 pursuant to Rule 278(2). Specifically, the facility's potential [hazardous air pollutant] HAP emissions exceed the major source threshold, and the unit is subject to 40 CFR Part 63, Subpart KK (MACT KK).
Solvent based cold cleaner	Rule 201	Thermaseal installed and commenced operation of a solvent based cold cleaner (contains toluene). This unit is excluded from the permit to install exemptions specified in Rule 280 to 291 pursuant to Rule 278(2) due to being installed concurrently with the rotogravure printing operation.
Rotogravure printing operation.	Rule 624	Thermaseal installed and operated a rotogravure printing process without an add-on emissions control device. This process is subject to a minimum 65% volatile organic compound reduction efficiency under Rule 624.
Rotogravure printing operation.	MACT KK	Thermaseal is not in compliance with MACT KK. Organic HAP emissions from this process are limited by MACT KK to no more than 5% of the organic HAP applied for the month

As requested, this letter provides information regarding the referenced citations, including: the date the alleged violations occurred; an explanation of the causes and duration of the alleged violations; whether the violations are ongoing; a summary of the actions that have been taken and are proposed to be taken to correct the violations; the dates by which these actions will take place; and what steps are being taken to prevent a reoccurrence.

It should be noted that Thermaseal is not currently manufacturing at its Romeo location. We have contracted with printers in Wisconsin and Pennsylvania; these printers are currently producing the labels that Thermaseal ships from its Romeo location. We have manufactured the labels out of state for some time; however, we intend to begin printing them at the Romeo facility once equipment set-up is complete. Shipping labels and other documentation can be provided proving that labels are shipped from out of state to the Romeo location. At this time, we are primarily performing research and development (R&D) at the Romeo location, with the goal of transferring printing activities, currently performed out of state on behalf of Thermaseal, to our Romeo facility sometime this summer. Beginning in October 2021, we produced some samples and shipped them to customers for their approval. We have had some technical problems with the process that currently remain unresolved preventing us from producing products suitable for sale. It should also be noted that Thermaseal employs only four individuals at our Romeo location— all family – not all are even full-time employees. Provided we can resolve the technical difficulties, we plan to bring on a plant manager and additional staff in February. We are currently in the process of purchasing an additional roller and investigating use of a specialty resin from Germany hoping that we can improve the quality of our printing. Once we determine the proper operational set points that will enable us to produce larger quantities of product at a time and consistently meet the quality our customers expect, we can cancel our out of state contracts and manufacture all our labels in-house.

I was surprised to see your letter. From our conversation when you were onsite and my conversations with my consultant, Fishbeck, I was under the impression that the process was exempt from permitting based on several exemptions in the Michigan Rules. After looking through our correspondence and discussing more thoroughly with Fishbeck, I realized the fact that our process could have qualified for multiple exemptions may have caused confusion. When you were at the facility, we discussed use of the Rule 287(2)(c) exemption, which requires that usages are less than 200 gallons per month (gal/mo). When I met with Fishbeck in August, I indicated that our intent was to operate the printing operations with the thermal oxidizer when we were in full production. Fishbeck reviewed the process assuming the oxidizer would be operating and indicated that we would have more flexibility under the Rule 290 exemption with use of the oxidizer as described in the Fishbeck exemption report dated August 26, 2021, which I provided you via email on December 17. Because we were not yet in full production mode and the oxidizer was not operational, we felt that the Rule 283(2)(a)(v) exemption was more representative of the preliminary processes currently taking place at the facility and indicated this R&D exemption in our email to you.

As we are not actually manufacturing labels, emissions occur very inconsistently and operation of the thermal oxidizer under these conditions is not efficient. For example, since you were at the site on December 3, we have operated the printer a very limited amount of time. It takes 24 hours to bring the thermal oxidizer online and get it up to temperature. As a result, it is not an effective method of air pollution control until our production is running continuously for the majority of the day. At current usage volumes, more emissions would be generated from using the thermal oxidizer than would have been produced by operating its printing operations uncontrolled. Although the oxidizer has not been operating, the uncontrolled emissions for October through December were below the Rule 290 emission thresholds. In addition, the usages were below the Rule 287(2)(c) exemption threshold of 200 gal/mo. In our conversation, you suggested we use Rule 290 instead of Rule 287, so that even if coatings or mix ratios change, the potential to emit (PTE) would stay the same. The VN indicated that Rule 290 could not be used to limit the PTE below the thresholds indicated in Rule 278 because we did not provide adequate records demonstrating the actual emissions complied with Rule 290 requirements. We have asked Fishbeck to simplify the Rule 290 tracking and email you the unlocked Excel file. Monthly emission estimates are included in Tables 1, 2, and 3 (attached) for October, November, and December, respectively. Because of the detail and effort involved in tracking emissions under Rule 290, Thermaseal had asked Fishbeck to prepare and submit a Permit to Install (PTI) Application that would make our record keeping simpler once the permit was issued. EGLE logged the PTI Application on December 15, 2021, with Application No. APP 2021-0321 .

With this additional background, we can address the individual allegations included in the VN:

Rotogravure printing operation Rule 201 violation. Michigan Rule 290 exempts emission units having low emissions. Emissions in Tables 1, 2, and 3 include total coating and clean-up solvent usage and total emissions for October, November, and December 2021. Emissions are as follows:

- October 92.34 pounds per month (lb/mo) of volatile organic compounds (VOCs)
- November 89.94 lb/mo VOCs
- December 103.4 lb/mo VOCs

Thermaseal began testing this equipment in October 2021, and we already have reformatted our records to more easily demonstrate compliance with the requirements of Rule 290. Table 4 (attached) provides the components found in each material and their associated screening levels. The volatile components which may be emitted from the process have been reviewed by EGLE and assigned screening levels. When EGLE toxicologists determine that a component is carcinogenic, they issue an initial risk screening level (IRSL) for the component or attach screening level footnote number 21 to the component. As presented in Table 4, none of the components emitted from the process have an IRSL or footnote 21 associated with them. Therefore, none of the components are carcinogens. As a result, Rule 290(2)(a)(i) restricts total emissions to 1,000 lb/mo or 6 tons per year (tpy). While testing this equipment, Thermaseal will track its coating and clean-up solvent usage to demonstrate conformance with the limits in Rule 290. Once the PTI is issued and the thermal oxidizer is operational, Thermaseal will maintain the records required by the PTI.

Solvent based cold cleaner Rule 201 violation. Emissions from the cold cleaner are exempt from requiring a PTI under Rule 290 as well. Thermaseal considers the cold cleaner to be part of the printing emission unit because it is a necessary part of the printing process. Therefore, the emissions were summarized in Tables 1, 2, and 3 and were included in the Rule 290 emissions analysis. But even if the cold cleaner were considered a separate emission unit, its PTE is only 6 tpy. The solvent used is 50% toluene; according to the instructions for calculating PTE on Page 2-26 of Michigan's Potential to Emit workbook¹, the amount of HAP can be estimated based on the limit in the Rule and the actual concentration of HAP in the materials used in the process. If considering the cold cleaner separately from the coating operations would only restrict its PTE to 6 tpy, and the solvent is 50% toluene, then the PTE for the toluene is 3 tpy.

If the coating operations must be considered separate from the cold cleaners, then the PTE for the coating operations is 6 tpy VOCs and, because only the base coat and top coat are used (and are not used separately), we can calculate the toluene PTE considering that the coatings together are 30.38% toluene. Toluene PTE from the coating operation is 1.82 tpy. Combined toluene PTE from the two emission units is 4.82 tpy which is less than the major source threshold of 10 tpy of an individual HAP. Using the additional information in the attached tables demonstrates that the Thermaseal printing and clean-up emission units do not comprise a major source of toluene. Thermaseal can use Rule 290 to restrict emissions from both emission units until the new PTI is issued provided the monthly records are maintained.

Rotogravure printing operation Rule 624 violation. Under Rule 624(7), emission units with less than 100 pounds per day (lb/day) or 2,000 lb/mo are exempt from Rule 624. As outlined in the attached tables and as listed above, emissions from the printing operations do not exceed the thresholds in Rule 624(7); therefore, the emission unit is exempt from this rule. Because emissions comply with the Rule 290 exemption limit of 1,000 lb/mo, they will also comply with the exemption found in Rule 624(7) (2,000 lb/mo). Therefore, Thermaseal is not subject to the control requirements cited in the VN. As previously mentioned, Thermaseal intends to operate a thermal oxidizer when the process is in full production which will meet the requirement of Rule 624 of 65% control.

Rotogravure printing operation MACT KK violation. Because the printing operations and cold cleaner are limited in emissions as described above, this facility is not a major source of HAPs. The requirements of Subpart KK *National Emission Standards for Printing and Publishing* (MACT KK) only apply to major sources of HAP. Therefore, they do not apply to the Thermaseal operations.

We regret any confusion that may have been caused by our initial response to your request for records and have pledged to maintain records similar to those included in the attachments until we receive the new PTI. Once we have started operating under the PTI, we will keep records as described in the PTI.

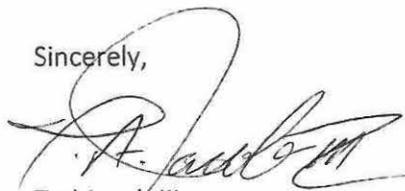
If you have any questions, please contact me at 586.336.336.9145 (tjacobiii@thermasealinc.com) or our environmental consultant, Lillian Woolley, at 586.489.6876 (lwoolley@fishbeck.com).

¹ [Potential to Emit Workbook \(michigan.gov\)](https://www.michigan.gov/potential-to-emit-workbook)

Adam Bognar
January 27, 2022

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Sincerely,

A handwritten signature in black ink, appearing to read "T. Jacob III". The signature is fluid and cursive, with a large loop at the end.

Ted Jacob III
President, Thermaseal, Inc.

Attachments

By email and USPS

Attachments

Copy: Jenine Camilleri – EGLE-AQD, Lansing

Table 1 – Gravure Printing Operation October Emissions
 Thermaseal, Inc. Exemption Documentation
 Romeo, Michigan

Component	Specific Gravity	Gallons/mo	Wt Fraction (of Coating)	Wt of Coating (lbs/mo)	Constituents	CAS No.	% Volatile	Wt Fraction (each component)	Emissions (lb/mo)	VOCs
										(lb/mo)
Stahl 502	1.07	1.36	0.44	12.13	1-Propanol	71-23-8	100%	0.35	4.24	19.57
					Methylbenzene (toluene)	108-88-3	100%	0.35	4.24	
					1-Methoxy-2-propanol	107-98-2	100%	0.15	1.82	
					Inert (solid)		0%	0.15	0.00	
Syloid 222	2.2	0.01	0.01	0.17	Amorphous silicon dioxide (solid)	7631-86-9	0%	1	0.00	
Titanium White (PW2)	4	0.03	0.04	1.11	Titanium dioxide (solid)	13463-67-7	0%	1	0.00	
Crosslinker 901 (catalyst)	0.99	0.02	0.01	0.14	1,6-diisodocyanato-hexane (homopolymer)	28182-81-2	0%	0.7	0.00	
					1,6-diisodocyanato-hexane	822-06-0	1%	0.01	0.00	
EH 118	2.01	0.29	0.18	4.84	epoxy resins (solid)	25068-38-6	0%	0.345	0.00	
					diglycidyl ether of Bisphenol F (solids)	9003-36-5	0%	0.0026	0.00	
Denatured Alcohol	0.8	0.69	0.17	4.63	Denatured alcohol	64-17-5	100%	1	4.63	
Toluene	0.866	0.64	0.17	4.63	Toluene	108-88-3	100%	1	4.63	
Total - Topcoat		3.04	1.00	27.64					19.57	
Stahl 502	1.07	4.45	0.50	39.75	1-Propanol	71-23-8	100%	0.35	13.91	
					Methylbenzene	108-88-3	100%	0.35	13.91	
					1-Methoxy-2-propanol	107-98-2	100%	0.15	5.96	
					Inert		0%	0.15	0.00	
Denatured Alcohol	0.8	0.86	0.07	5.72	Denatured alcohol	64-17-5	100%	1	5.72	
Toluene	0.866	0.79	0.07	5.72	Toluene	108-88-3	100%	1	5.72	
Syloid 222	2.2	0.01	0.00	0.16	Amorphous silicon dioxide (solid)	7631-86-9	0%	1	0.00	
Titanium White (PW2)	4	0.37	0.20	15.90	Titanium dioxide (solid)	13463-67-7	0%	1	0.00	
Crosslinker 901	0.99	1.48	0.15	12.24	1,6-diisodocyanato-hexane (homopolymer)	28182-81-2	0%	0.7	0.00	
					1,6-diisodocyanato-hexane	822-06-0	1%	0.01	0.00	
Total - Basecoat		7.96	1.00	79.50					45.24	

solid
 Total toluene emissions **19.64 lb/mo** **Coatings total - 11.00 gal/mo**
 Emissions from catalysts were evaluated using the MDEQ memo dated June 23, 1999, and selected Option 3. We excluded VOCs having low vapor pressure - keeping in mind that the purpose of the catalyst is facilitating a reaction.

Clean-up Solvent Emissions

Component	Wt Fraction (of Coating)	Constituents	CAS No.	% Volatile	Amount evaporated (gal/mo)	Specific gravity	Emissions (lb/mo)
Toluene	0.50	Toluene	108-88-3	100%	2	0.866	14.44
Denatured Alcohol	0.50	Denatured alcohol	64-17-5	100%	2	0.7851	13.10

Clean up solvent used (month) - 4.00

Total Monthly Emissions	VOCs (lb/mo)
Topcoat	19.57
Basecoat	45.23
Solvent	27.54
Total	92.34

Table 2– Gravure Printing Operation November Emissions
 Thermaseal, Inc. Exemption Documentation
 Romeo, Michigan

Component	Specific Gravity	Gallons/mo	Wt Fraction (of Coating)	Wt of Coating (lbs/mo)	Constituents	CAS No.	% Volatile	Wt Fraction (each component)	Emissions (lb/mo)	VOCs (lb/mo)
Stahl 502	1.07	1.31	0.44	11.68	1-Propanol	71-23-8	100%	0.35	4.09	18.84
					Methylbenzene (toluene)	108-88-3	100%	0.35	4.09	
					1-Methoxy-2-propanol	107-98-2	100%	0.15	1.75	
					Inert (solid)		0%	0.15	0.00	
Syloid 222	2.2	0.01	0.01	0.17	Amorphous silicon dioxide (solid)	7631-86-9	0%	1	0.00	
Titanium White (PW2)	4	0.03	0.04	1.06	Titanium dioxide (solid)	13463-67-7	0%	1	0.00	
Crosslinker 901 (catalyst)	0.99	0.02	0.01	0.13	1,6-diisodocyanato-hexane (homopolymer)	28182-81-2	0%	0.7	0.00	
					1,6-diisodocyanato-hexane	822-06-0	1%	0.01	0.00	
EH 118	2.01	0.28	0.18	4.66	epoxy resins (solid)	25068-38-6	0%	0.345	0.00	
					diglycidyl ether of Bisphenol F (solids)	9003-36-5	0%	0.0026	0.00	
Denatured Alcohol	0.8	0.67	0.17	4.46	Denatured alcohol	64-17-5	100%	1	4.46	
Toluene	0.866	0.62	0.17	4.46	Toluene	108-88-3	100%	1	4.46	
Total - Topcoat		2.93	1.00	26.62					18.84	
Stahl 502	1.07	4.29	0.50	38.28	1-Propanol	71-23-8	100%	0.35	13.40	43.56
					Methylbenzene	108-88-3	100%	0.35	13.40	
					1-Methoxy-2-propanol	107-98-2	100%	0.15	5.74	
					Inert		0%	0.15	0.00	
Denatured Alcohol	0.8	0.83	0.07	5.51	Denatured alcohol	64-17-5	100%	1	5.51	
Toluene	0.866	0.76	0.07	5.51	Toluene	108-88-3	100%	1	5.51	
Syloid 222	2.2	0.01	0.00	0.15	Amorphous silicon dioxide (solid)	7631-86-9	0%	1	0.00	
Titanium White (PW2)	4	0.46	0.20	15.31	Titanium dioxide (solid)	13463-67-7	0%	1	0.00	
Crosslinker 901	0.99	1.43	0.15	11.79	1,6-diisodocyanato-hexane (homopolymer)	28182-81-2	0%	0.7	0.00	
					1,6-diisodocyanato-hexane	822-06-0	1%	0.01	0.00	
Total - Basecoat		7.77	1.00	76.55					43.56	

solid
 Total toluene emissions **18.91 lb/mo** Coatings total - **10.70 gal/mo**

Emissions from catalysts were evaluated using the MDEQ memo dated June 23, 1999, and selected Option 3. We excluded VOCs having low vapor pressure - keeping in mind that the purpose of the catalyst is facilitating a reaction.

Clean-up Solvent Emissions

Component	Wt Fraction (of Coating)	Constituents	CAS No.	% Volatile	Amount evaporated (gal/mo)	Specific gravity	Emissions (lb/mo)
Toluene	0.50	Toluene	108-88-3	100%	2	0.866	14.44
Denatured Alcohol	0.50	Denatured alcohol	64-17-5	100%	2	0.7851	13.10

Clean up solvent used (month) - 4.00

Total Monthly Emissions	VOCs (lb/mo)
Topcoat	18.84
Basecoat	43.56
Solvent	27.54
Total	89.94

Table 3 – Gravure Printing Operation December Emissions
 Thermaseal, Inc. Exemption Documentation
 Romeo, Michigan

Component	Specific Gravity	Gallons/mo	Wt Fraction (of Coating)	Wt of Coating (lbs/mo)	Constituents	CAS No.	% Volatile	Wt Fraction (each component)	Emissions (lb/mo)	VOCs
										(lb/mo)
Stahl 502	1.07	1.58	0.44	14.10	1-Propanol	71-23-8	100%	0.35	4.94	22.76
					Methylbenzene (toluene)	108-88-3	100%	0.35	4.94	
					1-Methoxy-2-propanol	107-98-2	100%	0.15	2.12	
					Inert (solid)		0%	0.15	0.00	
Syloid 222	2.2	0.01	0.01	0.20	Amorphous silicon dioxide (solid)	7631-86-9	0%	1	0.00	
Titanium White (PW2)	4	0.07	0.04	1.29	Titanium dioxide (solid)	13463-67-7	0%	1	0.00	
Crosslinker 901 (catalyst)	1.13	0.02	0.01	0.16	1,6-diisodocyanato-hexane (homopolymer)	28182-81-2	0%	0.7	0.00	
					1,6-diisodocyanato-hexane	822-06-0	1%	0.01	0.00	
EH 118	2.01	0.34	0.18	5.63	epoxy resins (solid)	25068-38-6	0%	0.345	0.00	
					diglycidyl ether of Bisphenol F (solids)	9003-36-5	0%	0.0026	0.00	
Denatured Alcohol	0.8	0.81	0.17	5.39	Denatured alcohol	64-17-5	100%	1	5.39	
Toluene	0.866	0.75	0.17	5.39	Toluene	108-88-3	100%	1	5.39	
Total - Topcoat		3.57		32.15					22.76	
Stahl 502	1.07	5.63	0.50	46.67	1-Propanol	71-23-8	100%	0.35	16.33	53.10
					Methylbenzene	108-88-3	100%	0.35	16.33	
					1-Methoxy-2-propanol	107-98-2	100%	0.15	7.00	
					Inert		0%	0.15	0.00	
Denatured Alcohol	0.8	1.01	0.07	6.72	Denatured alcohol	64-17-5	100%	1	6.72	
Toluene	0.866	0.93	0.07	6.72	Toluene	108-88-3	100%	1	6.72	
Syloid 222	2.2	0.02	0.00	0.19	Amorphous silicon dioxide (solid)	7631-86-9	0%	1	0.00	
Titanium White (PW2)	4	0.85	0.20	18.67	Titanium dioxide (solid)	13463-67-7	0%	1	0.00	
Crosslinker 901	1.13	0.00	0.15	14.37	1,6-diisodocyanato-hexane (homopolymer)	28182-81-2	0%	0.7	0.00	
					1,6-diisodocyanato-hexane	822-06-0	1%	0.01	0.00	
Total - Basecoat		8.43	1.00	93.33					53.10	

solid
 Total toluene emissions **23.05 lb/mo** **Coatings total - 12.00 gal/mo**

Emissions from catalysts were evaluated using the MDEQ memo dated June 23, 1999, and selected Option 3. We excluded VOCs having low vapor pressure - keeping in mind that the purpose of the catalyst is facilitating a reaction.

Clean-up Solvent Emissions

Component	Wt Fraction (of Coating)	Constituents	CAS No.	% Volatile	Amount evaporated (gal/mo)	Specific gravity	Emissions (lb/mo)
Toluene	0.50	Toluene	108-88-3	100%	2	0.866	14.44
Denatured Alcohol	0.50	Denatured alcohol	64-17-5	100%	2	0.7851	13.10

Total Monthly Emissions	VOCs (lb/mo)
Topcoat	22.76
Basecoat	53.10
Solvent	27.54
Total	103.40

Clean up solvent used (month) - 4.00

Table 4 – Screening Level Summary
 Thermaseal, Inc. Exemption Documentation
 Romeo, Michigan

Chemical Name	CAS No.	Screening Level					AQID Footnote
		1st ITSL µg/m ³	1st ITSL Avg Time	2nd ITSL µg/m ³	2nd ITSL Avg Time	IRSL / SRSL µg/m ³ (annual Avg Time)	
1-Propanol	71-23-8	2500	8 hr				
Methylbenzene (toluene)	108-88-3	5000	24 hr				
1-Methoxy-2-proponal	107-98-2	3700	1 hr				
1,6-diisodocyanato-hexane	822-06-0	0.2	annual	0.3	8 hr		
Denatured alcohol	64-17-5	19000	1 hr				
Toluene	108-88-3	5000	24 hr				