MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
DATE
February 26, 2004

NEW SOURCE REVIEW PERMIT TO INSTALL
No. 287-00A

ISSUED TO
Ford Motor Company, Wixom Assembly Plant

LOCATED AT
28801 Wixom Road
Wixom, Michigan 48393

IN THE COUNTY OF
Oakland

STATE REGISTRATION NUMBER
A5260

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Part 5505(1) of Article II, Chapter I, Part 55 (Air Pollution Control) of P.A. 451 of 1994. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: **11/7/2003**	
DATE PERMIT TO INSTALL APPROVED: **2/26/2004**	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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Common Abbreviations / Acronyms

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	Btu	British Thermal Unit
BACT	Best Available Control Technology	°C	Degrees Celsius
CAA	Clean Air Act	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
COM	Continuous Opacity Monitoring	°F	Degrees Fahrenheit
EPA	Environmental Protection Agency	gr	Grains
EU	Emission Unit	Hg	Mercury
FG	Flexible Group	hr	Hour
GACS	Gallon of Applied Coating Solids	H_2S	Hydrogen Sulfide
GC	General Condition	hp	Horsepower
HAP	Hazardous Air Pollutant	lb	Pound
HVLP	High Volume Low Pressure *	m	Meter
ID	Identification	mg	Milligram
LAER	Lowest Achievable Emission Rate	mm	Millimeter
MACT	Maximum Achievable Control Technology	MM	Million
MAERS	Michigan Air Emissions Reporting System	MW	Megawatts
MAP	Malfunction Abatement Plan	NOx	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality	PM	Particulate Matter
MSDS	Material Safety Data Sheet	PM-10	Particulate Matter less than 10 microns diameter
NESHAP	National Emission Standard for Hazardous Air Pollutants	pph	Pound per hour
NSPS	New Source Performance Standards	ppm	Parts per million
NSR	New Source Review	ppmv	Parts per million by volume
PS	Performance Specification	ppmw	Parts per million by weight
PSD	Prevention of Significant Deterioration	psia	Pounds per square inch absolute
PTE	Permanent Total Enclosure	psig	Pounds per square inch gauge
PTI	Permit to Install	scf	Standard cubic feet
RACT	Reasonable Available Control Technology	sec	Seconds
ROP	Renewable Operating Permit	SO_2	Sulfur Dioxide
SC	Special Condition Number	THC	Total Hydrocarbons
SCR	Selective Catalytic Reduction	tpy	Tons per year
SRN	State Registration Number	µg	Microgram
TAC	Toxic Air Contaminant	VOC	Volatile Organic Compounds
VE	Visible Emissions	yr	Year

* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **[R336.1201(1)]**

2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **[R336.1201(4)]**

3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **[R336.1201(6)(b)]**

4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **[R336.1201(8), Section 5510 of Act 451, PA 1994]**

5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R336.1219. The written request shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **[R336.1219]**

6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **[R336.1901]**

7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **[R336.1912]**

8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.

9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.

10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R336.1303. **[R336.1301]**

    a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.

    b) A visible emission limit specified by an applicable federal new source performance standard.

    c) A visible emission limit specified as a condition of this permit to install.

12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R336.1370(2). **[R336.1370]**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R336.2001 and R336.2003, under any of the conditions listed in R336.2001. **[R336.2001]**

C. Emission Unit/Process Group Summary Table

EG-ENAMEL	Two parallel seven-section booths, each booth is followed by an oven. Used for the application of basecoat and clearcoat.	06/07/01	1. Water wash particulate matter control system 2. Carbon Concentrators 3. Catalytic Oxidizer 4. Thermal Oxidizer	SV-FWX-BO3T7 SV-FWX-BO1J6 SV-FWX-BO1K7 SV-FWX-BO1N7 SV-FWX-BO1M6 SV-FWX-BO1M7 SV-FWX-BO1Q7 SV-FWX-BO1S6 SV-FWX-BO1S7 SV-FWX-BO1T6 SV-FWX-BO1T7 SV-FWX-BO2M6 SV-FWX-BO2M7 SV-FWX-BO2Q7 SV-FWX-BO2S6 SV-FWX-BO2S7 SV-FWX-BO2T6 SV-FWX-BO2T7 SV-FWX-BO3J7 SV-FWX-BO3K6 SV-FWX-BO3M6 SV-FWX-BO3M7 SV-FWX-BO3Q6 SV-FWX-BO1J8 SV-FWX-BO1K8 SV-FWX-BO3Q7 SV-FWX-BO4Q7 SV-FWX-BO3S6 SV-FWX-BO4M6 SV-FWX-BO4M7 SV-FWX-BO4Q6 SV-FWX-BO5Q6 SV-FWX-CO1M10 SV-FWX-CO1M9 SV-FWX-CO1N10 SV-FWX-CO1P10 SV-FWX-CO1Q9 SV-FWX-CO1Q10 SV-FWX-CO1S10 SV-FWX-CO1Y7	E-1.6 F-1.1
EG-ENAMLSCFBTH	Enamel Scuff Booth	06/07/01	Exhaust Filters	SV-FWX-BO1R7 SV-FWX-BO2Q6 SV-FWX-BO4R6 SV-FWX-BO7R6	E-1.7
EG-BLACKOUT	Blackout Booth	06/07/01	Exhaust Filters	SV-FWX-BO1K9 SV-FWX-BO2J9 SV-FWX-BO2K9 SV-FWX-BO3J9 SV-FWX-BO4J9 SV-FWX-BO5J9 SV-FWX-BO6J9 SV-FWX-BO1J9	E-1.8
EG-SOLVENT	Combined purge and clean operations	06/07/01	Purge Capture	NA	E-1.9

	used in EG-GUIDECOAT and EG-ENAMEL.		System		F-1.1
EG-BODYWIPE	Combined body wipe operations used in EG-GUIDECOAT and EG-ENAMEL.	06/07/01	NA	NA	E-1.10 F-1.1
EG-FINLREPAIR	Final repair painting operations.	01/14/88	NA	NA	E-1.11
EG-PHOSBOILERS	Two Natural Gas burning boilers (No. 1 and 2) with a maximum heat input of 22 MM BTU/HR each, located in the Paint Shop.	04/27/88	NA	NA	E-1.12
EG-BOILERNO2	A Natural Gas/Coal burning boiler with a maximum heat input of 53 MM BTU/HR, located in the Power House.	05/24/93	NA	SV-FWX-PO2	E-1.13
EG-BOILERNO4	A Natural Gas burning boiler with a maximum heat input of 41.3 MM BTU/HR, located in the Power House.	04/16/91	NA	SV-FWX-PO1AA20	E-1.14
EG-GASHEATING	1) Seven natural gas, roof mounted, heating units with a heat capacity of 20 MMBTU/H Reach. 2) Two natural gas hot water units with a heat capacity of 15 MMBTUH each. 3) Indirect natural gas heating units with a total heat capacity of 13.525 MMBTU/HR.	04/04/01	NA	NA	E-1.15

TABLE E-1.1 EG-ECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

EMISSION GROUP	EG-ECOAT: Electrodeposition Operation including dip/rinse tanks, oven and RTO.
Flexible Grouping ID	NA

I. DESIGN PARAMETERS

A. Pollution Control Equipment	Oven Thermal Oxidizer
B. Stack/Vent Parameters	Exhaust gases shall be discharged unobstructed vertically upwards unless otherwise noted.

Stack/Vent ID	a. Minimum Height (feet)	b. Maximum Exhaust Dimension (inches)	c. Temperature (°F)	d. Air Flow Rate (acfm)	Applicable Requirement
SV-FWX-CO1G1	85	63	NA	NA	**R336.1901***
SV-FWX-TA1DD2	55	28	NA	NA	**R336.1901***
SV-FWX-TA1V2	55	28	NA	NA	**R336.1901***
SV-SWX-TA2BB2	55	28	NA	NA	**R336.1901***
SV-FWX-TA1X2	55	28	NA	NA	**R336.1901***

C. Other Design Parameters

NA

II. MATERIAL USAGE/EMISSION LIMITS

A. Material	Maximum Usage Rate
1. Natural gas combusted in ovens and RTO.	a. 10,059,000 cubic feet per month. **(R336.1205(1)(a)(ii)(c))** b. 120,708,000 cubic feet per year, based on a 12-month rolling time period as determined at the end of each calendar month. **(R336.1201(3))**
2. Coating Material.	a. 69,000 gallons per month (including water). **(R336.1201(3))** b. 828,000 gallons per year (including water). **(R336.1201(3))**

B. Pollutant	Maximum Emission Limit
Volatile Organic Compounds (VOC).	1. 13.6 pounds per hour (averaged over the hours operated during a calendar month). **(R336.1220(1)(a)(i), R336.1901)** 2. 33.30 tons per year, based upon a 12-month rolling time period as determined at the end of each calendar month. **(R336.1220(1)(a)(i)** 3. 0.25 pounds per gallon (0.030 kilogram per liter) of applied coating solids, based on a calendar month averaging period. **((R336.1220(1)(a)(i))**

III. COMPLIANCE EVALUATION
Records of all of the following shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

A. MONITORING/RECORDKEEPING (R 336.1213(3))
In Addition To General Requirements in Part A

1. Continuous Emission Monitoring (CEM) System and Recordkeeping.	NA
2. Process Monitoring System and Recordkeeping.	1. The permittee shall monitor and record, in a satisfactory manner, the temperature in the thermal oxidizer on a continuous basis in a manner and with instrumentation acceptable to the AQD. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. **(R336.1220, R336.1901)** 2. During production periods, if the measured operating temperature of the thermal oxidizers falls below 1400 degrees Fahrenheit and the permittee is basing compliance upon a 3-hour averaging period, the permittee shall calculate the average operating temperature for each

TABLE E-1.1 EG-ECOAT EMISSION UNIT/PROCESS GROUP REQUIREMENTS	
	three hour period which include one or more temperature readings below 1400 degrees Fahrenheit. **(R336.1220, R336.1901)**
3. Other Monitoring and/or Recordkeeping	1. Plant production: Daily and Monthly records. **(R336.1213(3))** 2. Plant production hours: Daily and Monthly records. **(R336.1213(3))** 3. Rate of all coating component materials consumed: Daily (calculated from monthly) and monthly records. **(R336.1213(3))** 4. The VOC content, water content and density of the resin, pigment and additions, as added to the E-Coat tank, shall be using federal Reference Test Method 24, unless formulation data has been authorized by the AQD. Alternatively, for water-borne coatings, the VOC content may be determined using formulation data. If the Method 24 and formulation values should differ, then the Method 24 results shall be used to determine compliance. Upon request of the AQD District Supervisor, the VOC content, water content and density of the resin, pigment and additions, as added to the E-Coat tank, shall be verified by testing federal Reference Test Method 24. **((R336.1702(a), and 40 CFR 52.21))** 5. Records of the density of the VOC portion for all coating component material. **(R336.1213(3))** 6. Records of the solids volume fraction for all coating component material. **(R336.1213(3))** 7. Records of the calculated average monthly VOC emission rate in pound/gallon of applied coating solids. **(R336.2040(12)(a), R336.1213(3))** 8. Calculate and record VOC emission rates according to the method outlined in Appendix 7, or an alternate method that is acceptable to the MDEQ-AQD. (**(R336.2040(12)(a), R336.1213(3))** 9. Calculated usage rate of natural gas: Monthly records, based on a 12-month rolling total. **(R336.1205, & R336.1702)** See Appendix 7
B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in Part A	
1. Parameter to be Tested/Recorded	VOC content of any coating, as applied. **((R336.1213(3))**
2. Method/Analysis	EPA Reference Test Method 24 or an alternative method consistent with condition III.A.3.4 above. **((R336.1213(3))**
3. Frequency and Schedule of Testing/Recordkeeping	NA
IV. REPORTING	
Reports and Schedules	1. Quarterly reporting of VOC emissions data shall be submitted to the AQD in an acceptable format within 30 days following the end of the quarter in which the data were collected. **(R336.1213, NSPS 40 CFR, Part 60, Subparts A & MM)** 2. All thermal oxidizer operating temperature calculations shall be kept on file for a period of at least five years and made available to the Department upon request. **(R336.1220, R336.1901)**

TABLE E-1.1 EG-ECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

V. OPERATIONAL PARAMETERS

1. Permittee shall not operate the E-Coat process for more than 1,200 jobs per day nor 360,000 jobs per year. **(R336.1201(3))**

2. Permittee shall not operate the E-Coat system unless the E-Coat oven thermal oxidizers are installed and operating properly in accordance with R 336.1910. **(R336.1910, R336.1201(3))**

3. Permittee shall monitor and record the temperature in each of the thermal oxidizers near the combustion chamber outlet on a continuous basis in a manner and with instrumentation acceptable to the AQD. **(R336.1702(a))**

4. Permittee shall not operate the E-Coat system unless the thermal oxidizers are installed and operating properly. Proper operation is defined as maintaining a combustion chamber temperature of 1400 degrees F, or at the permittee's option an average temperature of 1400 degrees F based on a three-hour rolling average and a minimum retention of 0.5 second. **(R336.1702(a))**

5. The permittee shall not operate the E-Coat system unless the Malfunction Abatement Plan (MAP) for the thermal oxidizers, specified in Appendix A, or an alternate plan approved by the AQD District Supervisor, for the thermal oxidizers is implemented and is maintained. If the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the MAP within 45 days after such an event occurs and submit the revised plan to the AQD District Supervisor. Any additional changes made to the MAP must have prior approval by the AQD District Supervisor prior to implementation. **(R336.1702(a))**

VI. OTHER REQUIREMENTS

Compliance with the requirements of this table, E-1.1, shall be considered compliance with the applicable provisions of the federal Standards of Performance for New Stationary Sources, 40 CFR, Part 60, Subpart A & MM, which have been subsumed under these streamlined requirements. **(40 CFR, Part 60, Subpart A & MM , R336.1910, R336.1220)**

* This requirement is state enforceable only.

TABLE E-1.4 EG-GUIDECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

EMISSION GROUP	EG- GUIDECOAT: Eight-section booth followed by one oven. The booth is used for application of urethane, anti-chip, colored primer, color-in prime, blackout, and low gloss.
Flexible Grouping ID	FG-COATING

I. DESIGN PARAMETERS

A. Pollution Control Equipment	1. Water wash particulate matter control system 2. Carbon Concentrators 3. Catalytic Oxidizer 4. Thermal Oxidizer
B. Stack/Vent Parameters	Exhaust gases shall be discharged unobstructed vertically upwards unless otherwise noted.

Stack/Vent ID	a. Minimum Height (feet)	b. Maximum Exhaust Dimension (inches)	c. Temperature (°F)	d. Air Flow Rate (acfm)	Applicable Requirement
SV-FWX-BO1N5	80	65	NA	NA	**R336.1901***
SV-FWX-BOIN6	75	65	NA	NA	**R336.1901***
SV-FWX- BOIP5	80	65	NA	NA	**R336.1901***
SV-FWX- BOIR5	80	65	NA	NA	**R336.1901***
SV-FWX- BOIS5	80	65	NA	NA	**R336.1901***
SV-FWX- BOIT5	80	65	NA	NA	**R336.1901***
SV-FWX- BO2Q5	80	65	NA	NA	**R336.1901***
SV-FWX- BO2S5	80	65	NA	NA	**R336.1901***
SV-FWX- BO3Q5	80	65	NA	NA	**R336.1901***
SV-FWX- BO3S5	80	65	NA	NA	**R336.1901***
SV-FWX- CO1V6	80	65	NA	NA	**R336.1901***
SV-FWX- CO1Y6	77	62	NA	NA	**R336.1901***
SV-FWX- CO2V5	80	67	NA	NA	**R336.1901***

C. Other Design Parameters

NA

II. MATERIAL USAGE/EMISSION LIMITS

A. Material	Maximum Usage Rate
Natural gas combusted in Guidecoat process oven.	1. 33,520,000 cubic feet per month **(R336.1205(1)(a)(ii)(c))** 2. 402,200,000 cubic feet per year, based on a 12-monthrolling time period as determined at the end of each calendar month. **(R336.1205(1)(a)(ii)(c))**

B. Pollutant	Maximum Emission Limit
Volatile Organic Compounds (VOC).	1. 139.4 pound per hour (averaged over the hours operated during a calendar month). **(R336.1220(1)(a)(ii))** 2. 341.5 tons per year, based upon a 12-month rolling time period as determined at the end of each calendar month. **(R336.1702(c), R336.1220(1)(a)(ii))** 3. 5.35 pounds per gallon of applied coating solids: Daily averaging period calculated at the end of each calendar month. **(R336.1702(c), R336.1220(1)(a)(ii))**

III. COMPLIANCE EVALUATION
Records of all of the following shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

TABLE E-1.4 EG-GUIDECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

A. MONITORING/RECORDKEEPING (R 336.1213(3))
In Addition To General Requirements in Part A

1. Continuous Emission Monitoring (CEM) System and Recordkeeping.	NA
2. Process Monitoring System and Recordkeeping.	1. Whenever the oxidizers are in use, the permittee shall monitor and record their operating temperatures with instrumentation acceptable to the AQD. Temperature monitoring shall be performed on a continuous basis. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. **(R336.1201(3))** 2. During production periods, if the measured operating temperature of the thermal oxidizers falls below 1400 degrees Fahrenheit and the permittee is basing compliance upon a 3-hour averaging period, the permittee shall calculate the average operating temperature for each three hour period which include one or more temperature readings below 1400 degrees Fahrenheit. Likewise, during production periods, if the measured operating temperature of the regenerative catalytic oxidizers falls below 800 degrees Fahrenheit and the permittee is basing compliance upon a 3-hour averaging period, the permittee shall calculate the average operating temperature for each three hour period which include one or more temperature readings below 800 degrees Fahrenheit. **(R336.1220, R336.1702)**
3. Other Monitoring and/or Recordkeeping	1. Records of the following data, test documentation, and annual reviews which are necessary to perform the calculations in the publication entitled "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-duty Truck Topcoat Operations," EPA-450/3-88-018, or as amended (The EPA Protocol). **(R336.1213(3))** a) For each type of coating used during the calendar month: 1) Coating identification. 2) Analytical VOC content as determined by EPA Reference Test Method 24. 3) Formulation VOC and volume solids content. 4) Coating usage (daily or monthly), including withdrawals. 5) Dilution solvent usage and density. b) Number of vehicles coated per production day by body style, coating color, and square footage coated (or equivalent unit), unless daily coating records are kept. c) Transfer efficiency. 1) Value(s) used in protocol calculations. 2) Value(s) from most recent test. 3) Annual review of operating conditions to demonstrate that the transfer efficiency remains valid. d) Oven exhaust control device VOC loading (booth/oven split). 1) Value(s) used in protocol calculations. 2) Value(s) from most recent test. 3) Annual review of operating conditions to demonstrate that the oven exhaust control device VOC loading remains valid. e) Destruction efficiency of each control device. 1) Value(s) used in protocol calculations. 2) Value(s) derived from most recent test. 2. In lieu of maintaining records required by the EPA Protocol as listed in conditions III.A.3.1

TABLE E-1.4 EG-GUIDECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

	above, an alternative format may be submitted for approval to the District Supervisor. This alternative format must be approved in advance, be consistent with the requirements of the EPA Protocol, and include all information necessary to assure compliance with the applicable limits. 3. Records of the VOC emission for each production day, which shall be determined by using the EPA Protocol. **((R336.1213(3))** 4. Plant production: monthly records. **(R336.1213(3))** 5. Records of the VOC mass emission rates shall be calculated according to the method in Appendix 7, or an alternative method that is acceptable to the DEQ-AQD. **(R336.1213(3))** 6. Weekly records of the condition of water wash system, and records of the date of inspections shall be kept at the site. **(R336.1213(3))** See Appendix 7.
B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in Part A	
1. Parameter to be Tested/Recorded.	1. Transfer efficiency of the Guidecoat process. **(R336.1213(3))** 2. Oven Exhaust Control Device VOC Loading of the Guidecoat process. **(R336.1213(3))** 3. VOC content of coatings as received. **(R336.1213(3))**
2. Method/Analysis.	1. Transfer efficiency testing is to conform to the U.S. EPA Protocol. **(R336.1213(3))** 2. Oven Exhaust Control Device VOC Loading testing to is to conform to the U.S. EPA Protocol. **(R336.1213(3))** 3. EPA Reference Test Method 24 as well as formula volume solids pursuant to the EPA Protocol. **(R336.2004(1)(q))**
3. Frequency and Schedule of Testing/Recordkeeping.	1. Verification of the transfer efficiency rates of the Guidecoat process by testing, at owners expense, is required according to the following schedule: a) Within 180 days of issuance of this permit if an acceptable transfer efficiency test has not been conducted within five years prior to the issuance of the RO permit, unless the Permittee has submitted an acceptable demonstration that the most recent acceptable test remains valid and representative. b) Within 180 days of making any changes in operating conditions which necessitate reevaluation of the transfer efficiency, as required by the EPA Protocol. Verification of transfer efficiency rates includes the submittal of a complete report of the test results. No less than 30 days prior to testing, a complete testing plan must be submitted to the DEQ-AQD. The final plan must be approved by the DEQ-AQD prior to testing. Not less than seven days before any tests are conducted, the Permittee shall notify the DEQ-AQD District Supervisor, in writing, of the time and place of the test and who will be conducting it. **(R336.1213(3), R336.2001(3))** 2. Verification of the Oven Exhaust Control Device VOC Loading rates of the Guidecoat process by testing, at owners expense, is required according to the following schedule: a) Within 180 days of issuance of this permit if an Oven Exhaust Control Device VOC Loading test has not been conducted within five years prior to the issuance of the RO permit, unless the Permittee has submitted an acceptable demonstration that the most recent acceptable test remains valid and representative.

TABLE E-1.4 EG-GUIDECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

	b) Within 180 days of making any changes in operating conditions which necessitate reevaluation of the Oven Exhaust Control Device VOC Loading rates. Verification of Oven Exhaust Control Device VOC Loading rates includes the submittal of a complete report of the test results. No less than seven days before any tests are conducted; the Permittee shall notify the DEQ-AQD District Supervisor, in writing, of the time and place of the test and who will be conducting it. **(R336.1213(3), R336.2001(3))** Verification of the analytical VOC content, as received, by testing, at owner's expense, of each non-waterborne coating, excluding powder coatings, at least once during each calendar year. Alternatively, the permittee may elect to have the EPA Method 24 analysis performed by the coating supplier on each batch of coating. **(R336.1213(3))**
IV. REPORTING	
Reports and Schedules	1. Quarterly reporting of VOC emissions shall be submitted to the AQD within 30 days of the end of the quarter in which the data were collected. **(R336.1213(3))** See Appendix 8. 2. All oxidizer operating temperature calculations shall be kept on file for a period of at least five years and made available to the Department upon request. **(R336.1220, R336.1702)**

V. OPERATIONAL PARAMETERS

1. Applicant shall operate the Guidecoat process with the water wash particulate matter control system installed and operating properly. **(R336.1331)**

2. Applicant shall operate section five of the Guidecoat booth with the carbon concentrators operating, and with the afterburner operating with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 800 degrees Fahrenheit, or at the permittee's option an average temperature of 800 degrees Fahrenheit based on a three-hour rolling average for the regenerative catalytic oxidizer, or with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 1400 degrees Fahrenheit, or at the permittee's option an average temperature of 1400 degrees Fahrenheit based on a three-hour rolling average for the regenerative thermal oxidizer. **(R336.1220, R336.1702)**

3. Applicant shall operate section Guidecoat bake oven with the afterburner operating with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 800 degrees Fahrenheit, or at the permittee's option an average temperature of 800 degrees Fahrenheit based on a three-hour rolling average for the regenerative catalytic oxidizer, or with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 1400 degrees Fahrenheit, or at the permittee's option an average temperature of 1400 degrees Fahrenheit based on a three-hour rolling average for the regenerative thermal oxidizer. **(R336.1220, R336.1702)**

4. The permittee shall not operate the Guidecoat system unless the Malfunction Abatement Plan (MAP) for the thermal or catalytic oxidizer, specified in Appendix A, or an alternate plan approved by the AQD District Supervisor, is implemented and is maintained. If the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the MAP within 45 days after such an event occurs and submit the revised plan to the AQD District Supervisor. Any additional changes made to the MAP must have prior approval by the AQD District Supervisor prior to implementation. (**R336.1220, R336.1702**)

VI. OTHER REQUIREMENTS

1. Compliance with the requirements of this table, E-1.4, shall be considered compliance with the applicable provisions of the federal Standards of Performance for New Stationary Sources, 40 CFR, Part 60, Subpart A & MM, which have been

TABLE E-1.4 EG-GUIDECOAT
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

subsumed under these streamlined requirements. **(40 CFR, Part 60, Subpart A & MM, R336.1220)**

2. If permittee replaces the regenerative thermal oxidizer for the Guidecoat bake oven with a regenerative catalytic oxidizer, the permittee shall, within 270 days after the replacement, verify coating VOC destruction efficiency of the oxidizer, by testing at owner's expense, in accordance with Department requirements and the US EPA "Protocol for Determining the Daily VOC Emission Rate of Automobile and Light-Duty Truck Topcoat Operations", December 1988, EPA 450/3-88-018. No less than 60 days prior to testing, a complete testing plan shall be submitted to AQD District Supervisor. The final plan must be approved by the Department prior to testing. A complete report of results must be submitted to the AQD District Supervisor within 60 days following testing. **(R336.1220, R336.1702)**

* This requirement is state enforceable only.

TABLE E-1.6 EG-ENAMEL

EMISSION UNIT/PROCESS GROUP REQUIREMENTS

EMISSION GROUP	EG-ENAMEL: Two parallel seven-section booths, each booth is followed by an oven. The booths are used for the application of basecoat and clearcoat.
Flexible Grouping ID	FG-COATING
I. DESIGN PARAMETERS	
A. Pollution Control Equipment	1) Regenerative Catalytic Oxidizer (RCO), 2) Regenerative Thermal oxidizer (RTO), 3) Water wash Particulate Matter Control System.
B. Stack/Vent Parameters	Exhaust gases shall be discharged unobstructed vertically upwards unless otherwise noted.

Stack/Vent ID	a. Minimum Height (feet)	b. Maximum Exhaust Dimension (inches)	c. Temperature (°F)	d. Air Flow Rate (acfm)	Applicable Requirement
SV-FWX-B03T7	80	65	NA	NA	**R336.1901***
SV-FWX-B01J6	80	65	NA	NA	**R336.1901***
SV-FWX-B01K7	80	65	NA	NA	**R336.1901***
SV-FWX-B01M6	80	65	NA	NA	**R336.1901***
SV-FWX-B01M7	80	65	NA	NA	**R336.1901***
SV-FWX-B01N7	80	65	NA	NA	**R336.1901***
SV-FWX-B01Q7	80	65	NA	NA	**R336.1901***
SV-FWX-B01S6	80	65	NA	NA	**R336.1901***
SV-FWX-B01S7	80	65	NA	NA	**R336.1901***
SV-FWX-B01T6	80	65	NA	NA	**R336.1901***
SV-FWX-B01T7	80	65	NA	NA	**R336.1901***
SV-FWX-B02M6	80	65	NA	NA	**R336.1901***
SV-FWX-B02M7	80	65	NA	NA	**R336.1901***
SV-FWX-B02Q7	80	65	NA	NA	**R336.1901***
SV-FWX-B02S6	80	65	NA	NA	**R336.1901***
SV-FWX-B02S7	80	65	NA	NA	**R336.1901***
SV-FWX-B02T6	80	65	NA	NA	**R336.1901***
SV-FWX-B02T7	80	65	NA	NA	**R336.1901***
SV-FWX-B03J7	80	65	NA	NA	**R336.1901***
SV-FWX-B03K6	80	65	NA	NA	**R336.1901***
SV-FWX-B03M6	80	65	NA	NA	**R336.1901***
SV-FWX-B03M7	80	65	NA	NA	**R336.1901***
SV-FWX-B03Q6	80	65	NA	NA	**R336.1901***
SV-FWX-B01J8	80	65	NA	NA	**R336.1901***
SV-FWX-B01K8	80	65	NA	NA	**R336.1901***
SV-FWX-B04Q7	80	65	NA	NA	**R336.1901***
SV-FWX-B03Q7	80	65	NA	NA	**R336.1901***
SV-FWX-B03S6	80	65	NA	NA	**R336.1901***
SV-FWX-B04M6	80	65	NA	NA	**R336.1901***
SV-FWX-B04M7	80	65	NA	NA	**R336.1901***
SV-FWX-B04Q6	80	65	NA	NA	**R336.1901***
SV-FWX-B05Q6	80	65	NA	NA	**R336.1901***
SV-FWX-CO1M10	75	67	NA	NA	**R336.1901***
SV-FWX- CO1M9	75	65	NA	NA	**R336.1901***
SV-FWX-CO1N10	75	67	NA	NA	**R336.1901***
SV-FWX- CO1P10	75	67	NA	NA	**R336.1901***

TABLE E-1.6 EG-ENAMEL

EMISSION UNIT/PROCESS GROUP REQUIREMENTS

SV-FWX- CO1Q10	75	67	NA	NA	**R336.1901***
SV-FWX- CO1Q9	75	67	NA	NA	**R336.1901***
SV-FWX-CO1S10	75	65	NA	NA	**R336.1901***
SV-FWX- CO1Y7	78	68	NA	NA	**R336.1901***

C. Other Design Parameters

NA

II. MATERIAL USAGE/EMISSION LIMITS

A. Material	Maximum Usage Rate
Natural gas combusted in the Enamel Process.	1. 82,680,000 cubic feet per month. **(R336.1205(1)(a)(ii)(c))** 2. 992,100,000 cubic feet per year, based on a 12-month rolling time period as determined at the end of each calendar month. **(R336.1205(1)(a)(ii)(c))**
B. Pollutant	**Maximum Emission Limit**
Volatile Organic Compounds (VOC).	1. 367.5 pounds per hour (averaged over the hours operated during a calendar month) **(R336.1702(c))** 2. 900.0 tons per year, based upon a 12-month rolling time period as determined at the end of each calendar month. **(R336.1702(c))** 3. 5.29 pounds per gallon of applied coating solids**,** based upon a calendar month averaging period. **(R336.1702(a))**

III. COMPLIANCE EVALUATION

Records of all of the following shall be maintained on file for a period of 5 years. (R 336.1213(3)(b)(ii))

A. MONITORING/RECORDKEEPING (R 336.1213(3))
In Addition To General Requirements in Part A

1. Continuous Emission Monitoring (CEM) System and Recordkeeping.	NA
2. Process Monitoring System and Recordkeeping.	1. Whenever the oxidizers are in use, the permittee shall monitor and record their operating temperatures with instrumentation acceptable to the AQD. Temperature monitoring shall be performed on a continuous basis. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. **(R336.1201(3))** 2. During production periods, if the measured operating temperature of the thermal oxidizers falls below 1400 degrees Fahrenheit and the permittee is basing compliance upon a 3-hour averaging period, the permittee shall calculate the average operating temperature for each three hour period which include one or more temperature readings below 1400 degrees Fahrenheit. Likewise during production periods, if the measured operating temperature of the regenerative catalytic oxidizers falls below 800 degrees Fahrenheit and the permittee is basing compliance upon a 3-hour averaging period, the permittee shall calculate the average operating temperature for each three hour period which include one or more temperature readings below 800 degrees Fahrenheit. **(R336.1220, R336.1702)**
3. Other Monitoring and/or Recordkeeping.	1. Records of the following data, test documentation, and annual reviews which are necessary to perform the calculations in the publication entitled "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-duty Truck Topcoat Operations," EPA-450/3-88-018, or as amended (The EPA Protocol). **(R336.1213(3))**

TABLE E-1.6 EG-ENAMEL **EMISSION UNIT/PROCESS GROUP REQUIREMENTS**	
	a) For each type of coating used during the calendar month: 1) Coating identification. 2) Analytical VOC content as determined by EPA Reference Test Method 24. 3) Formulation VOC and volume solids content. 4) Coating usage (daily or monthly), including withdrawals. 5) Dilution solvent usage and density. b) Number of vehicles coated per production day by body style, coating color, and square footage coated (or equivalent unit), unless daily coating records are kept. c) Transfer efficiency. 1) Value(s) used in protocol calculations. 2) Value(s) from most recent test. 3) Annual review of operating conditions to demonstrate that the transfer efficiency remains valid. d) Oven exhaust control device VOC loading (booth/oven split). 1) Value(s) used in protocol calculations. 2) Value(s) from most recent test. 3) Annual review of operating conditions to demonstrate that the oven exhaust control device VOC loading remains valid. e) Destruction efficiency of each control device. 1) Value(s) used in protocol calculations. 2) Value(s) derived from most recent test. 2. In lieu of maintaining records required by the EPA Protocol as listed in conditions III.A.3.1 above, an alternative format may be submitted for approval to the District Supervisor. This alternative format must be approved in advance, be consistent with the requirements of the EPA Protocol, and include all information necessary to assure compliance with the applicable limits. 3. Records of the VOC emission for each production day, which shall be determined by using the EPA Protocol. **((R336.1213(3))** 4. Plant production: monthly records. **(R336.1213(3))** 5. Records of the VOC mass emission rates shall be calculated according to the method in Appendix 7, or an alternative method that is acceptable to the DEQ-AQD. **(R336.1213(3))** 6. Weekly records of the condition of water wash system, and records of the date of inspections shall be kept at the site. **(R336.1213(3))** See Appendix 7.
B. TESTING/RECORDKEEPING (R 336.1213(3)) In Addition to General Requirements in Part A	
1. Parameter to be Tested/Recorded.	1. Transfer efficiency of the Enamel process. **(R336.1213(3))** 2. Oven Exhaust Control Device VOC Loading of the Enamel process. **(R336.1213(3))** 3. VOC content of non-waterborne coatings, as received, excluding powder coatings. **(R336.1213(3))**

TABLE E-1.6 EG-ENAMEL **EMISSION UNIT/PROCESS GROUP REQUIREMENTS**	
2. Method/Analysis.	1. Transfer efficiency testing is to conform to the U.S. EPA Protocol. **(R336.1213(3))**
	2. Oven Exhaust Control Device VOC Loading testing to is to conform to the U.S. EPA Protocol. **(R336.1213(3))** 3. EPA Reference Test Method 24 as well as formula volume solids pursuant to the EPA Protocol. **(R336.2004(1)(q))**
3. Frequency and Schedule of Testing/Recordkeeping.	1. Verification of the transfer efficiency rates of the Enamel process by testing, at owners expense, is required according to the following schedule: a) Within 180 days of issuance of this permit if an acceptable transfer efficiency test has not been conducted within five years prior to the issuance of the RO permit, unless the Permittee has submitted an acceptable demonstration that the most recent acceptable test remains valid and representative. b) Within 180 days of making any changes in operating conditions which necessitate reevaluation of the transfer efficiency, as required by the EPA Protocol. Verification of transfer efficiency rates includes the submittal of a complete report of the test results. No less than 30 days prior to testing, a complete testing plan must be submitted to the DEQ-AQD. The final plan must be approved by the DEQ-AQD prior to testing. Not less than seven days before any tests are conducted, the Permittee shall notify the DEQ-AQD District Supervisor, in writing, of the time and place of the test and who will be conducting it. **(R336.1213(3), R336.2001(3))** 2. Verification of the Oven Exhaust Control Device VOC Loading rates of the Enamel Line by testing, at owners expense, is required according to the following schedule: a) Within 180 days of issuance of this permit if an Oven Exhaust Control Device VOC Loading test has not been conducted within five years prior to the issuance of the RO permit, unless the Permittee has submitted an acceptable demonstration that the most recent acceptable test remains valid and representative. b) Within 180 days of making any changes in operating conditions which necessitate reevaluation of the Oven Exhaust Control Device VOC Loading rates. Verification of Oven Exhaust Control Device VOC Loading rates includes the submittal of a complete report of the test results. No less than seven days before any tests are conducted; the Permittee shall notify the DEQ-AQD District Supervisor, in writing, of the time and place of the test and who will be conducting it. **(R336.1213(3), R336.2001(3))** Verification of the analytical VOC content, as received, by testing, at owner's expense, of each non-waterborne coating, excluding powder coatings, at least once during each calendar year. Alternatively, the permittee may elect to have the EPA Method 24 analysis performed by the coating supplier on each batch of coating. **(R336.1213(3))**
IV. REPORTING	
Reports and Schedules	1. Quarterly reporting of the emissions on a pound VOC per gallon of applied coating solids, averaged over each calendar month, to be submitted, to the AQD, within 30 days of the end of the quarter in which the data were collected. **(R336.1213, NSPS 40 CFR, Part 60, Subparts A & MM)** 2. All oxidizer operating temperature calculations shall be kept on file for a period of at least five years and made available to the Department upon request. **(R336.1220, R336.1702)**

TABLE E-1.6 EG-ENAMEL
EMISSION UNIT/PROCESS GROUP REQUIREMENTS

V. OPERATIONAL PARAMETERS

1. Permittee shall not operate the Enamel process unless the water wash particulate matter control system is operating properly. **(R336.19331)**

2. Permittee shall operate sections 2 and 3 (basecoat) of the Enamel booths with the carbon concentrators operating, and with the afterburner operating with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 800 degrees Fahrenheit, or at the permittee's option an average temperature of 800 degrees Fahrenheit based on a three-hour rolling average for the regenerative catalytic oxidizer, or with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 1400 degrees Fahrenheit, or at the permittee's option an average temperature of 1400 degrees Fahrenheit based on a three-hour rolling average for the regenerative thermal oxidizer. **(R336.1220, R336.1702)**

3. Permittee shall operate section 6 (clearcoat) of the Enamel booths with the carbon concentrators operating, and with the afterburner operating with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 800 degrees Fahrenheit, or at the permittee's option an average temperature of 800 degrees Fahrenheit based on a three-hour rolling average for the regenerative catalytic oxidizer, or with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 1400 degrees Fahrenheit, or at the permittee's option an average temperature of 1400 degrees Fahrenheit based on a three-hour rolling average for the regenerative thermal oxidizer. **(R336.1220, R336.1702)**

4. Permittee shall operate the Enamel booth bake ovens with their afterburner operating with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 800 degrees Fahrenheit, or at the permittee's option an average temperature of 800 degrees Fahrenheit based on a three-hour rolling average for the regenerative catalytic oxidizer, or with a minimum retention time of 0.5 seconds and at a minimum chamber temperature of 1400 degrees Fahrenheit, or at the permittee's option an average temperature of 1400 degrees Fahrenheit based on a three-hour rolling average for the regenerative thermal oxidizer. **(R336.1220, R336.1702)**

5. The permittee shall not operate the Enamel system unless the Malfunction Abatement Plan (MAP) for the thermal or catalytic oxidizer, specified in Appendix A, or an alternate plan approved by the AQD District Supervisor, is implemented and is maintained. If the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction at the time the plan is initially developed, the owner or operator shall revise the MAP within 45 days after such an event occurs and submit the revised plan to the AQD District Supervisor. Any additional changes made to the MAP must have prior approval by the AQD District Supervisor prior to implementation. **(R336.1220, R336.1702)**

VI. OTHER REQUIREMENTS

1. Compliance with requirements of this table, E-1.6, shall be considered compliance with the applicable provisions of the federal Standards of Performance for New Stationary Sources, 40 CFR, Part 60, Subpart A & MM, which have been subsumed under these streamlined requirements. **(40 CFR, Part 60, Subpart A & MM , R336.1220)**

2. If permittee replaces the regenerative thermal oxidizer for any of the Enamel bake oven with a regenerative catalytic oxidizer, the permittee shall, within 270 days after the replacement, verify coating VOC destruction efficiency of the oxidizer, by testing at owner's expense, in accordance with Department requirements and US EPA "Protocol for Determining the Daily VOC Emission Rate of Automobile and Light-Duty Truck Topcoat Operations", December 1988, EPA 450/3-88-018. No less than 60 days prior to testing, a complete testing plan shall be submitted to AQD District Supervisor. The final plan must be approved by the Department prior to testing. A complete report of results must be submitted to the AQD District Supervisor within 60 days following testing. **(R336.1220, R336.1702)**

* This requirement is state enforceable only.

Appendix 7. Emission Calculations

The permittee shall use the following calculations methods as guidance in conjunction with monitoring, testing or recordkeeping data to determine compliance with the applicable requirements referenced in Tables E-1.1, E-1.4, and E-1.6. These calculations are to be used to estimate the emission rates that are utilized in the compliance demonstrations however, not all calculated values have an underlying applicable requirement (e.g., monthly VOC emissions are utilized to calculate hourly VOC emissions though there is no limit on monthly VOC emissions). Material usage and VOC content are "with water" unless otherwise noted. *"Days" may be used as either production days or calendar days.* Alternate calculation methods may be utilized where acceptable to the MDEQ. The MDEQ-AQD does not require a specific format to be used for submittal and currently used formats are considered acceptable unless notified in writing by the MDEQ-AQD.

VOC Emission Calculations

VOC Emissions - Monthly Calculation (Ibs/month) for Sources Without Add-on Controls:
Pounds VOC/month = Net Material usage (gallons/month) * VOC content (lbs./gal)

VOC Emissions - Monthly Calculation (lbs/month) for Sources With Add-on Controls:
Pounds VOC/month = (net material usage (gallons/month) * VOC content (lbs./gal)*
Fraction emitted in uncontrolled areas) + (Net material usage (gallons/month) * VOC content (lbs/gal) *
Fraction emitted in controlled areas * (1 - control efficiency))

VOC Emission Rate Hourly Emission Calculation (lbs/hr) (controlled or uncontrolled from above):

$$\text{Pounds VOC/hour} = \frac{\text{Pounds VOC/month}}{\text{monthly hours of operation}}$$

VOC Emission Rate Annual Emission Calculation (tons VOClyear -12 month rolling time period) (controlled or uncontrolled from above):

$$\text{tons VOC/year} = \sum_{b=1}^{12} \frac{\text{Monthlv VOC Emissions (lbs)}}{\text{2000 lbs./ ton}}$$

VOC Emission Rate Pounds of VOC per Gallon of Coating (or Solvent) Minus Water (lbs VOC/gal (minus water)):
1) Where applicable, to determine the VOC content of each coating (or solvent), minus water, as applied, that belongs to the same coating category "P" used during the averaging period by using the method described in R336.2040(5).

2) Determine the weight of VOC used during the averaging period "M" by using the method described in R336.2040(6).

3) Determine the total volume of coatings (or solvent) used on the coating line during the averaging period "G_t" using the following equation:

$$G_t = \sum_{i=1}^{zc} L_{ci}$$

4) Determine the volume-weighted average weight of VOC per gallon, minus water, as applied, by the following equation:

$$P_a = M/G_t$$

5) If "P_a" is less than or equal to the specified emission limit, the coating line meets the emission limit.

Note – All terms defined in R336.2040

For Table 1.1 EG-ECOAT (VOC Calculations)

- VOC emission rate (lb/GACS) for each month = $\dfrac{\sum_{i=1}^{zc} L_{di} D_{ci} W_{ci}}{\sum_{i=1}^{zc} L_{di} V_{ci} T} \times (1 - DE\ N)$

- Daily mass VOC emission rate (lb/day) on day n based on monthly proration using coated surface area alternately, The proration may be based on operating days during the month = $\sum_{i=1}^{zc} L_{di} D_{ci} W_{ci} \times (DAYSQFT(n)/ MONSQFT) \times (1 - DE\ N)$

- Monthly mass VOC emission rate (tons/month) as determined at the end of each calendar month = $\dfrac{\sum_{i=1}^{zc} L_{di} D_{ci} W_{ci}}{2000} \times (1 - DE\ N)$

- Hourly mass VOC emission rate (lb/hr) is calculated by dividing monthly mass VOC emission rate by the number of hours operated that month

- Annual mass VOC emission rate (tons/12 month) as determined at the end of each calendar month = $\dfrac{\sum_{b=1}^{12} \sum_{i=1}^{zc} L_{di} D_{ci} W_{ci}}{2000} \times (1 - DE\ N)$

Where: L_{di} = Volume of each component "i" used during the current calendar month, gallons - Rule 1040 (3)(n),

D_{ci} = Density of each component "i" as received, lb/gallon – Rule 1040 (3)(e),

W_{ci} = Proportion of VOC by weight in each component "i" as received, lb VOC/lb – Rule 1040 (3)(xx),

NOTE: D_{ci} and W_{ci} may be reported separately, but will normally be reported as a single value D_{ci} W_{ci} (lbs VOC/gallon).

V_{ci} = Proportion of solids by formula volume in each coating "i" as received, gal solids/gal – Rule 1040 (3)(vv),

i = An individual component used during the calendar month – Rule 1040 (3)(j),

zc = The total number of different components "i" used during the calendar month - Rule 1040 (3)(bbb),

O = Operating (or production) days during the calendar month,

T = Overall transfer efficiency for all components "i", as a fraction (100% assumed) – Rule 1040 (3)(pp),

b = Current calendar month plus 11 preceding calendar months,

DE = VOC destruction efficiency of add-on emission control device(s), if present – Rule 1040 (3)(g),

N = Fraction, by weight, of total VOC which is emitted by EU-ECOAT which is captured and enters the add-on emission control device(s), if present, as a fraction (100% assumed) – Rule 1040 (3)(t).

DAYSQFT(n) = Total square footage coated with coatings on day n

MONSQFT = Total square footage coated with coatings in the month

"Days" may be used as either production days or calendar days.

For Table 1.4 EG-GUIDECOAT (VOC Calculations)

- VOC emission rate (lb/GACS) for each production day = from Calculations
- Daily mass VOC emission rate (lb/day) based on monthly proration = from Calculations
- Hourly mass VOC emission rate (lb/hr) is calculated by dividing monthly mass VOC emission rate by the number of hours operated that month
- Monthly mass VOC emission rate (tons/mo.) as determined at the end of each calendar month =

$$\frac{\text{Pounds VOC/calendar month [from Calculations]}}{2000}$$

Annual mass VOC emission rate (tons/12 month) as determined at the end of each calendar month =

$$\sum_{b=1}^{12} \frac{\text{Pounds VOC/calendar month [from Calculations]}}{2000}$$

Where: b = current calendar month plus 11 preceding calendar months,
Calculations = values determined by the methodology described in the publication entitled - Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations, EPA-450/3-88-018, December 1988

Where: L_{di} = Volume of each coating "i" used during the current calendar month, gallons - Rule 1040 (3)(n),
D_{ci} = Density of each coating "i" as received, lb/gallon – Rule 1040 (3)(e),
W_{ci} = Proportion of VOC by weight in each coating "i" as received, lb VOC/lb – Rule 1040 (3)(xx),
NOTE: D_{ci} and W_{ci} may be reported separately, but will normally be reported as a single value D_{ci} W_{ci} (lbs VOC/gallon).
V_{ci} = Proportion of solids by formula volume in each coating "i" as received, gal solids/gal – Rule 1040 (3)(vv),
L_{sj} = Volume of each VOC dilution solvent "j" added to the coating, gallons – Rule 1040 (3)(p),
D_{sj} = Density of each VOC dilution solvent "j" added to the coating, lbs/gallon – Rule 1040 (3)(f),
j = An individual dilution solvent used during the calendar month – Rule 1040 (3)(k),
i = An individual coating used during the calendar month – Rule 1040 (3)(j),
zc = The total number of different coatings "i" used during the calendar month - Rule 1040 (3)(bbb),
y = The total number of different dilution solvents "j" – Rule 1040 (3)(zz),
T = Overall transfer efficiency for all coatings "i", as a fraction (per 40 CFR 393(C)) – Rule 1040 (3)(pp),
b = Current calendar month plus 11 preceding calendar months,
DE = VOC destruction efficiency of add-on emission control device(s), if present – Rule 1040 (3)(g),
N = Fraction, by weight, of total VOC which is emitted by EG-Guidecoat which is captured and enters the add-on emission control device(s), if present, as a fraction – Rule 1040 (3)(t).
"Days" may be used as either production days or calendar days.

For Table 1.6 EG-ENAMEL (VOC Calculations)

- VOC emission rate (lb/GACS) for each production day = from Calculations
- Daily mass VOC emission rate (lb/day) based on monthly proration = from Calculations
- Hourly mass VOC emission rate (lb/hr) is calculated by dividing monthly mass VOC emission rate by the number of hours operated that month
- Monthly mass VOC emission rate (tons/mo.) as determined at the end of each calendar month =

$$\frac{\text{Pounds VOC/calendar month [from Calculations]}}{2000}$$

Annual mass VOC emission rate (tons/12 month) as determined at the end of each calendar month =

$$\sum_{b=1}^{12} \frac{\text{Pounds VOC/calendar month [from Calculations]}}{2000}$$

Where: b = current calendar month plus 11 preceding calendar months,
Calculations = values determined by the methodology described in the publication entitled - Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations, EPA-450/3-88-018, December 1988

Where: L_{di} = Volume of each coating "i" used during the current calendar month, gallons - Rule 1040 (3)(n),
D_{ci} = Density of each coating "i" as received, lb/gallon – Rule 1040 (3)(e),
W_{ci} = Proportion of VOC by weight in each coating "i" as received, lb VOC/lb – Rule 1040 (3)(xx),
NOTE: D_{ci} and W_{ci} may be reported separately, but will normally be reported as a single value D_{ci} W_{ci} (lbs VOC/gallon).
V_{ci} = Proportion of solids by formula volume in each coating "i" as received, gal solids/gal – Rule 1040 (3)(vv),
L_{sj} = Volume of each VOC dilution solvent "j" added to the coating, gallons – Rule 1040 (3)(p),
D_{sj} = Density of each VOC dilution solvent "j" added to the coating, lbs/gallon – Rule 1040 (3)(f),
j = An individual dilution solvent used during the calendar month – Rule 1040 (3)(k),
i = An individual coating used during the calendar month – Rule 1040 (3)(j),
zc = The total number of different coatings "i" used during the calendar month - Rule 1040 (3)(bbb),
y = The total number of different dilution solvents "j" – Rule 1040 (3)(zz),
T = Overall transfer efficiency for all coatings "i", as a fraction (per 40 CFR 393(C)) – Rule 1040 (3)(pp),
b = Current calendar month plus 11 preceding calendar months,
DE = VOC destruction efficiency of add-on emission control device(s), if present – Rule 1040 (3)(g),
N = Fraction, by weight, of total VOC which is emitted by EU-Topcoat which is captured and enters the add-on emission control device(s), if present, as a fraction – Rule 1040 (3)(t).
"Days" may be used as either production days or calendar days.

Appendix 8. Reporting

A. Annual and Deviation Certification Reporting

The Permittee shall use the Report Certification form (EQP5736) and Deviation Report form (EQP 5737) for the annual and deviation certification reporting referenced in Section IV and described in Rules 336.1213(4)(c) and 336.1213(3)(c)(i). Alternative formats must be approved by the AQD District Supervisor.

Appendix A

WIXOM ASSEMBLY
MALFUNCTION ABATEMENT PLAN

This document was created to define the malfunction abatement plan as required by subrule (2) of Rule 911 of the Air Pollution Control Rules – Part 9. Emission Limitations and Prohibitions. This abatement plan is used to detect, prevent, and correct malfunctions or equipment failures resulting in emissions exceeding any applicable emission limitation. The plan will be revised within 45 days of occurrence if a malfunction occurs that is not addressed within the plan

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DESCRIPTION OF CONTROL EQUIPMENT

Two types of emission abatement equipment are utilized for VOC control at the Wixom Assembly Plant: 1) thermal oxidizers and 2) carbon adsorption systems. Emissions from the e-coat, guidecoat and topcoat ovens are directed to thermal oxidizers for emission control. During the curing process, VOCs are driven out of the coating while the coating solids remain on the car body. Thermal oxidation of oven exhaust takes advantage of both the elevated temperature of the exhaust gas as well as the BTU value of the VOC. A diagram of a typical thermal oxidizer can be seen below. There are two types of thermal oxidizers utilized at the Wixom Assembly Plant – regenerative thermal oxidizers (RTO) and regenerative catalytic oxidizers (RCO). In an RTO, thermal efficiency is achieved through the use of ceramic media which retains a large portion of the heat generated by the combustion chamber. As the exhaust air passes through the ceramic media the VOCs are oxidized, or destroyed, by the high temperature. The designed operating temperature for the RTOs at Wixom Assembly is 1400 ^{O}F. In an RCO, a catalytic media is utilized to achieve VOC destruction at reduced temperatures. As the exhaust air passes through the RCO, the VOCs contained in the air are oxidized by the catalytic media. The RCO operating temperature is 800 ^{O}F or greater.

Emissions from controlled sections of the guidecoat and topcoat spray booths are controlled using a carbon adsorption system (CAS). This system consists of a carbon concentrating system coupled with a thermal oxidizer (discussed above). The carbon concentrating system has two main functions – 1) to capture VOCs from the spray booth exhaust air and 2) to direct the captured VOCs to the thermal oxidizer for destruction. The first step is accomplished using a large carbon rotor. The carbon rotor has twenty-four (24) separate sections, each filled with activated carbon blocks. At all times of operation, spray booth exhaust air passes through twenty-two (22) of the carbon rotor sections. As the exhaust air passes through the carbon media, VOCs are captured (adsorbed) by the activated carbon. A desorption system is utilized to remove, or "strip" the captured VOCs and direct them to the thermal oxidizer for destruction. In order for proper desorption to occur, the carbon rotor continuously rotates and at all times of operation two rotor sections are undergoing desorption. The desorption system consists of a desorption fan and heater which directs heated air (250 to 270 ^{O}F) through the carbon rotor section. As the heated air passes through the carbon media, VOCs are "stripped" from the activated carbon. The desorbed VOCs are then directed to a thermal oxidizer for destruction. The volume of desorption air is typically about one-tenth of the total spray booth exhaust air treated by the CAS. A diagram of a typical CAS can be seen below.

PREVENTIVE MAINTENANCE PROGRAM

Identification of Supervisory Personnel

The Paint Area Manager and Paint Manufacturing Engineering Manager are responsible for overseeing the inspection, maintenance and repair of air-cleaning devices. Repair work is completed by either plant skilled trades personnel or outside contractors experienced in the maintenance and operation of these devices.

Description of Items and/or Conditions that Shall Be Inspected/Frequency of Inspection or Repairs

Inspections and routine preventive maintenance, as recommended by the vendor and/or identified by Ford engineering staff, are performed on a routine basis for all emission control equipment. Specific inspection and maintenance tasks are part of the facility's Total Equipment Maintenance System (TEMS), which identifies inspection and maintenance task information for all major process and control equipment. Records of all inspections and maintenance activities performed are maintained within the TEMS system. Table 1 contains highlights of the Ford Wixom preventive maintenance program including frequency of inspections/repairs.

Identification of Major Replacement Parts to be maintained in Inventory for Expedient Replacement

A critical spare parts inventory has been identified and is maintained for the VOC control equipment at the Ford Wixom Assembly Plant. Critical spare parts are those that are deemed unique in their design and/or are difficult to obtain, and may contribute to the malfunction of existing control equipment based on supplier information, plant operating experience and good engineering judgment. The inventory list has been developed which identifies the critical spare parts kept by the plant and where they are located. The critical spare parts in the inventory are subject to change based on best engineering judgment and technological/equipment improvements.

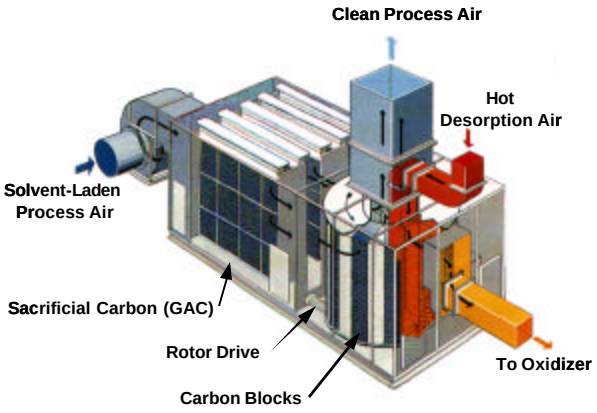
As spare parts are utilized, necessary replacements are acquired to maintain adequate inventory levels. Inventory checks are routinely performed (e.g. quarterly) to ensure part availability.

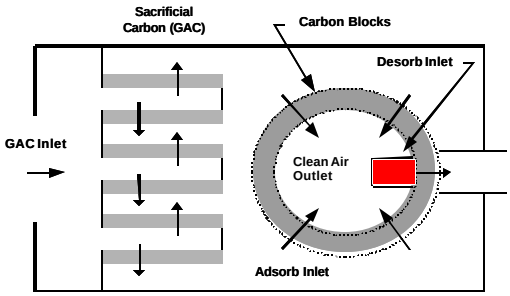
Table 2 lists the typical spare parts which are inventoried at Wixom Assembly.

MONITORED VARIABLES

Carbon Adsorption System

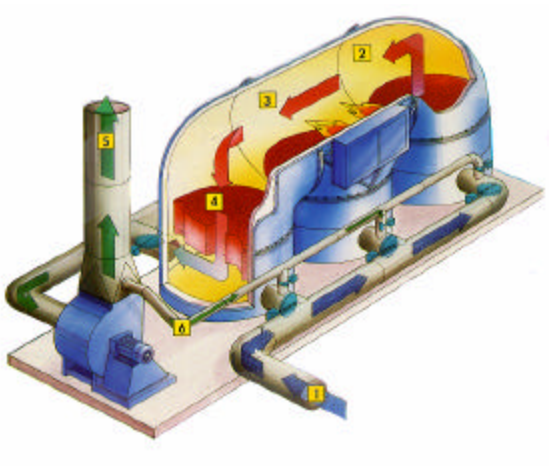
There are two main operating variables of the Carbon Adsorption System to be monitored: wheel rotation and desorption air temperature. If the carbon wheel stops rotating for any reason, an alarm will sound and the system will shut down (process air is diverted to by-pass stacks). System shut down is required to prevent the occurrence of a fire or explosion caused by the build-up of excessive VOCs on the carbon rotor. Second, desorption air temperature (approximately 250-270 ^{O}F) is monitored by the system's Programmable Logic Controller (PLC). The Programmable Logic Controller (PLC) is programmed to sound an alarm if the desorption temperature is outside an acceptable safety margin value. Inadequate air temperatures may result in decreased desorption which could result in the excess build-up of VOCs on the carbon rotors - a serious safety concern.

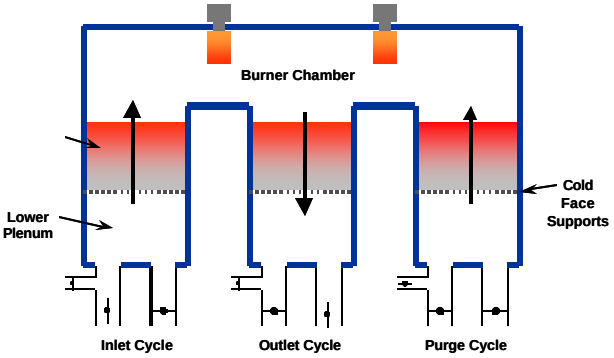




Regenerative Thermal Oxidizer (RTO) or Regenerative Catalytic Oxidizer (RCO)

The oxidizer combustion chamber temperature is continuously monitored to ensure that a minimum temperature of 1400 ^{O}F (800 ^{O}F for RCOs) is achieved. The combustion chamber temperature is monitored through the Programmable Logic Controller. The Programmable Logic Controller (PLC) is programmed to sound an alarm if the combustion chamber temperature is outside an acceptable safety margin value.





MALFUNCTION OR BREAKDOWN NOTIFICATION AND COMMUNICATION PROCESS

When an abatement equipment fault condition/fault status occurs, the facility Environmental Control Specialist (ECS), Paint ME Manager and Paint Maintenance Superintendent are contacted. The notification will identify the piece of abatement equipment the fault occurred on, the time the fault occurred and the estimated time for repairs. If the abatement equipment fault condition/fault status continues for more than two hours, a follow-up notification will be sent stating the current status of the incident and information on the cause of the fault. If the ECS cannot be immediately reached by telephone or radio, a text page message is sent. If the ECS does not respond to the text page within a reasonable time period, the Plant Engineering Manager or the Manufacturing Planning Manager are contacted. If an abnormal condition, start-up, shutdown, or malfunction to the abatement equipment results in the exceedance of an applicable standard or emission limitation lasting more than two hours, the ECS will notify the AQD. The notification is made as soon as reasonably possible, but not later than two business days after becoming aware of the event. A written report detailing the event is submitted within ten days. The written report identifies the emission source, the time and duration of the event, corrective and preventive actions taken, actions taken to minimize emissions and if possible an estimate of the emissions during the event.

Once the abatement equipment is back on-line, the Paint Area Manager or designee notifies the ECS that the emission control system has been returned to operation. An Emission Control Equipment Breakdown Report is completed with details on the piece of abatement equipment the fault occurred on, the duration of the breakdown (i.e., date, times, shift type), interim corrective actions, root cause of the fault, names and times that any service representatives were contacted and permanent corrective actions. The completed report is submitted to the facility Environmental Control Specialist. The information is also routed to the Division office for review and analysis.

CORRECTIVE PROCEDURES AND OPERATING SCENARIOS

In addition to robust PM and expeditious repair activities, the plant management in consultation with environmental staff as appropriate will evaluate the appropriateness and/or feasibility of operational constraints to minimize VOC emissions. VOC emissions will be estimated during the malfunction based on similar production data from a previous month. If a breakdown is going to result in exceedance of a short-term mass VOC emission limit, plant management will consider various options to minimize emissions. Possible operating actions may include the following but are not limited to:

- Switching from Tag relief to Mass personnel relief
- Adjusting production schedule to minimize emissions (i.e. lunches or breaks)
- Reducing operating hours (i.e. don't run scheduled overtime)
- Temporarily slowing down or stopping production through part or all of the paint production line

Primary consideration will be given to the potential risk of negatively impacting human health and the environment. In situations where the risk of negatively impacting human health and environment is high (e.g. plant-wide mass emission limits will potentially be exceeded), plant management will consider more drastic operating constraints including an orderly shutdown to minimize emissions.

TABLE 1

HIGHLIGHTS OF FORD WIXOM PREVENTIVE MAINTENANCE ACTIVITIES

Frequency	Maintenance Activity
Weekly	PM inspection and lubrication
3 Times per year	Infrared inspection of electrical components
Semi Annual	Detailed mechanical inspection of incinerators
Semi Annual	Inspection of dampers
Semi Annual	Carbon wheel gearbox and damper lubrication
Semi Annual	Detailed mechanical inspection of carbon wheels
Annual	Inspection and testing of gas trains

TABLE 2
TYPICAL EMISSION CONTROL EQUIPMENT REPLACEMENT PARTS INVENTORY

Part Name	Storage Location
Motors for Blowers	Birclar Electric
Variable Frequency Drive	General Stores
Thermocouples, Honeywell	General Stores
Pump, WEP Water, Gusher	Paint Basement
Honeywell Flame Detection Components	General Stores
PLC Processors, Allen Bradley	General Stores
Gas Train regulators/switches/valves	General Stores
Gas Firing Controllers	General Stores
Hydraulic Cylinders and Valves	General Stores
Pneumatic cylinder	General Stores