Oven Solvent Loading
Test Report

General Motors, LLC
Detroit-Hamtramck Assembly (Factory ZERO)
2500 East General Motors Boulevard
Detroit, MI 48211

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APPENDIX

Appendix A Results of Oven Solvent Loading Test
Appendix B Certification of Scale Accuracy

1. Introduction

General Motors (GM) retained Axalta to conduct Oven Solvent Loading for the GM Detroit Hamtramck facility (Factory ZERO) located at 2500 E. General Motors Blvd., Detroit, MI 48211, PTI-209-19A. Oven Solvent Loading Testing of the Primer Surfacer (primer, monocoat) and Topcoat (base solid, base metallic, clearcoat) operations. Testing included: Oven exhaust control device VOC loading rates (Oven Solvent Loading).

AQD has published a guidance document entitled "Format for Submittal of Source Emission Test Plans and Reports" (November 2019). The following is a summary of the emissions test plan in the format suggested by the aforementioned document.

1.a Identification, Location, and Dates of Test

Oven Solvent Loading Testing of the Primer Surfacer and Topcoat was conducted June 9, 2022. Testing was conducted at the Axalta Coating Systems facility in Mount Clemens, MI.

1.b Purpose of Test

Testing was conducted for FGAUTOASSEMBLY (TESTING V. 4) operations as prescribed by Permit Number PTI-209-19A and the test plan as approved by the Air Quality Division (letter dated May 26, 2022)

1.c Source Description

The GM facility is an automotive assembly center. The facility utilizes numerous raw materials in the process of automotive assembly, varying from imported parts and products to pre-assembled automotive supplies. The materials utilized that are influential for the proposed emissions test program are paints that are cured in curing ovens.

1.d Test Program Contacts

The contact for the source and test report is:

Ms. Meghan Kennedy
Environmental Engineer
General Motors, LLC
Detroit-Hamtramck Assembly
2500 E. GM Blvd.
Detroit, MI 48211
(248) 409-8974

Ms. Jessica Alderton

Sr. Environmental Project Engineer
General Motors, LLC
SW Strategic Environmental Solutions
(586) 863-8490
jessica.alderton@gm.com

Stephen Hall
Product Engineering Manager – OEM Light Vehicle
Axalta Coating Systems
(810) 728-6139
stephen.hall@axalta.com

2. Summary of Results

2.a Operating Data

The operating parameters of the regenerative thermal oxidizers are as follows:

Temp – minimum 1500 degrees Fahrenheit
Minimum of 0.5 second gas retention time

The attached report provided as Appendix A provides a summary of process operating parameters.

2.b Applicable Permit

The applicable permit number is PTI-209-19A. The emission unit ID is FGAUTOASSEMBLY.

2.c Results

The attached report provided as Appendix A provides a summary of results.

3. Source Description

3.a Process Description

EUTOPCOATSYSTEM - A topcoat spray booth followed by a curing oven. There is a heated flash-off area located between the basecoat portion of the booth and the clearcoat portion of the booth. The waterborne basecoat is applied automatically with air atomized or electrostatic spray guns. The solventborne clearcoat is applied automatically with air atomized or electrostatic spray guns. Spray booth overspray (basecoat and clearcoat) is controlled by a waterwash particulate control system. Exhaust from all basecoat and clearcoat spray booths and all observation zones is controlled by a bank of three RTOs (RTO 110, RTO 120, and RTO 130) for control of VOCs. Exhaust from all basecoat heated flash-off areas and all topcoat curing ovens is exhausted to a bank of two RTOs (RTO 210 and RTO 220) for control of VOCs. The spot reprocess area is exhausted through downdraft

ventilation through a dry filter particulate control system and vented back into the in-plant environment.

EUPRIMERSURFACER - A guidecoat (primer surfacer) spray booth followed by a curing oven. The solventborne primersurfacer is applied automatically with air atomized or electrostatic spray guns. Primer coating booth overspray is controlled by a waterwash particulate control system. The exhaust from the primer coating booth and observation zone is controlled by a bank of three RTOs (RTO 110, RTO 120, and RTO 130) for control of VOCs. Primer curing oven emissions are exhausted to a bank of two RTOs (RTO 210 and RTO 220) for control of VOC emissions. The cooling tunnels are exhausted to the atmosphere.

Oven solvent loading test results are used to calculate paint shop VOC emissions.

3.b Type of Raw and Finished Materials

The following materials were used in the testing program:

- Canvas White solventborne primer surfacer
- Black Monocoat solventborne monocoat
- Summit White waterborne basecoat
- Barb Wire Metallic waterborne basecoat
- 2K Clearcoat Part A, 2K Clearcoat Part B

3.c Capacity of the Process

The facility is restricted in the total tons of VOCs per year and per vehicle. During initial low production the limit is 39.0 tons per year, based on a 12-month rolling time period. During normal production, the limit is 330.3 tons per year, based on a 12-month rolling time period and a 3.0 pounds of VOC per job, based on a 12-month rolling time period.

3.d Process Instrumentation

Process instrumentation is not associated with this testing.

4. Sampling and Analytical Procedures

Oven Solvent Loading

Primer Surfacer

W0 = weight of bare panel
Apply primer surfacer
W1 = Weight of panel + primer surfacer (immediately after spraying as practical)
Flash for 16 min 56 sec minutes at ambient temp
W2 = Weight of primed panel after flash
Bake Panel at 38 min 30 sec @ 285°F

Let panel cool
W3 = Weight of cooled, cured primed panel

Monocoat

W0 = weight of bare panel
Apply primer surfacer
W1 = Weight of panel + primer surfacer (immediately after spraying as practical)
Flash for 16 min 56 sec minutes at ambient temp
W2 = Weight of primed panel after flash
Bake Panel at 38 min 30 sec @ 285°F
Let panel cool
W3 = Weight of cooled, cured primed panel

Waterborne Basecoat Body System

W0 = weight of bare panels
Apply basecoat (Barb Wire (Metallic) and White (solid) (2 separate panels)
W1 = Weight of each panel + basecoat (immediately after spraying as practical)
Flash for 1 minute, 12 seconds at ambient temperature
W2 = Weight of basecoated panels after flash
Oven for 6 minutes at 180°F
W3 = Weight of basecoated panel after heated flash
Flash for 13 minutes at ambient temperature
W4 = Weight of basecoated panel after flash
Bake for 36 minutes, 24 seconds at 250°F
Let panel cool
W5 = Weight of cooled, cured basecoated panels

Clearcoat Body System

W0 = Weight of bare panel
W1 = Weight of panel + clearcoat (immediately after spraying as practical)
Flash for 6 minutes and 25 seconds at ambient temperature
W2 = Weight of clearcoated panel after flash
Bake for 36 minutes, 45 seconds at 250F
Let panel cool
W3 = Weight of cooled, cured clearcoated panel

5. Test Results

5.a-b Test Results Summary

A summary is presented in the attached reports provided as Appendix A. Results from this test program will be used to calculate associated emissions from the respective sources.

5.c Sampling Procedure Variation

Not applicable for this testing.

5.d Process or Control Device Upsets

Not applicable for this testing.

5.e Control Device Maintenance

Not applicable for this testing.

5.f Re-test

This was not a re-test.

5.g Quality Assurance Audit Samples

Not applicable for this testing.

5.h Calibration Sheets

Certification of scale accuracy documentation is provided as Appendix B.

5.i Sample calculations

Not applicable for this testing.

5.j Field Data Sheets

Included in attached reports provided as Appendix A.

5.k Laboratory Data

Included in attached reports provided as Appendix A.