

Oven Solvent Loading
Test Report

General Motors, LLC
Flint Assembly
G-3100 Van Slyke Road
Flint, MI 48551

December 11, 2019

TABLE OF CONTENTS

1. INTRODUCTION..... 3

1.A IDENTIFICATION, LOCATION, AND DATES OF TEST 3

1.B PURPOSE OF TEST 3

1.C SOURCE DESCRIPTION 3

1.D TEST PROGRAM CONTACTS..... 3

2. SUMMARY OF RESULTS..... 4

2.A OPERATING DATA..... 4

2.B APPLICABLE PERMIT..... 4

2.C RESULTS 4

3. SOURCE DESCRIPTION 4

3.A PROCESS DESCRIPTION 4

3.B TYPE OF RAW AND FINISHED MATERIALS 4

3.D PROCESS INSTRUMENTATION 5

4. SAMPLING AND ANALYTICAL PROCEDURES 5

5. TEST RESULTS 5

5.A-B TEST RESULTS SUMMARY 5

5.C SAMPLING PROCEDURE VARIATION 5

5.D PROCESS OR CONTROL DEVICE UPSETS 6

5.E CONTROL DEVICE MAINTENANCE 6

5.F. RE-TEST 6

5.G QUALITY ASSURANCE AUDIT SAMPLES..... 6

5.H CALIBRATION SHEETS 6

TABLE OF CONTENTS (continued)

APPENDIX

- Appendix A Results of Oven Solvent Loading Test and Field Data Sheets
- Appendix B Certification of Scale Accuracy

1. Introduction

General Motors Flint Assembly (GM) retained EFTEC to conduct Oven Solvent Loading (OSL) testing for the GM Flint Assembly facility located at G-3100 Van Slyke Road, Flint, MI 48551, MI-ROP-B1606-2014b. Testing was conducted on November 22, 2019. The OSL test results will be used to calculate VOC emissions from the sealer application process. Testing was conducted at the EFTEC North America laboratory at 20201 Northline Road Taylor, MI 48180.

AQD published a guidance document entitled “Format for Submittal of Source Emission Test Plans and Reports” (March 2018). The following report uses the format suggested by the aforementioned document.

1.a Identification, Location, and Dates of Test

Oven Solvent Loading Testing was conducted on November 22, 2019 and included oven solvent load test values used to calculate VOC emissions from the paint sealer application process. Testing was conducted at the EFTEC North America laboratory at 20201 Northline Road Taylor, MI 48180.

1.b Purpose of Test

The test was conducted to demonstrate compliance with requirements of the facility’s Renewable Operating Permit, MI-ROP-B1606-2014b, FG-PAINT & ASSEMBLY condition no. V.1 relative to maintaining a valid and representative capture efficiency value for the curing oven portion of EU-SEALERS & ADHESIVES.

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 sealers applied in the paint shop that are cured in curing ovens.

1.d Test Program Contacts

The contact for the source and test report is:

Ms. Karen Carlson
Senior Environmental Engineer
General Motors, LLC
Sustainable Workplaces – SES
Global Technical Center, Cadillac Tower
30400 Van Dyke Ave. – Floor 5
Warren, MI 48093-2368
(517) 204-9011
karen.j.carlson@gm.com

Ms. Alexandra Thibeault
Senior Environmental Engineer
General Motors, LLC
Flint Assembly
G-3100 Van Slyke Road
Flint, MI 48551
(810) 577-9003
alexandra.thibeault@gm.com

Personnel onsite for the test included Department of Environment, Great Lakes and Energy Air Quality Division District office personnel: Mark Dziadosz (Warren District) and Gina Angellotti (Detroit District); Eftec personnel: Qavi Anjum (PVC Group R&D) and Noor Hussein (Chemist); and GM personnel: Karen Carlson, SES, and Atul Patel, Senior (Paint Materials Engineer.)

2. Summary of Results

2.a Operating Data

The test was conducted in a laboratory and not at the assembly plant, as a result, this section is not applicable.

2.b Applicable Permit

The applicable permit number is Renewable Operating Permit, Permit No. MI-ROP-B1606-2014b, and applicable flexible group and emission unit are FG-PAINT & FACILITY and EU-SEALERS & ADHESIVES, respectively.

2.c Results

The attached report provided as Appendix A provides a summary of results. The resulting capture efficiency is 85.5 %.

3. Source Description

3.a Process Description

FG-PAINT & ASSEMBLY – This flexible group covers equipment used for automotive assembly and painting operations for the Flint Assembly Plant. This flexible group covers all permit identified emission units associated with automotive assembly and painting operations including EU-SEALERS & ADHESIVES. EU-SEALERS & ADHESIVES is described as “Sealers and adhesives are applied both in the body shop and paint shop. Various sealer materials application stations in the paint shop are followed by a curing oven.” The curing oven is controlled by a regenerative thermal oxidizer.

OSL test results are reported as the sealer oven capture efficiency which is used to calculate VOC emissions associated with the paint shop sealer application process.

3.b Type of Raw and Finished Materials

The following material was used in the testing program:

- EFTEC EFSEAM PS2540: Multi-purpose sealer

3.c Capacity of the Process

Paint Shop vehicle throughput is 49 jobs per hour.

3.d Process Instrumentation

Process instrumentation is not associated with this testing.

4. Sampling and Analytical Procedures

Oven Solvent Loading

Sealer (EFTEC EFSEAM PS2540)

W0 = weight of bare panel

Apply sealer bead 25 mm wide X 2 mm thick X 250 mm long

W1 = Weight of panel + sealer

Flash for 49 minutes at ambient temperature

W2 = Weight of sealed panel after ambient flash

Bake for 26 minutes at 300°F

Let panel cool

W3 = Weight of cooled, cured sealed panel

5. Test Results

5.a-b Test Results Summary

A summary is presented in the attached report provided as Appendix A. Results from this test program will be used to calculate paint shop sealer volatile organic compound emissions reported under FG-PAINT & ASSEMBLY.

The September 17, 2019 test plan, Appendix A “Test Plan Detail” indicated that USEPA Method 24 would be used to report appropriate sealer weight solids, volume solids, % water and density. After discussion with and approval from Mark Dziadosz (AQD Warren District) on the day of the test, it was determined that the sealer OSL test did not require Method 24 data, and therefore, it was not performed.

5.c Sampling Procedure Variation

No sampling procedure variations occurred during 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

Not applicable for this testing. 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.

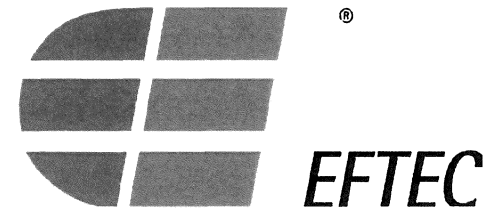
5.k Laboratory Data

Included in attached reports provided as Appendix A.

Appendix A



OVEN SOLVENT LOADING AND FLASH STUDY
Flint Assembly Plant
November 22, 2019



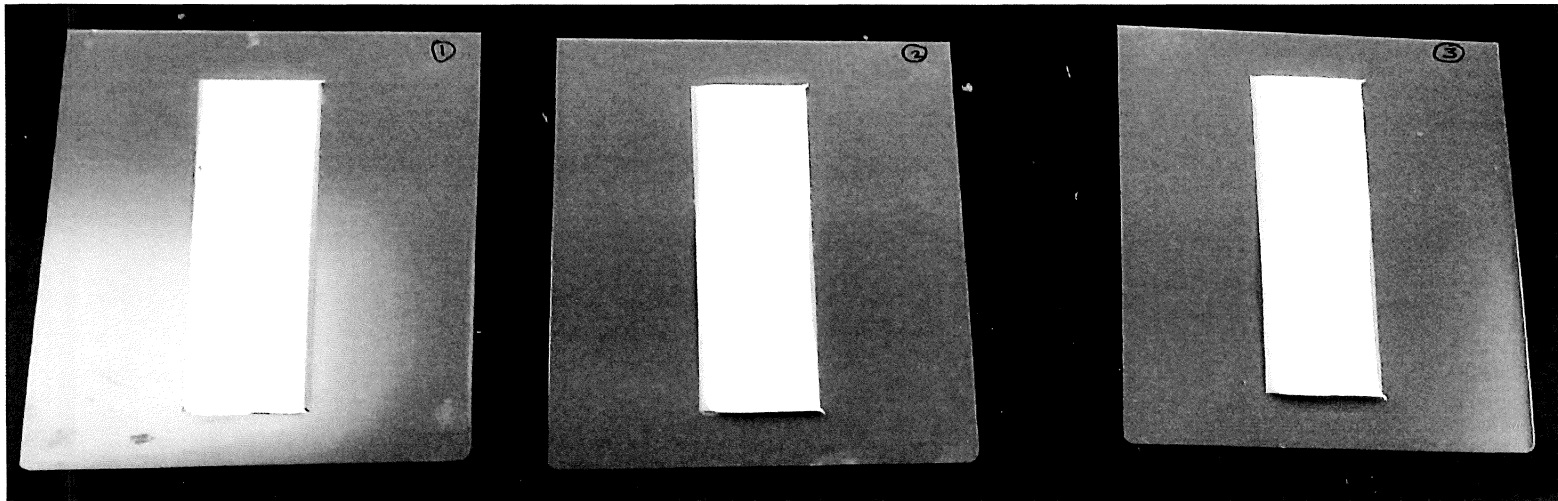
GM 9986524 (EFTEC EFSEAM PS2540)

Lot#: 1120192509247

Panel 1

Panel 2

Panel 3



Panel Size: 100mm x 150mm

Bead size: 2mm x 25mm x 120 mm