EXECUTIVE SUMMARY

RWDI AIR Inc. (RWDI) and JLB Industries, LLC were retained by FCA US LLC (FCA) to complete compliance testing of the coating operations at their Detroit Assembly Complex – Mack (DACM) located at 4000 Saint Jean Street, Detroit, Michigan. The scope of the test program was to complete paint solids transfer efficiency (TE) and Booth and Oven Capture Efficiency (BCE/OCE) testing of the Primer/Tutone operations (EUPRIMER) and Topcoat operations (EUTOPCOAT) as outlined under Flexible Group FGAUTOASSEMBLY. There is one (1) line for Primer and Tutone Booth and two (2) virtually identical coating lines for Basecoat Booth and Clearcoat Booth. For Basecoat Booth and Clearcoat Booth, testing was completed on Color 1 Line. The program considered the following coatings:

- Primer;
- Tutone Primer;
- Tutone Coloring Primer;
- Basecoat; and
- Clearcoat.

Results of the testing are considered representative of plant production. The results will support on-going VOC monthly emission calculations. DACM currently operates under Permit to Install (PTI) Permit # 14-19A dated October 30, 2020.

The testing program consisted of Transfer Efficiency (TE) testing and Capture Efficiency (CE) testing. Determination of TE and CE were conducted in accordance with all applicable procedures contained in USEPA document "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations". The testing was completed on October 12th, 13th, and 15th, 2021. The testing consisted of the following:

- Paint solids transfer efficiency (TE) – the percent of paint solids sprayed that deposit on the painted part was measured when applying primer, tutone primer, tutone coloring primer, basecoat and clearcoat and are considered to be representative for all Primer and Topcoat Operations.
- Volatile Organic Compound (VOC) capture efficiency (CE) was completed on the booth, heated flash zone and bake oven zones for the "EUPRIMER and EUTOPCOAT" lines. This includes the percent of VOC captured from the curing of the coating in the spray booths, heated flash, and bake ovens. The spray booth, heated flash and bake oven VOC CE is used to calculate the mass of VOC captured per gallon of applied coating solids (lb VOC/gacs) and is also referred to as oven solvent loading. Spraybooth, heated flash and oven VOC CE was measured at the "EUPRIMER and EUTOPCOAT" systems when applying primer, tutone primer, tutone coloring primer, basecoat and clearcoat and are considered to be representative for all primer and topcoat operations.

RWDI/JLB Industries used highly accurate weighing systems to determine the vehicle and panel weights before and after coating application. Calibrated volumetric flow meters, located on each applicator, were used to measure paint usage.

Material samples were collected from the paint circulation tanks directly after vehicle spray out. Determination of percent solids by weight and density was performed by RTI Laboratories, located in Livonia, Michigan.

Transfer Efficiency (TE) Results Summary

Tested Coating	Solids Transfer Efficiency (%)
Gray Prime (Primer)	80.6%
Roof Prime (Tutone Primer)	82.8%
Tutone Monocoat (Tutone Coloring Primer)	70.1%
White Basecoat (Basecoat)	72.4%
Clearcoat	71.5%

Capture Efficiency (CE) Results Summary

Source		Loading (Lb/GACS)	Capture Efficiency
		EU-PRIMER / EU-TOPCOAT	
Gray Prime (Primer)	**Booth**	4.53	55.2%
	Oven	2.05	25.0%
	Total	**6.59**	**80.2%**
Roof Prime (Tutone Primer)	**Booth**	6.17	77.6%
	Oven	1.00	12.5%
	Total	**7.16**	**90.1%**
Tutone Monocoat (Tutone Coloring Primer)	**Booth**	3.87	35.6%
	Oven	3.84	35.4%
	Total	**7.70**	**71.0%**
White Basecoat (Basecoat)	**Booth**	3.66	48.5%
	Oven	1.46	19.3%
	Total	**5.12**	**67.8%**
Clearcoat (Clearcoat)	**Booth**	4.17	43.5%
	Oven	3.01	31.4%
	Total	**7.17**	**74.9%**

TABLE OF CONTENTS

LIST OF TABLES

TABLES FOUND WITHIN THE REPORT:

TABLES FOUND WITHIN THE TABLES SECTION FOLLOWING THE REPORT:

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

RWDI AIR Inc. (RWDI) and JLB Industries, LLC were retained by FCA US LLC (FCA) to complete compliance testing of the coating operations at their Detroit Assembly Complex – Mack (DACM) located at 4000 Saint Jean Street, Detroit, Michigan. The scope of the test program was to complete paint solids transfer efficiency (TE) and Booth and Oven Capture Efficiency (BCE/OCE) testing of the Primer/Tutone operations (EUPRIMER) and Topcoat operations (EUTOPCOAT) as outlined under Flexible Group FGAUTOASSEMBLY. There is one (1) line for Primer and Tutone Booth and two (2) virtually identical coating lines for Basecoat Booth and Clearcoat Booth. For Basecoat Booth and Clearcoat Booth, testing was completed on Color 1 Line. The program considered the following coatings:

Primer;

- Tutone Primer;
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- Paint solids transfer efficiency (TE) – the percent of paint solids sprayed that deposit on the painted part was measured when applying primer, tutone primer, tutone coloring primer, basecoat and clearcoat and are considered to be representative for all Topcoat Operations.
- Volatile Organic Compound (VOC) capture efficiency (CE) was completed on the booth, heated flash zone and bake oven zones for the "EUPRIMER and EUTOPCOAT" lines. This includes the percent of VOC captured from the curing of the coating in the spray booths, heated flash, and bake ovens. The spray booth, heated flash and bake oven VOC CE is used to calculate the mass of VOC captured per gallon of applied coating solids (lb VOC/gacs) and is also referred to as oven solvent loading. Spraybooth, heated flash and oven VOC CE was measured at the "EUPRIMER and EUTOPCOAT" systems when applying primer, tutone primer, tutone coloring primer, basecoat and clearcoat and are considered to be representative for all primer and topcoat operations.

RWDI/JLB Industries used highly accurate weighing systems to determine the vehicle and panel weights before and after coating application. Calibrated volumetric flow meters, located on each applicator, were used to measure paint usage.

A Source Testing Plan, for the testing, was submitted to the Michigan Department of Environment, Great Lakes and Energy (EGLE) on August 10, 2021. Testing was successfully completed while all process equipment was operating under normal operating conditions during the week of October 11th, 2021. A copy of the Source Testing Plan and Approval Letter is provided in **Appendix A**.

Testing of emissions was conducted by Mr. Jim Belanger, Mr. Jeff Monache and Mr. Kyle Lyons of JLB. Mr. Paul Diven and Mr. Thomas Caltrider were on-site to monitor the process operation and witness the testing on behalf of FCA US LLC. Testing was witness by Mr. Mark Dziadosz, Ms. Regina Angellotti and Mr Bob Byrnes from EGLE.

2 SOURCE AND SAMPLING LOCATIONS

2.1 Process Description

DACM operates an automobile assembly plant that produces the Jeep Grand Cherokee L models for FCA US LLC. Vehicle body panels are stamped and assembled on site from sheet metal components. The bodies are cleaned, treated, and prepared for painting in the phosphate system. Then the vehicle bodies are dip coated in electro deposition corrosion primer for protection (EUECOAT). The electro primer (E-coat) is heat-cured to the vehicle body in a high-temperature bake oven. After completing the E-coat operation, vehicle bodies are conveyed to the sealer area for application of various sealants to body seams and joints.

The vehicles are then routed to a prep tunnel; two (2) automatic primer booths (EUPRIMER- one for solvent borne main primer and Tutone primer, and one for solvent borne Tutone colorant/coloring primer, (also referred to as Monocoat or Black Roof); a primer/Tutone observation zone; two (2) ambient flash-off areas; and a natural gas fired primer oven. Coating booth overspray is controlled by a waterwash particulate control system. A portion of the primer and Tutone coating booths exhaust is filtered and recirculated to the booth air make-up system. The primer and Tutone coating booth emissions are exhausted through a bank of particulate filters, then to a concentrator and then to the Regenerative Thermal Oxidizer (RTO) (via concentrator desorption exhaust). Primer Oven emissions are exhausted directly to the RTO.

After the primer booths, the vehicles are routed to an automatic topcoat spray application consisting of a waterborne basecoat coating booth, a basecoat observation zone, a basecoat ambient flash-off area, a basecoat heated flash-off area, a solvent borne clearcoat coating booth, a clearcoat observation zone, a clearcoat ambient flash-off area and a natural gas fired curing oven. A portion of the basecoat and clearcoat coating booth exhaust will be filtered and recirculated to the booth air make-up system. All topcoat spray booth emissions and some ambient flash-off areas are exhausted through a bank of particulate filters, then to the concentrator and then to the RTO. Oven emissions are exhausted directly to the RTO. Emissions from the observation zones and the balance of ambient flash-off areas are controlled by particulate control system and exhausted to the ambient air.

Two (2) additional weighing locations were added in the tutone controlled area for the Primer and Tutone Primer in order to obtain any additional VOCs captured in the tutone controlled area. Any carryover (VOCs captured in the Tutone controlled area) was included into the booth capture values.

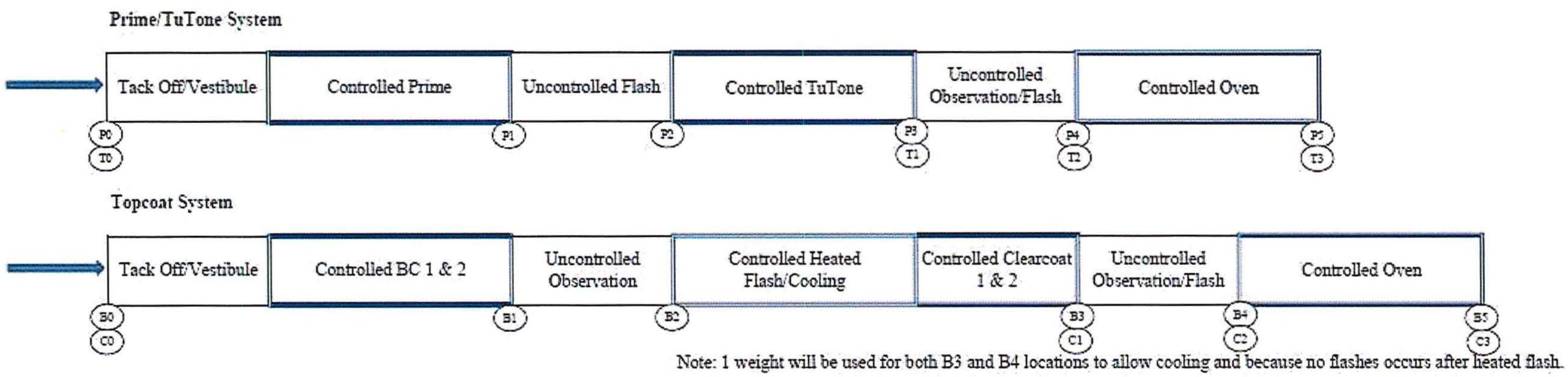

Figure 1: Process and Sampling Location Overview

Table 2.1-1: Summary of Applicator Parameters

Operation	Manufacturer	Applicator	Bell Size	Gun Voltage (kV)	RPM	Gun-to-Target Distance (inch)	Remarks
Primer	Fanuc	Versa Bell III	80mm	80kV	50k	10"	Solventborne
Tutone	Fanuc	Versa Bell III	65mm	30 to 80 kV	50 – 55k	8" interior 10"exterior	Solventborne
Basecoat	Fanuc	Versa Bell III	65mm	30 – 80kV	35 – 50k	8" interior 10"exterior	Waterborne
Clearcoat	Fanuc	Versa Bell III	65mm	30 – 80kV	50 – 55k	8" interior 10"exterior	Solventborne

Notes: mm – millimetres
kV – kilovolts
RPM – revolutions per minute

2.2 Control Equipment

Primer, Tutone and Topcoat Spray Booths are controlled using a downdraft ventilation system and water wash system below the booth grate to control paint overspray. Captured primer, tutone primer, tutone coloring primer, basecoat and clearcoat booth, heated flash zone and bake oven VOC emissions and some ambient flash areas are directed to RTO for VOC abatement. All controls were functioning during the testing period.

2.3 Operating Parameters

The following process control measures were recorded during the testing:

- Coating usage;
- Application information;
- Bake Oven Temperature;
- Spray booth relative humidity; and
- Spray booth temperature.

The following summarizes the Spray booth and Bake Oven process conditions.

Table 2.3-1: Summary of Operating Conditions – Primer

Source		Primer Booth (Prime)		Prime Oven 1 Temperature	Prime Oven 2 Temperature
		10/12/2021		10/12/2021	10/12/2021
Primer Spray Booth Temperature		75°F		--	--
Primer Spray Booth Relative Humidity		66%		--	--
Prime Oven Temperatures	**Zone 1**	--	--	371°F	365°F
	Zone 1 Sill	--	--	318°F	311°F
	Zone 2	--	--	371°F	365°F
	Zone 2 Sill	--	--	361°F	360°F
	Zone 3	--	--	320°F	320°F
	Zone 4	--	--	311°F	311°F
	Zone 5	--	--	297°F	290°F
	Cooling	--	--	82°F	81°F

Table 2.3-2: Summary of Operating Conditions – Tutone Primer and Tutone Monocoat

Source		Primer Booth (Tutone Prime)	Tutone Booth (Monocoat)	Prime Oven 1 Temperature	Prime Oven 2 Temperature
		10/13/2021	10/13/2021	10/13/2021	10/13/2021
Spray Booth Temperature		75ºF	75ºF	--	--
Spray Booth Relative Humidity		66%	64%	--	--
Prime Oven Temperature	Zone 1	--	--	370ºF	366ºF
	Zone 1 Sill	--	--	322ºF	312ºF
	Zone 2	--	--	370ºF	366ºF
	Zone 2 Sill	--	--	361ºF	361ºF
	Zone 3	--	--	320ºF	321ºF
	Zone 4	--	--	311ºF	311ºF
	Zone 5	--	--	296ºF	291ºF
	Cooling	--	--	76ºF	75ºF

Table 2.3-3: Summary of Operating Conditions - Basecoat

Source	Basecoat Spray Booth Temperature		Basecoat Spray Booth Relative Humidity		Basecoat Heated Flash Temperate/Relative Humidity		Topcoat Oven Temperature	
	Unit	10/15/21	Unit	10/15/21	Unit	10/15/21	Unit	10/15/21
Basecoat	Basecoat	73ºF	Basecoat	63%	Basecoat	150ºF / 3%	Zone 1	321ºF
	--						Zone 1 Sill	261ºF
	--						Zone 2	331ºF
	--						Zone 2 Sill	341ºF
	--						Zone 3	301ºF
	--						Zone 4	301ºF
	--						Zone 5	281ºF
							Cooling	62ºF

Table 2.3-4: Summary of Operating Conditions - Clearcoat

Source	Clearcoat Spray Booth Temperature		Clearcoat Spray Booth Relative Humidity		Clearcoat Heated Flash Temperate/Relative Humidity		Topcoat Oven Temperature	
	Unit	10/15/21	Unit	10/15/21	Unit	10/15/21	Unit	10/15/21
Clearcoat	Clearcoat	80°F	Clearcoat	65%	Clearcoat	150°F / 3%	Zone 1	320°F
	--						Zone 1 Sill	261°F
	--						Zone 2	331°F
	--						Zone 2 Sill	341°F
	--						Zone 3	301°F
	--						Zone 4	301°F
	--						Zone 5	281°F
							Cooling	62°F

2.4 Process Sampling Locations

A process sample of each coating applied during the testing was collected for analysis. The coatings were collected following procedures in USEPA's "Standard Procedure for Collection of Coating and Ink Samples for Analysis by Method 24 and 24A".

Coating samples were collected at the application point into four (4) ounce glass sampling jars with minimal headspace. The coating-as-applied samples were analyzed using USEPA Method 24 to measure percent VOC, percent water and density. The results are summarized below in **Table 2.4-1** and in **Appendix C**.

Table 2.4-1: Summary of Method 24 Coating Analysis

Sample	Parameter									
	Date	% Non-Volatile	% Volatile	Density		% Water	VOC		VOC-Water	
				g/ml	lb/gal		g/L	lb/gal	g/L	lb/gal
Gray Prime (Primer)	10/12/21	66.96	33.64	1.346	11.23	N/A	0.445	3.71	N/A	N/A
Roof Primer (Tutone Primer)	10/13/21	65.36	34.27	1.279	10.67	N/A	0.443	3.70	N/A	N/A
Black Monocoat (Tutone Colorant)	10/13/21	53.38	47.12	1.031	8.60	N/A	0.481	4.01	N/A	N/A
White (Basecoat)	10/15/21	47.00	52.00	1.270	10.60	35.2	0.226	1.89	0.440	3.67
Clearcoat Part A	10/15/21	57.92	42.62	1.054	8.81	N/A	0.445	3.71	N/A	N/A
Clearcoat Part B	10/15/21	59.31	41.97	1.011	8.44	N/A	0.412	3.44	N/A	N/A

In addition, seven (7) samples were collected by RWDI/JLB (6 samples + 1 blank) of waterborne coating (basecoat) to analyze for percent moisture. The samples were collected at the point of application on foil panels attached to the test vehicles. The coated foils were then transferred into a four (4) ounce glass sampling jar and anhydrous methanol was added to the sampling jar to allow the coating to disperse. The sample was then allowed to separate and analyzed for percent water using ASTM E203-08 "Standard Test Method for Water Using Volumetric Karl Fischer Titration". The ASTM E203 -08 coating analysis is summarized in **Table 2.4-2** and **Appendix C.**

Table 2.4-2: Summary of Volumetric Karl Fischer Titration Coating Analytical

Sample	Date	Parameter Percent Water
Blank	10/15/2021	0.020
Sample B1 White Solid	10/15/2021	0.590
Sample B2 White Solid	10/15/2021	0.640
Sample B3 White Solid	10/15/2021	0.360
Sample B4 White Solid	10/15/2021	0.070
Sample B5 White Solid	10/15/2021	0.030
Sample B6 White Solid	10/15/2021	0.050

3 SAMPLING AND ANALYTICAL PROCEDURES

3.1 Summary of Test Program

The EUPRIMER at DACM is comprised of one (1) paint line and the EUTOPCOAT process is comprised of two (2) virtually identical paint lines. Topcoat Color 1 line was chosen for the testing. The primer, tutone and topcoat system consists of several spray sections followed by associated curing ovens. The spray booth operations are defined as follows:

- **Primer Robots:** Liquid solvent based primer was applied to the exterior and interior surfaces;
- **Tutone Primer Robots:** Liquid tutone solvent based primer was applied to the exterior and interior surfaces;
- **Tutone Colorant Robots:** Tutone monocoat solvent based coating was applied to the exterior and interior surfaces;
- **Basecoat Robots**: Basecoat waterborne was applied to the exterior and interior surfaces; and
- **Clearcoat Robots**: Clearcoat solventborne was applied to the exterior and interior surfaces.

Skidded vehicles are conveyed through the booth and coated with coating materials (primer, tutone primer, tutone coloring primer, basecoat and clearcoat). The vehicles are processed through various bake ovens where the coating is cured.

Currently, coatings are applied to the Jeep Grand Cherokee L production models. Production units on which an electrocoat corrosion inhibiting primer had been applied were used in the test program for the transfer efficiency testing. For the CE testing, scrap vehicles were used for the testing program. The test program is summarized below.

3.2 Transfer Efficiency Test

Transfer Efficiency testing was conducted in the Spray Booths where Primer, Tutone Primer, Tutone Coloring Primer, basecoat, and clearcoat were applied. Applicator and environmental conditions were monitored to ensure that the testing accurately reflected production conditions. Measured parameters included: Vehicle weight gain, material usage, material analysis (percent solids by weight and density), applicator settings, film build and oven heat settings.

A total of four (4) vehicle bodies were used in calculating test results. Three (3) vehicles were processed as normal production vehicles, and one vehicle was dedicated as a no-paint, control vehicle in conjunction with the testing. All units were production vehicles with cured body shop sealer.

An off-line vehicle weigh station (VWS) was constructed to measure the weight of the test units before and after each painting process. Test vehicles were routed to a dedicated conveyor spur. A fixed stop was secured to assure repeatable positioning of the vehicles. Test vehicles were lifted free from their carriers by two lift-table mounted scale bases. Ultra-high molecular weight (UHMW) plastic blocks were strategically placed on the scale bases to lift the vehicle at the center of gravity locations. The UHMW blocks minimized friction loading on vehicles and scale bases.

Vehicle weights were measured several times and recorded. All test vehicles were weighed with production fixtures (door hooks and hood props) installed. The vehicle weigh station scales were calibrated using Class-F calibration weights conforming to the National Bureau of Standards handbook 105-1. A one or two-pound avoirdupois, Class F stainless steel weight was added periodically during pre- and post-process weighing to verify scale linearity.

Coating thickness was measured on a representative test vehicle to verify paint film-build was within the production specification. The data was taken with a handheld Elcometer gauge.

Coating material usage was monitored via volumetric flow measurement devices located on each applicator. A verification of each applicator was performed by FCA personnel to ensure accurate usage measurement. Material samples of applied coatings were collected from the respective systems directly after testing. Samples were sent to RTI Laboratories for analysis to determine density by ASTM D1475 and weight solids content by ASTM D2369 (referenced in EPA Method 24). The laboratory results were used in calculating the Transfer Efficiency and Capture Efficiency values.

Production vehicles with body shop sealer were prepared with e-coat and processed through the Spray Booth systems. The test sequence for the Transfer Efficiency test was:

<u>Gray Primer (Primer):</u>

1. Test Unit ID TE1 – Carrier 612
2. Test Unit ID TE2 – Carrier 431
3. Test Unit ID TE3 – Carrier 524
4. Test Unit ID TE4 – Carrier 786 (no-paint control)

<u>Roof Prime (Tutone Primer):</u>

1. Test Unit ID TE1 – Carrier 621
2. Test Unit ID TE2 – Carrier 431
3. Test Unit ID TE3 – Carrier 524
4. Test Unit ID TE4 – Carrier 786 (no-paint control)

<u>Tutone Monocoat (Tutone Colorant):</u>

1. Test Unit ID TE1 – Carrier 621
2. Test Unit ID TE2 – Carrier 431
3. Test Unit ID TE3 – Carrier 524
4. Test Unit ID TE4 – Carrier 786 (no-paint control)

<u>White Basecoat (Basecoat):</u>

1. Test Unit ID TE1 – Carrier 621
2. Test Unit ID TE2 – Carrier 431
3. Test Unit ID TE3 – Carrier 524
4. Test Unit ID TE4 – Carrier 786 (no-paint control)

Clearcoat (Clearcoat):

1. Test Unit ID TE1 – Carrier 621
2. Test Unit ID TE2 – Carrier 431
3. Test Unit ID TE3 – Carrier 524
4. Test Unit ID TE4 – Carrier 786 (no-paint control)

Test Vehicles were routed through the bake oven and back to the vehicle weigh station. After cooling, the test vehicles were weighed and released to production.

3.3 Capture Efficiency Tests

A panel weigh station (PWS) was assembled at the Spray Booths. A precision balance with measurement capability to 0.001 gram was placed on an isolation platform inside an enclosure to minimize vibration and air movement.

The testing conformed to the methods described in ASTM 5087-02 for solvent borne coatings and ASTM 6266-00a (Reapproved 2005) for waterborne coatings.

Test panels were placed on a test vehicle and processed with normal production spray programming.

At least three electrocoated panels were used for each test. Each group of test panels was weighed in several locations (see panel test diagram) to determine the relative distribution of VOC that is released in the controlled booth zone and bake oven. The panels were attached to test vehicles by magnet, which allowed for removal of the wet panels with minimal disturbance to the coating during handling. Panel mounting locations were chosen to achieve a representative coating film based on the observation of normal vehicle production.

Before the panels were coated, they were marked (1, 2, 3, blank) and weighed to establish the initial unpainted panel weights (P0). The panels were then attached to a test vehicle and routed through the Spray Booth. After coating, the panels were carefully removed from the test vehicle and brought to the balance for weighing immediately upon exit from the controlled booth zone (P1). Panels were weighed again before entering the controlled bake oven (P2). The panels were then placed on the test vehicle for travel through the curing oven. Upon exiting the oven, the panels were allowed to cool and then weighed a final time (P3). For the Primer and Tutone samples, two (2) additional weighing locations were added in the tutone controlled area in order to determine if any additional VOCs were captured in the controlled zone. Any carryover (VOCs from primer or tutone controlled) was included into the booth capture values.

4 TEST EQUIPMENT AND QA/QC PROCEDURES

Equipment used in this program passed the Quality Assurance /Quality Control (QA/QC) procedures. **Appendix D** contains the calibration records of the equipment and inspection sheets.

4.1 Pretest QA/QC Activities and Audits

Before testing, the equipment was inspected and calibrated according to the procedures outlined in the applicable procedures outlined in the USEPA document "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobiles and Light Duty Truck Topcoat Operations", as referenced in 40 CFR 63, Subpart IIII. Refer to **Appendix D** for inspection and calibration sheets.

The results of select sampling and equipment QA/QC audits are presented in the following sections. Refer to **Appendix D** for inspection and calibration sheets. Test Equipment and QA/QC Procedures

4.1.1 Vehicle Weigh Station (VWS)

A dedicated vehicle weigh station (VWS) equipped with two 1,000 lb. capacity scale bases was used to obtain pre- and post-process vehicle weights. The VWS is accurate to better than 0.05 pounds.

The scales were calibrated as directed by the operating instruction manual. Scales were powered up and exercised by placing 250 pounds of Class F calibration weights on each scale platform. Then, the VWS was calibrated with 500 pounds of Class F calibration weights. VWS linearity was checked using a one-pound, Class F stainless steel calibration weight. The one-pound weight was also added to each test vehicle during pre- and post-process weighing to verify scale linearity.

4.1.2 Material Usage

Coating material usage was monitored via volumetric flow measurement devices located on each applicator. A verification of the applicators was performed by FCA personnel before testing to ensure accurate usage data. Paint usage was measured at each applicator in a graduated cylinder and compared to the expected volume.

A sample of each material was taken after each test and analyzed by Advanced Technologies of Materials, located in Waverly, Ohio. These values were used in calculating the paint solids sprayed and the transfer efficiency. ASTM Method D-2369 was used to determine paint solids. ASTM Method D-1475 was used to determine paint density.

4.1.3 Panel Weigh Station

A panel weigh station (PWS) with measurement capability to 0.001 gram was used to measure panel weights. The balance was warmed up and then calibrated with a 300 gram test weight. The balance was tested with 100, 50, 10 and 1 gram weights before commencing weighing operations. A blank panel weight was measured at the beginning of the testing program and again at the time of each subsequent panel weight measurement. The balance was placed on an isolation platform and inside an enclosure to minimize vibration and airflow at the measurement point.

5 RESULTS

The testing program consisted of Transfer Efficiency (TE) testing and Capture Efficiency (CE) testing. Determination of TE and CE were conducted in accordance with all applicable procedures contained in USEPA document "Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations".

The test results will be used to demonstrate compliance with Auto MACT requirements and for use in monthly emissions compliance calculations to comply with PTI Permit 14-19A and 40CFR 63 Subpart IIII – National Emissions Standards or Hazardous Pollutants: Surface Coating of Automobiles and Light Duty Trucks, emission limits.

5.1 Results

Results are summarized in Tables 5.2-1 and 5.2-2 for TE and CE. Detailed VOC CE and paint solids TE results are presented in Table Section. All sampling field notes are provided in **Appendix F**. Sample Calculations are provided in **Appendix G**. All laboratory results are included in **Appendix C**. Process Data is provided in **Appendix B**.

Table 5.1-1: Transfer Efficiency (TE) Results Summary

Tested Coating	Solids Transfer Efficiency (%)
Gray Prime (Primer)	80.6%
Roof Prime (Tutone Primer)	82.8%
Tutone Monocoat (Tutone Colorant)	70.1%
White Basecoat (Basecoat)	72.4%
Clearcoat	71.5%

Table 5.1-2 Capture Efficiency (CE) Results Summary

Source		Loading (Lb/GACS)	Capture Efficiency
		EU-PRIMER / EU-TOPCOAT	
Gray Prime (Primer)	Booth	4.53	55.2%
	Oven	2.05	25.0%
	Total	**6.59**	**80.2%**
Roof Prime (Tutone Primer)	Booth	6.17	77.6%
	Oven	1.00	12.5%
	Total	**7.16**	**90.1%**
Tutone Monocoat (Tutone Colorant)	Booth	3.87	35.6%
	Oven	3.84	35.4%
	Total	**7.70**	**71.0%**
White Basecoat (Basecoat)	Booth	3.66	48.5%
	Oven	1.46	19.3%
	Total	**5.12**	**67.8%**
Clearcoat (Clearcoat)	Booth	4.17	43.5%
	Oven	3.01	31.4%
	Total	**7.17**	**74.9%**

5.2 Discussion of Results

There were no significant disruptions to the testing program.

6 PROCESS CONDITIONS

Operating conditions during the sampling were monitored by FCA personnel. All equipment was operated under normal, representative operating conditions. Process Data is provided in **Appendix B**.

Contact was maintained between the operator and the sampling team. A member of the RWDI/JLB sampling team was in contact with FCA staff during the entire sampling program.

7 CONCLUSIONS

Testing was successfully completed during the week of October 11th, 2021. All parameters were tested in accordance with referenced methodologies.