GM Flint Assembly Plant
Flint, Michigan

RECEIVED
OCT 0 3 2016
AIR QUALITY DIV.

Environmental Testing Program – Transfer Efficiency July/August 2016

Prepared By:

JLB Industries, LLC
Rochester Hills, MI 48306
(248) 904-7027
enviro@jlbindustries.com

1.0 Executive Summary

JLB Industries, LLC completed a compliance environmental testing program during the week of July 18, 2016 and on August 5, 2016 at the General Motors LLC Flint Assembly Plant located in Flint, Michigan. The testing served as a compliance demonstration for the 3-Wet coating operations. Solids transfer efficiency (TE) values were determined for representative coatings, including gray prime, white solid basecoat, silver metallic basecoat and clearcoat. The testing was performed as required by Michigan Department of Environmental Quality PTI 173-13B, FG-PAINT & ASSEMBLY, Special Condition V.1.

The testing program was conducted in accordance with all applicable procedures contained in the U.S. Environmental Protection Agency document *Protocol for Determining the Daily Volatile Organic Compound Emission Rate of Automobile and Light-Duty Truck Topcoat Operations* as referenced in 40 CFR, Part 63. The resultant test values will be used to calculate emissions.

Transfer Efficiency values were derived using the Chevrolet full size truck, which represents the current production at the facility. Personnel from the paint shop, GM environmental staff and JLB Industries, LLC conducted the testing. These groups worked together at each stage of testing to ensure that the results were representative of production conditions.

JLB Industries used highly accurate weighing systems to determine the vehicle weights before and after coating application. Calibrated volumetric flow meters, located on each applicator, were used to measure paint usage. Mr. Bob Byrnes and Mr. Tom Maza of the *Michigan Department of Environmental Quality* were present for portions of the testing program.

Material samples were collected from the paint circulation tanks on the day of testing. Determination of percent solids by weight and density was performed by BASF at their laboratory facilities in Southfield, Michigan.

Table 1 – Testing Results Summary

Tested Coating	Transfer Efficiency
Gray Prime	70.6%
White Solid Basecoat	81.9%
Silver Metallic Basecoat	76.4%
Clearcoat	79.6%

2.0 Introduction

JLB Industries, LLC (JLBI) was contracted by the General Motors Flint Assembly Plant (GM) to perform an environmental testing program on the new 3-Wet coating operations. Solids transfer efficiency (TE) values were determined for gray prime, white solid basecoat, silver metallic basecoat and clearcoat. This testing was conducted using the Chevrolet full size truck model during the week of July 18, 2016 and on August 5, 2016.

3.0 Sampling and Analytical Procedures

Transfer Efficiency testing was conducted in the 3-Wet Spraybooth, where gray prime, white solid basecoat, silver metallic basecoat and clearcoat were applied by robotic applicators. Applicator and environmental conditions were monitored to ensure that the testing accurately reflected production conditions. Measured parameters included: vehicle weight gain, coating material usage, coating material analysis (percent solids by weight and density), applicator settings, film build and oven heat settings.

A total of four vehicle bodies were used for the testing procedure. Three vehicles were processed as normal production vehicles, while one vehicle was dedicated as a no-paint test control in conjunction with each test. Testing was performed with scrap vehicles; all with no paint shop sealer.

An on-line vehicle weigh station (VWS) was constructed to measure the weight of the test vehicles before and after each coating process. Test vehicles were routed to a dedicated conveyor spur and into the VWS. Test vehicles were lifted free from their carriers by four lift-table mounted scale bases. Hoods and fenders were removed from the carrier and weighed on a separate scale. 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 from the vehicles on 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-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 each coated test vehicle to verify paint film-build was within the production specification. The data was taken with a handheld elcometer gauge.

Robotic coating material usage was monitored via volumetric flow measurement devices located on each applicator. A verification of the applicators was performed before testing to ensure accurate usage measurement.

Gray Prime
Test vehicles were weighed and processed through the prime section of the 3-Wet Spraybooth and coated with Gray Prime. The test sequence was:

1. Test Vehicle ID TE 1 (No-paint)
2. Test Vehicle ID TE 2
3. Test Vehicle ID TE 3
4. Test Vehicle ID TE 4

The test vehicles were routed through the oven and allowed to cool before a post-weight measurement was taken at the VWS.

White Solid Basecoat
Test vehicles were weighed and processed through the basecoat section of the 3-Wet Spraybooth and coated with white solid basecoat. The test sequence was:

1. Test Vehicle ID TE 1 (No-paint)
2. Test Vehicle ID TE 2
3. Test Vehicle ID TE 3
4. Test Vehicle ID TE 4

The test vehicles were routed through the oven and allowed to cool before a post-weight measurement was taken at the VWS.

Silver Metallic Basecoat
Test vehicles were weighed and processed through the basecoat section of the 3-Wet Spraybooth and coated with silver metallic basecoat. The test sequence was:

1. Test Vehicle ID TE 5 (No-paint)
2. Test Vehicle ID TE 6
3. Test Vehicle ID TE 7
4. Test Vehicle ID TE 8

The test vehicles were routed through the oven and allowed to cool before a post-weight measurement was taken at the VWS.

Clearcoat
Test vehicles were weighed and processed through the clearcoat section of the 3-Wet Spraybooth and coated with clearcoat. The test sequence was:

1. Test Vehicle ID TE 1 (No-paint)
2. Test Vehicle ID TE 2
3. Test Vehicle ID TE 3
4. Test Vehicle ID TE 4

The test vehicles were routed through the oven and allowed to cool before a post-weight measurement was taken at the VWS.

4.0 Test Equipment and Calibration

Vehicle Weigh Station

A dedicated vehicle weigh station (VWS) equipped with five 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 300 pounds of Class F calibration weights on each scale platform. Then, the VWS was calibrated with 300 pounds of Class F calibration weights on each scale. 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.

Material Usage

Coating material usage was monitored by volumetric flow measurement devices located on each applicator. A verification of the applicators was performed by GM prior to testing to ensure accurate usage data. Paint usage was measured in a graduated cylinder and compared to the expected volume. The Paint Metering Verification Record is included in Section 7 of this report.

A sample of the material was taken on the day of testing and analyzed for weight solids and density per EPA Method 24 by BASF at their laboratory facilities in Southfield, Michigan. These values were used in calculating the paint solids sprayed and the transfer efficiency for each process.

5.0 Discussion of Test Results

On the day of the prime test, the initial post-weight of the control vehicle was taken before the vehicle and carrier were fully cooled. It was agreed by the testing team to wait until all vehicles were fully cooled before continuing the weighing process.

The measured vehicle weight gain for one vehicle in the prime test fell outside of ten percent of the average weight gain of the test batch. As specified by the protocol, this vehicle was excluded from the test results.

On the day of the metallic basecoat test, the control vehicle gained 0.81 pounds of weight. There were some weigh scale calibration issues before starting the TE testing for this particular coating, however, the source of the control vehicle weight gain for this particular coating is unknown. Subsequently, the testing group decided to retest the TE for metallic basecoat and notified the DEQ. As requested by the DEQ, the data from both the initial test and the subsequent retest are included in the report.

6.0 Calculation of Results

Table 2 - Gray Prime Transfer Efficiency Summary
GM Flint Transfer Efficiency Test
July/August 2016

Vehicle ID	Vehicle Weight Gain (lb.)	Avg. Vehicle Weight Gain (lb.)	Avg. Paint Sprayed (gal)	Coating Density (lb/gal)	Weight Solids Fraction	Avg. Solids Sprayed	Transfer Efficiency (%)
Variable:	VWG	BVWG	BPS	CD	WSF	BSS	TE
Calculation:	(W2-W1)	(avg VWG-SWL)	(avg PS)	(Method 24)	(Method 24)	(BPS*CD*WSF)	(BVWG/BSS)
TE 2	1.04	1.00	0.444	9.35	0.3399	1.41	**70.6%**
TE 3	0.95						
TE 4	**						

** Note: the weight gain of test vehicle TE 4 was not within 10% of the average weight gain. This vehicle was excluded from the test results as directed in the protocol.

Table 3 - White Solid Basecoat Transfer Efficiency Summary
GM Flint Transfer Efficiency Test
July/August 2016

Vehicle ID	Vehicle Weight Gain (lb.)	Avg. Vehicle Weight Gain (lb.)	Avg. Paint Sprayed (gal)	Coating Density (lb/gal)	Weight Solids Fraction	Avg. Solids Sprayed	Transfer Efficiency (%)
Variable:	VWG	BVWG	BPS	CD	WSF	BSS	TE
Calculation:	(W2-W1)	(avg VWG-SWL)	(avg PS)	(Method 24)	(Method 24)	(BPS*CD*WSF)	(BVWG/BSS)
TE 2	3.48	3.57	0.979	10.34	0.4300	4.35	**81.9%**
TE 3	3.52						
TE 4	3.69						

Table 4 - Silver Metallic Basecoat Transfer Efficiency Summary
GM Flint Transfer Efficiency Test
July/August 2016

Vehicle ID	Vehicle Weight Gain (lb.)	Avg. Vehicle Weight Gain (lb.)	Avg. Paint Sprayed (gal)	Coating Density (lb/gal)	Weight Solids Fraction	Avg. Solids Sprayed	Transfer Efficiency (%)
Variable:	VWG	BVWG	BPS	CD	WSF	BSS	TE
Calculation:	(W2-W1)	(avg VWG-SWL)	(avg PS)	(Method 24)	(Method 24)	(BPS*CD*WSF)	(BVWG/BSS)
TE 6	1.50	1.49	0.923	8.83	0.2398	1.95	**76.4%**
TE 7	1.49						
TE 8	1.48						

Table 5 - Clearcoat Transfer Efficiency Summary
GM Flint Transfer Efficiency Test
July/August 2016

Vehicle ID	Vehicle Weight Gain (lb.)	Avg. Vehicle Weight Gain (lb.)	Avg. Paint Sprayed (gal)	Coating Density (lb/gal)	Weight Solids Fraction	Avg. Solids Sprayed	Transfer Efficiency (%)
Variable:	VWG	BVWG	BPS	CD	WSF	BSS	TE
Calculation:	(W2-W1)	(avg VWG-SWL)	(avg PS)	(Method 24)	(Method 24)	(BPS*CD*WSF)	(BVWG/BSS)
TE 2	5.12	5.02	1.241	8.34	0.6089	6.31	**79.6%**
TE 3	4.99						
TE 4	4.94						

7.0 Data Sheets

Table 6 - Applicator Parameter Summary
GM Flint Transfer Efficiency Test
July/August 2016

Operation	Manufacturer	Applicator	Fluid Tip	Bell Size	Gun Voltage	RPM	Gun-to-Target Distance
Prime	Fanuc	Versabell III	1.2 mm	65 mm	60-80 kV	50,000	10"
BC Int/Ext 1	Fanuc	Versabell III	1.2 mm	65 mm	60-80 kV	50,000	10"
BC Ext 2	Fanuc	Versabell III	1.2 mm	65 mm	60-80 kV	50-60,000	10"
CC Int	Fanuc	Versabell III	1.2 mm	65 mm serrated	50-80 kV	40-60,000	10"
CC Ext	Fanuc	Versabell III	1.2 mm	65 mm serrated	50-80 kV	40-60,000	10"

Line Speed: 14.6 ft/min

JLB Industries, LLC

Paint Metering Data Record
Gray Prime
GM Flint Transfer Efficiency Test, July/August 2016

Process	Applicator	Vehicle ID/Paint Sprayed (cc) TE 2	TE 3	TE 4
Robot	P1	403	403	404
	P2	257	257	257
	P3	310	314	310
	P4	397	397	397
	P5	--	--	--
	P6	310	314	310
	Total (cc):	1677	1685	1678
	Total (gal):	0.443	0.445	0.443

Avg. Paint Sprayed (gal): 0.444

JLB Industries, LLC

Paint Metering Data Record
White Solid Basecoat
GM Flint Transfer Efficiency Test, July/August 2016

Process	Applicator	Vehicle ID/Paint Sprayed (cc) TE 2	TE 3	TE 4
Robot	P1	423	422	422
	P2	422	423	423
	P3	317	318	317
	P4	307	307	308
	P5	278	278	278
	P6	274	274	274
	P7	232	232	232
	P8	232	232	232
	P9	--	--	--
	P10	--	--	--
	2P1	--	--	--
	2P2	--	--	--
	2P3	250	250	250
	2P4	218	218	218
	2P5	--	--	--
	2P6	245	245	245
	2P7	253	253	253
	2P8	253	254	254
	Total (cc):	3704	3706	3706
	Total (gal):	0.979	0.979	0.979

Avg. Paint Sprayed (gal): 0.979

JLB Industries, LLC

Paint Metering Data Record
Silver Metallic Basecoat
GM Flint Transfer Efficiency Test, July/August 2016

Process	Applicator	Vehicle ID/Paint Sprayed (cc) TE 6	TE 7	TE 8
Robot	P1	411	411	412
	P2	412	412	411
	P3	--	--	--
	P4	302	302	302
	P5	311	311	309
	P6	244	244	243
	P7	247	247	248
	P8	--	--	--
	P9	219	219	219
	P10	219	219	219
	2P1	--	--	--
	2P2	--	--	--
	2P3	180	180	180
	2P4	219	219	219
	2P5	223	223	224
	2P6	252	253	253
	2P7	253	253	253
	2P8	--	--	--
	Total (cc):	3492	3493	3492
	Total (gal):	0.923	0.923	0.923

Avg. Paint Sprayed (gal): 0.923

Paint Metering Data Record
Clearcoat
GM Flint Transfer Efficiency Test, July/August 2016

Process	Applicator	Vehicle ID/Paint Sprayed (cc) TE 2	TE 3	TE 4
Robot	P1	291	291	291
	P2	291	291	291
	P3	279	279	279
	P4	279	279	279
	P5	485	485	485
	P6	--	--	--
	2P1	393	393	393
	2P2	484	484	484
	2P3	453	453	453
	2P4	394	394	394
	2P5	--	--	--
	2P6	452	452	452
	2P7	452	452	452
	2P8	446	446	446
	Total (cc):	4699	4699	4699
	Total (gal):	1.241	1.241	1.241

Avg. Paint Sprayed (gal): 1.241

Paint Metering Verification Record

GM Flint Transfer Efficiency Test, July/August 2016

Applicator	Paint Volume (cc) Requested	Measured
PrP1	200	194
PrP3	200	199
PrP4	200	197
PrP5	200	198
PrP6	200	198
CCZ1P1	100	101
CCZ1P2	100	100
CCZ1P3	100	100
CCZ1P4	100	100
CCZ1P5	100	103
CCZ1P6	100	101
CCZ2P1	100	100
CCZ2P2	100	98
CCZ2P3	100	100
CCZ2P4	100	99
CCZ2P5	100	99
CCZ2P6	100	99
CCZ2P7	100	98
CCZ2P8	100	100

Data from July 6-7, 2016

Applicator	Paint Volume (cc) Requested	Measured
BC P1	100	100
BC P2	100	100
BC P3	100	101
BC P4	100	100
BC P5	100	100
BC P6	100	100
BC P7	100	100
BC P8	100	100
BC P9	100	100
BC P10	100	100
Tri P1	100	100
Tri P2	100	100
Tri P3	100	101
Tri P4	100	100
Tri P5	100	100
Tri P6	100	100
Tri P7	100	100
Tri P8	100	100

Basecoat metering was originally verified on July 6-7, 2016 and found to be accurate, however, the records were misplaced. The above data is from retest on September 9, 2016.

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)	
Carrier	4047	739.07	382.39	55.01	48.13	
VIN	TE 1	739.09	382.39	55.01	48.13	
		739.08	382.36			
						Total Weight
Linearity Check:		*740.09*	*383.37*			(Lb.)
Average Part Weight:		739.08	382.38	55.01	48.13	1224.60

Test Vehicle *Prime Control*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4047	738.98	382.34	55.02	48.17		
VIN	TE 1	738.99	382.36	55.02	48.17		
		739.00	382.37				
						Total Weight	
Linearity Check:		*740.00*	*383.37*			(Lb.)	**Weight Change**
Average Part Weight:		738.99	382.36	55.02	48.17	1224.54	**-0.06**

Test Vehicle *White BC Control*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4047	738.96	382.43	55.03	48.14		
VIN	TE 1	738.97	382.44	55.03	48.14		
		738.95	382.43				
						Total Weight	
Linearity Check:		*739.95*	*383.43*			(Lb.)	**Weight Change**
Average Part Weight:		738.96	382.43	55.03	48.14	1224.56	**0.03**

Test Vehicle *Silver BC Control*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4047	739.93	382.26	55.05	48.19		
VIN	TE 1	739.88	382.25	55.03	48.17		
		739.90	382.25				
						Total Weight	
Linearity Check:		*740.92*	*383.25*			(Lb.)	*Weight Change*
Average Part Weight:		739.90	382.25	55.04	48.18	1225.38	*0.81*

**Silver Retested*

Test Vehicle *CC Control*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4047	739.86	382.29	55.05	48.19		
VIN	TE 1	739.80	382.27	55.03	48.17		
		739.82	382.26				
						Total Weight	
Linearity Check:		*740.82*	*383.28*			(Lb.)	**Weight Change**
Average Part Weight:		739.83	382.27	55.04	48.18	1225.32	**-0.06**

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)	
Carrier	4204	739.60	382.12	55.05	48.15	
VIN	TE 2	739.56	382.13	55.05	48.16	
		739.55	382.13			
						Total Weight
Linearity Check:		*740.56*	*383.13*			(Lb.)
Average Part Weight:		739.57	382.13	55.05	48.16	1224.90

Test Vehicle *Gray Prime*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4204	739.88	382.62	55.14	48.28		
VIN	TE 2	739.90	382.65	55.13	48.26		
		739.91	382.65				
						Total Weight	
Linearity Check:		*740.91*	*383.65*			(Lb.)	Weight Change
Average Part Weight:		739.90	382.64	55.14	48.27	1225.94	**1.04**

Test Vehicle *White Basecoat*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4204	741.56	384.02	55.34	48.49		
VIN	TE 2	741.55	384.06	55.35	48.49		
		741.54	384.02				
						Total Weight	
Linearity Check:		*742.54*	*385.03*			(Lb.)	Weight Change
Average Part Weight:		741.55	384.03	55.35	48.49	1229.42	**3.48**

Test Vehicle *Silver Basecoat*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4204	742.58	384.08	55.41	48.64		
VIN	TE 2	742.57	384.10	55.42	48.66		
		742.56	384.04				
						Total Weight	
Linearity Check:		*743.57*	*385.08*			(Lb.)	*Weight Change*
Average Part Weight:		742.57	384.07	55.42	48.65	1230.71	*1.29*

**Silver Retested*

Test Vehicle *Clearcoat*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4204	745.13	386.12	55.60	48.98		
VIN	TE 2	745.15	386.10	55.60	48.97		
		745.15	386.11				
						Total Weight	
Linearity Check:		*746.15*	*387.11*			(Lb.)	Weight Change
Average Part Weight:		745.14	386.11	55.60	48.98	1235.83	**5.12**

Vehicle Weigh Station Data Record

GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*	
Carrier	4016	739.26	379.77	54.90	48.13	
VIN	TE 3	739.23	379.79	54.90	48.12	
		739.24	379.79			
						Total Weight
Linearity Check:		*740.24*	*380.79*			*(Lb.)*
Average Part Weight:		739.24	379.78	54.90	48.13	1222.05

Test Vehicle *Gray Prime*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4016	739.57	380.36	54.95	48.14		
VIN	TE 3	739.57	380.33	54.95	48.14		
		739.57	380.34				
						Total Weight	
Linearity Check:		*740.57*	*381.33*			*(Lb.)*	**Weight Change**
Average Part Weight:		739.57	380.34	54.95	48.14	1223.00	**0.95**

Test Vehicle *White Basecoat*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4016	741.27	381.65	55.17	48.45		
VIN	TE 3	741.28	381.59	55.17	48.44		
		741.27	381.68				
						Total Weight	
Linearity Check:		*742.27*	*382.67*			*(Lb.)*	**Weight Change**
Average Part Weight:		741.27	381.64	55.17	48.45	1226.53	**3.52**

Test Vehicle *Silver Basecoat*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4016	742.25	381.71	55.26	48.57		
VIN	TE 3	742.26	381.74	55.26	48.58		
		742.25	381.72				
						Total Weight	
Linearity Check:		*743.25*	*382.72*			*(Lb.)*	*Weight Change*
Average Part Weight:		742.25	381.72	55.26	48.58	1227.81	*1.28*

**Silver Retested*

Test Vehicle *Clearcoat*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4016	744.72	383.74	55.45	48.91		
VIN	TE 3	744.73	383.72	55.45	48.91		
		744.73	383.70				
						Total Weight	
Linearity Check:		*745.73*	*384.71*			*(Lb.)*	**Weight Change**
Average Part Weight:		744.73	383.72	55.45	48.91	1232.81	**4.99**

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)	
Carrier	4233	739.23	380.04	54.96	48.15	
VIN	TE 4	739.27	380.05	54.96	48.16	
		739.27	380.04			
						Total Weight
Linearity Check:		*740.27*	*381.04*			(Lb.)
Average Part Weight:		739.26	380.04	54.96	48.16	1222.42

Test Vehicle *Gray Prime*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4233	739.58	380.44	55.02	48.22		
VIN	TE 4	739.58	380.42	55.03	48.23		
		739.58	380.45				
						Total Weight	
Linearity Check:		*740.58*	*381.45*			(Lb.)	Weight Change
Average Part Weight:		739.58	380.44	55.03	48.23	1223.27	**0.85**

Test Vehicle *White Basecoat*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4233	741.34	381.88	55.23	48.51		
VIN	TE 4	741.34	381.85	55.24	48.51		
		741.35	381.89				
						Total Weight	
Linearity Check:		*742.35*	*382.88*			(Lb.)	Weight Change
Average Part Weight:		741.34	381.87	55.24	48.51	1226.96	**3.69**

Test Vehicle *Silver Basecoat*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4233	742.29	381.88	55.34	48.65		
VIN	TE 4	742.22	381.89	55.34	48.65		
		742.25	381.88				
						Total Weight	
Linearity Check:		*743.25*	*382.88*			(Lb.)	*Weight Change*
Average Part Weight:		742.25	381.88	55.34	48.65	1228.13	*1.17*

**Silver Retested*

Test Vehicle *Clearcoat*		Cab (Lb.)	Box (Lb.)	Fenders (Lb.)	Hood (Lb.)		
Carrier	4233	744.85	383.73	55.52	48.99		
VIN	TE 4	744.83	383.70	55.53	49.00		
		744.84	383.70				
						Total Weight	
Linearity Check:		*745.84*	*384.71*			(Lb.)	Weight Change
Average Part Weight:		744.84	383.71	55.53	49.00	1233.07	**4.94**

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*	
Carrier	4204	745.82	385.96	55.71	49.02	
VIN	TE 5	745.85	385.94	55.72	49.01	
		745.84	385.98			
						Total Weight *(Lb.)*
Linearity Check:		*746.84*	*386.98*			
Average Part Weight:		745.84	385.96	55.72	49.02	1236.53

Test Vehicle *Silver BC Re-Test Control*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4204	745.85	385.94	55.70	49.00		
VIN	TE 5	745.84	385.98	55.71	49.01		
		745.84	385.96				
						Total Weight *(Lb.)*	**Weight Change**
Linearity Check:		*746.84*	*386.96*				
Average Part Weight:		745.84	385.96	55.71	49.01	1236.51	**-0.01**

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*	
Carrier	4233	744.79	383.00	55.59	49.02	
VIN	TE 6	744.82	383.00	55.59	49.02	
		744.83	383.02			
						Total Weight
Linearity Check:		*745.80*	*384.00*			*(Lb.)*
Average Part Weight:		744.81	383.01	55.59	49.02	1232.43

Test Vehicle *Silver Basecoat Re-Test*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4233	745.50	383.60	55.68	49.14		
VIN	TE 6	745.48	383.62	55.69	49.14		
		745.50	383.62				
						Total Weight	
Linearity Check:		*746.50*	*384.62*			*(Lb.)*	**Weight Change**
Average Part Weight:		745.49	383.61	55.69	49.14	1233.93	**1.50**

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*	
Carrier	4016	744.85	382.74	55.52	48.95	
VIN	TE 7	744.86	382.78	55.53	48.95	
		744.85	382.76			
						Total Weight
Linearity Check:		*745.85*	*383.76*			*(Lb.)*
Average Part Weight:		744.85	382.76	55.53	48.95	1232.09

Test Vehicle *Silver Basecoat Re-Test*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4016	745.50	383.40	55.61	49.07		
VIN	TE 7	745.48	383.40	55.62	49.07		
		745.49	383.42				
						Total Weight	
Linearity Check:		*746.48*	*384.42*			*(Lb.)*	**Weight Change**
Average Part Weight:		745.49	383.41	55.62	49.07	1233.58	**1.49**

Vehicle Weigh Station Data Record
GM Flint Transfer Efficiency Test, July/August 2016

Test Vehicle		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*	
Carrier	4047	740.25	381.40	55.09	48.20	
VIN	TE 8	740.25	381.40	55.08	48.20	
		740.26	381.42			
						Total Weight
Linearity Check:		*741.26*	*382.42*			*(Lb.)*
Average Part Weight:		740.25	381.41	55.09	48.20	1224.95

Test Vehicle *Silver Basecoat Re-Test*		**Cab** *(Lb.)*	**Box** *(Lb.)*	**Fenders** *(Lb.)*	**Hood** *(Lb.)*		
Carrier	4047	740.90	382.04	55.17	48.32		
VIN	TE 8	740.89	382.04	55.18	48.32		
		740.91	382.02				
						Total Weight	
Linearity Check:		*741.89*	*383.02*			*(Lb.)*	**Weight Change**
Average Part Weight:		740.90	382.03	55.18	48.32	1226.43	**1.48**

Analytical Results for TE Test Materials -- Week of July 18, 2016							
	Mass of Aluminum Pan	**Mass of Sample (pre-bake)**	**Mass of Sample+Pan (post-bake)**	**Mass of Sample (post-bake)**	**% Solids**	**Avg**	**WPG**
Gray Primer B204629056							
Sample: #1	1.2842	0.4991	1.4541	0.1699	**34.04%**		
Sample: #2	1.2895	0.5109	1.4629	0.1734	**33.94%**	**33.99%**	9.353
Sample: #3	1.2815	0.4995	1.4512	0.1697	**33.97%**		
Summit White B20515639							
Sample: #1	1.2825	0.5138	1.5031	0.2206	**42.93%**		
Sample: #2	1.2842	0.5131	1.5042	0.22	**42.88%**	**43.00%**	10.344
Sample: #3	1.2864	0.4996	1.5022	0.2158	**43.19%**		
2K4 Clearcoat B205065938/B349000403							
Sample: #1	1.2821	0.5026	1.5879	0.3058	**60.84%**		
Sample: #2	1.2862	0.5065	1.5916	0.3054	**60.30%**	**60.89%**	8.342
Sample: #3	1.288	0.5019	1.5968	0.3088	**61.53%**		
Analytical Results for TE Test Materials -- August 5, 2016							
Switchblade Silver							
						23.98%	8.826