CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2018
DateRun:	08/28/2018
Experimenters:	Vinh Tran, Othon Pagounes, Ted Kearney
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Aluminum, Ceramics, Plastic, Painted metal
PartType:	Coupon
Contaminants:	Dirt
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate the effectiveness of the Alpha Chemical Sample C formula against the Alpha Chemical Sample G formula and the Alpha Chemical Sample M formula on the removal of vehicle dirt.
Experimental Procedure:	Twelve coupons per cleaner, three of each substrate, were pre weighed and had one half of a gram of Vehicle Dirt soil (45% lithium grease, 39% motor oil, and 16% bike dirt) distributed onto each coupon. The dirty weights were recorded before placing three coupons of the same substrate onto the Single Line Washing Unit (SLW) with Wypall X60 attached to each cleaning sled. The Wypall X60 reinforced wipe, along with the coupons, were treated with three sprays each and allowed to soak for 30 seconds before cleaning for 20 cycles (30 seconds of cleaning). Clean coupons were air dried at room temperature (68 F) before clean weights were recorded. For the second and third trial, the clean weight of the coupons became the new initial weights and the procedure was repeated.

Results:

First Trial						
Cleaner	Substrate	Initial wt. of cont. (g)	Final wt. of cont. (g)	% Cont. Removed	Average % Content Removed	Overall Average % Content Removed
Formulation C	Aluminum	0.5572	0.0571	89.75	90.69	88.66
		0.5272	0.0329	93.76		
		0.5709	0.0653	88.56		
	Ceramic	0.4985	0.0552	88.93	93.54	
		0.6009	0.0260	95.67		
		0.4792	0.0191	96.01		
	Acrylic Plastic	0.4983	0.1491	70.08	84.71	
		0.5039	0.0416	91.74		
		0.4626	0.0356	92.30		
	Painted Steel	0.6802	0.1630	76.04	85.71	
		0.5338	0.0381	92.86		
		0.5578	0.0657	88.22		
Formulation G	Aluminum	0.6341	0.1540	75.71	85.50	89.49
		0.5385	0.0834	84.51		
		0.7741	0.0287	96.29		
	Ceramic	0.4264	0.0243	94.30	92.35	
		0.4317	0.0241	94.42		
		0.3930	0.0459	88.32		
	Acrylic Plastic	0.4622	0.0620	86.59	90.72	
		0.4447	0.0267	94.00		
		0.4147	0.0349	91.58		
	Painted Steel	0.4237	0.0525	87.61	89.38	
		0.4476	0.0380	91.51		
		0.4706	0.0517	89.01		
Formulation M	Aluminum	0.4426	0.1604	63.76	77.02	86.83
		0.4330	0.0401	90.74		
		0.4409	0.1033	76.57		
	Ceramic	0.4999	0.0555	88.90	91.18	

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		0.4054	0.0508	87.47		
		0.5425	0.0153	97.18		
	Acrylic Plastic	0.4460	0.0650	85.43	87.80	
		0.8490	0.1005	88.16		
		0.7253	0.0740	89.80		
	Painted Steel	0.5989	0.0277	95.38	91.30	
		0.5306	0.0602	88.65		
		0.5048	0.0512	89.86		

Second Trial

Cleaner	Substrate	Initial wt. of cont. (g)	Final wt. of cont. (g)	% Cont. Removed	Average % Content Removed	Overall Average % Content Removed
Formulation C	Aluminum	0.5960	0.1114	81.31	85.09	89.99
		0.4659	0.0704	84.89		
		0.5437	0.0594	89.08		
	Ceramic	0.5833	0.0857	85.31	91.87	
		0.4512	0.0316	93.00		
		0.4353	0.0118	97.29		
	Acrylic Plastic	0.4116	0.0304	92.61	90.07	
		0.7992	0.0872	89.09		
		0.4871	0.0560	88.50		
	Painted Steel	0.7668	0.0625	91.85	92.93	
		0.6517	0.0492	92.45		
		0.6551	0.0361	94.49		
Formulation G	Aluminum	0.4077	0.0598	85.33	87.74	89.92
		0.3313	0.0313	90.55		
		0.4364	0.0552	87.35		
	Ceramic	0.6995	0.0690	90.14	95.10	
		0.5333	0.0147	97.24		
		0.4497	0.0094	97.91		
	Acrylic Plastic	0.3537	-0.0009	100.25	87.83	
		0.3825	0.0523	86.33		
		0.6503	0.1501	76.92		
	Painted Steel	0.5430	0.0744	86.30	89.02	
		0.6591	0.0410	93.78		
		0.6652	0.0867	86.97		
Formulation M	Aluminum	0.5350	0.0856	84.00	86.18	89.63
		0.4857	0.0363	92.53		
		0.6904	0.1241	82.02		
	Ceramic	0.6457	0.0416	93.56	96.25	
		0.5218	0.0174	96.67		
		0.5278	0.0078	98.52		
	Acrylic Plastic	0.4279	0.0577	86.52	87.71	
		0.8618	0.1318	84.71		
		0.8336	0.0676	91.89		
	Painted Steel	0.6027	0.0881	85.38	88.38	
		0.3882	0.0502	87.07		
		0.6463	0.0473	92.68		

Third Trial

Cleaner	Substrate	Initial wt. of cont. (g)	Final wt. of cont. (g)	% Cont. Removed	Average % Content Removed	Overall Average % Content Removed
Formulation C	Aluminum	0.7645	0.1112	85.46	87.79	90.26
		0.7817	0.0938	88.00		

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		0.6685	0.0675	89.90		
	Ceramic	0.6085	0.0410	93.26	94.61	
		0.6831	0.0487	92.87		
		0.5719	0.0131	97.71		
	Acrylic Plastic	0.9168	0.0962	89.51	89.88	
		0.9596	0.0994	89.64		
		0.7647	0.0727	90.49		
	Painted Steel	0.5141	0.0397	92.28	88.74	
		0.5444	0.0433	92.05		
		0.7200	0.1305	81.88		
Formulation G	Aluminum	0.9838	0.0868	91.18	90.09	92.67
		0.6352	0.0951	85.03		
		0.8353	0.0496	94.06		
	Ceramic	0.7032	0.0274	96.10	96.48	
		0.6089	0.0219	96.40		
		0.6824	0.0208	96.95		
	Acrylic Plastic	0.8085	0.0499	93.83	88.16	
		0.6471	0.0876	86.46		
		0.8117	0.1284	84.18		
	Painted Steel	0.5626	0.0218	96.13	95.94	
		0.6154	0.0225	96.34		
		0.6307	0.0293	95.35		
Formulation M	Aluminum	0.8710	0.1152	86.77	90.00	91.97
		0.8778	0.0787	91.03		
		0.9550	0.0744	92.21		
	Ceramic	0.4625	0.0248	94.64	96.00	
		0.7093	0.0301	95.76		
		0.5965	0.0144	97.59		
	Acrylic Plastic	0.7556	0.0672	91.11	89.57	
		0.8318	0.0991	88.09		
		0.7426	0.0778	89.52		
	Painted Steel	0.5297	0.0609	88.50	92.32	
		0.8171	0.0624	92.36		
		0.7088	0.0277	96.09		

Formulation C Overall Average Content Removed

	Aluminum %	Ceramic %	Acrylic Plastic %	Painted Steel %
First Trial	90.69	93.54	84.71	85.71
Second Trial	85.09	91.87	90.07	92.93
Third Trial	87.79	94.61	89.88	88.74
Trial Average %	87.86	93.34	88.22	89.13
Effective	Yes	Yes	Yes	Yes

Formulation G Overall Average Content Removed

	Aluminum %	Ceramic %	Acrylic Plastic %	Painted Steel %
First Trial	85.50	92.35	90.72	89.38
Second Trial	87.74	95.10	87.83	89.02
Third Trial	90.09	96.48	88.16	95.94
Trial Average %	87.78	94.64	88.90	91.45
Effective	Yes	Yes	Yes	Yes

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Formulation M Overall Average Content Removed

	Aluminum %	Ceramic %	Acrylic Plastic %	Painted Steel %
First Trial	77.02	91.18	87.80	91.30
Second Trial	86.18	96.25	87.71	88.38
Third Trial	90.00	96.00	89.57	92.32
Trial Average %	84.40	94.48	88.33	90.67
Effective	Yes	Yes	Yes	Yes

Trial Averages %

Cleaner	Aluminum %	Ceramic %	Acrylic Plastic %	Painted Steel %	Overall %
Alpha Chemical Sample C Formulation	87.86	93.34	88.22	89.13	89.64
Alpha Chemical Sample G Formulation	87.78	94.64	88.90	91.45	90.69
Alpha Chemical Sample M Formulation	84.40	94.48	88.33	90.67	89.47

Summary:

Substrates:	Aluminum, Ceramics, Plastic, Painted metal				
Contaminants:	Dirt				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Alpha Chemical Services	Sample C Formulation	100%	89.64	☑	
Alpha Chemical Services	Sample G Formulation	100	90.69	☑	
Alpha Chemical Services	Sample M Formulation	100	89.47	☑	

Conclusion:

Alpha Chemical Sample C Formulation, Alpha Chemical Sample G Formulation, and the Alpha Chemical Sample M Formulation are all effective in the removal and prevention of vehicle dirt from staying on multiple surfaces. The soil removal increased gravimetrically and visually after every trial of all three cleaners.