CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2006
DateRun:	11/14/2006
Experimenters:	Jason Marshall
ClientType:	Lab
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Carbon Deposits, Greases, Oil
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Gravimetric
Purpose:	Laboratory evaluations of alternative aerosol cleaning products
Experimental Procedure:	Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Fifteen products were selected for testing based on previous testing on the selected soil. Five products were diluted to 25%, two products were diluted to 17% and one was used at 10% using DI water. The other seven products were used at full strength. Products were used at room temperature. Forty-five preweighed aluminum coupons were coated with a collection of brake/engine soil collected from an automobile shop. The coupons were allowed to sit for several days before a second weight was recorded. Three coupons were cleaned in each solution for less than one minute using low pressure spray. Coupons were then rinsed in a tap water spray for 5 seconds and dried using air blow off at room temperature for 10 seconds. Following drying, final weights were recorded and cleaning efficiencies were calculated.
Results:	Fourteen of the products removed over 95% of the soil mix within 30 seconds of spray cleaning. The one product that did not, removed just over 70%. It may have been due to a lower delivery pressure. Two of the soy-based products (Soy Gold 1000 and 2000) left a visible residue on the coupons. These coupons were wiped with a paper towel and reweighed to determine if the residue could be easily removed from the surfaces. Wiping increased the efficiency for both products. In all, five products removed over 99% (seven when including wiping), 5 more removed over 98%. Many of the products had foaming occur to some extent during the spray cleaning process. Lower concentrations could be tested to determine if the foaming would be decreased. The table below lists the amount of soil applied, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Aquavantage 1400	0.2968	0.0062	97.91
	0.2957	0.0047	98.41
	0.3448	0.0114	96.69
Daraclean 282	0.3040	0.1832	39.74
	0.2624	0.0634	75.84
	0.5967	0.0250	95.81
Inproclean 3800	0.3890	0.0060	98.46
	0.2668	0.0039	98.54
	0.4252	0.0088	97.93
Cal Parts Washer	0.1953	-0.0008	100.41
	0.2838	0.0010	99.65
	0.4623	-0.0001	100.02
Eliminator	0.1227	0.0010	99.19
	0.1443	0.0069	95.22
	0.2416	0.0091	96.23
Sea Wash Blue	0.5025	0.0043	99.14
	0.4191	0.0036	99.14
	0.8749	0.0024	99.73
278 Super Solv	0.6721	0.0314	95.33
	0.4183	0.0142	96.61
	0.9093	0.0266	97.07
Citrus Soy Solvent	0.9261	0.0093	99.00

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	0.5565	0.0085	98.47
	0.2986	0.0093	96.89
Harvest Gold 2000	1.0054	0.0054	99.46
	0.929	0.0107	98.85
	0.7738	0.0125	98.38
Maxi Solv	0.9340	0.0052	99.44
	0.2918	0.0041	98.59
	0.5647	0.0064	98.87
DS 104	0.4035	0.0010	99.75
	0.5208	0.0052	99.00
	0.5090	-0.0003	100.06
D Greeze 500 Lo	0.4698	0.0004	99.91
	0.4024	0.0007	99.83
	0.3723	0.0026	99.30
Solsafe 245	0.5731	0.0002	99.97
	0.4618	0.0002	99.96
	0.8017	0.0000	100.00
Soy Gold 1000	0.6150	0.0132	97.85
	0.5308	0.0104	98.04
	0.5221	0.0130	97.51
Soy Gold 2000	0.5566	0.0113	97.97
	0.5493	0.0061	98.89
	0.7190	0.0057	99.21
With Wipe			
Soy Gold 1000			99.17
Soy Gold 2000			99.45

Summary:

Substrates:	Aluminum
Contaminants:	Carbon Deposits, Greases, Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Brulin Corporation	Aquavantage 1400	25	97.67	☑	Foaming
Magnaflux	Daraclean 282	25	70.46	☐	Some foam
Oakite Products	Inproclean 3800	25	98.31	☑	Foaming
Phase III Inc	California Parts Washer Solution	25	100.03	☑	Foaming
Phase III Inc	Eliminator	17	96.88	☑	Foaming
Warren Chemical Company	Sea Wash Blue	17	99.34	☑	Some foaming
AW Chesterton	278 Super Solv	10	96.34	☑	No foaming
Bi-O-Kleen Industries	Citrus Soy Solvent Cleaner & Degreaser	25	98.12	☑	No foaming
United Laboratories International	United 2002 Harvest Gold	100	98.90	☑	No foaming
Gemtek Products	Safe Care (SC) Maxi Solv	100	98.97	☑	No foaming
Dysol	DS 104 Wipe Solvent	100	99.60	☑	Some foaming
Transene Company, Inc.	D Greeze 500 LO	100	99.68	☑	Some foaming
Bio Chem Systems	Solsafe 245	100	99.97	☑	Some foaming
AG Environmental Products	Soy Gold 1000	100	97.80	☑	No foaming
AG Environmental Products	Soy Gold 2000	100	98.69	☑	No foaming

Conclusion: The products that showed good cleaning will be evaluated further using an aerosol delivery process.