

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2024
 DateRun: 10/02/2024
 Experimenters: Cindy McClaughlin, Rachael Rososky
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #2
 Substrates: Ceramics, Plastic, Stainless Steel
 PartType: Coupon
 Contaminants: DCC-17
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric

Purpose: To evaluate the efficacy of FB-1000 at various concentrations and temperatures compared to a 2% caustic cleaner in removing DCC17 grease soil from a variety of substrates.

Experimental Procedure: A total of 27 coupons, three each of stainless steel, plastic, and ceramic per product solution, were tested using FB-1000 at 10%, 2%, and 1% dilutions, and Alpha Chemical's Veracity Caustic Cleaner (sodium hydroxide) at a 2% concentration. FB-1000 was tested at room temperature (68°F) and 120°F, while the comparative caustic cleaner was tested only at room temperature.

Initial coupon weights were recorded before contamination with DCC-17 (0.25g applied to each coupon using a handheld swab). After drying overnight, the contaminated "dirty" weights were recorded. Three coupons per substrate were cleaned in a Gardner Straight Line Washability (SLW) unit using a Kimberly-Clark Wypall towel and two sprays of cleaner (~2.5 mL per coupon) at the designated temperature. Cleaning involved 20 cycles (~30 seconds). Cleaned coupons were air-dried for 24 hours before final weights were recorded to quantify soil removal and evaluate cleaning efficacy.

Results:

Product/ Dilution	Temp (°F)	Substrate	Initial wt. (g) of cont.	Final wt. (g) of cont.	%Cont. Removed	Average % Removal	Overall % Removal (Temp.)
FB 1000 10%	68	Stainless Steel	0.2681	0.0135	94.9646	91.41	92.94
			0.1787	0.0204	88.5842		
			0.2586	0.0241	90.6806		
		Plastic	0.2812	0.0168	94.0256	94.28	
			0.2725	0.0125	95.4128		
			0.2381	0.0157	93.4061		
		Ceramic	0.2031	0.0214	89.4633	93.13	
			0.2720	0.0088	96.7647		
			0.2238	0.0153	93.1635		
	120	Stainless Steel	0.2162	0.0249	88.4829	89.57	92.78
			0.2412	0.0201	91.6667		
			0.2290	0.0262	88.5590		
		Plastic	0.2255	0.0042	98.1375	96.80	
			0.2107	0.0043	97.9592		
			0.2056	0.0117	94.3093		
		Ceramic	0.2204	0.0098	95.5535	91.97	
			0.2327	0.0075	96.7770		
			0.1704	0.0280	83.5681		
FB 1000 2%	68	Stainless Steel	0.3067	0.0375	87.7731	86.49	90.75
			0.2819	0.0335	88.1164		
			0.1704	0.0280	83.5681		
		Plastic	0.3289	0.0314	90.4530	93.04	
			0.2340	0.0146	93.7607		
			0.2516	0.0128	94.9126		
		Ceramic	0.2490	0.0130	94.7791	92.73	
			0.2633	0.0169	93.5815		
			0.2432	0.0247	89.8438		
	120	Stainless Steel	0.2803	0.0265	90.5458	89.14	89.38
			0.2726	0.0354	87.0139		

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		Plastic	0.2423	0.0246	89.8473	93.63	
			0.1787	0.0151	91.5501		
			0.2372	0.0043	98.1872		
		Ceramic	0.2104	0.0186	91.1597	85.36	
			0.2301	0.0299	87.0056		
			0.2445	0.0396	83.8037		
FB 1000 1%	68	Stainless Steel	0.2691	0.0396	85.2843	86.28	90.95
			0.2487	0.0294	88.1785		
			0.2365	0.0417	82.3679		
		Plastic	0.2239	0.0262	88.2983	93.29	
			0.2080	0.0129	93.7981		
			0.1892	0.0075	96.0359		
		Ceramic	0.1856	0.0185	90.0323	93.27	
			0.2506	0.0219	91.2610		
			0.2538	0.0122	95.1931		
	120	Stainless Steel	0.2548	0.0169	93.3673	88.49	91.25
			0.2436	0.0247	89.8604		
			0.2573	0.0262	89.8173		
		Plastic	0.2239	0.0318	85.7972	91.75	
			0.2285	0.0123	94.6171		
			0.2372	0.0369	84.4435		
		Ceramic	0.2942	0.0112	96.1931	93.52	
			0.1989	0.0185	90.6988		
			0.2489	0.0110	95.5806		
Veracity 2%	68	Stainless Steel	0.2639	0.0151	94.2781	91.57	94.79
			0.2602	0.0084	96.7717		
			0.2539	0.0350	86.2150		
		Plastic	0.2514	0.0208	91.7263	94.61	
			0.2567	0.0159	93.8060		
			0.2503	0.0131	94.7663		
		Ceramic	0.2492	0.0118	95.2648	98.19	
			0.3667	0.0029	99.2092		
			0.2536	0.0032	98.7382		
				0.2551	0.0086	96.6288	

FB-1000 at 1% and 2% dilutions demonstrated grease removal effectiveness comparable to the 10% solution. All three FB-1000 dilutions at room temperature performed as effectively as their heated counterparts.

Summary:

Substrates:	Ceramics, Plastic, Stainless Steel					
Contaminants:	DCC-17					
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:	
Innovative Chemical Technologies, Inc.	Virdivis FB1000 (ICT 1648L)	10%	92.94	☒		
Innovative Chemical Technologies, Inc.	Virdivis FB1000 (ICT 1648L)	10%	92.78	☒		
Innovative Chemical Technologies, Inc.	Virdivis FB1000 (ICT 1648L)	2%	90.75	☒		
Innovative Chemical Technologies, Inc.	Virdivis FB1000 (ICT 1648L)	2%	89.38	☒		
Innovative Chemical Technologies, Inc.	Virdivis FB1000 (ICT 1648L)	1%	90.95	☒		
Innovative Chemical Technologies, Inc.	Virdivis FB1000 (ICT 1648L)	1%	91.25	☒		
Alpha Chemical Services	Veracity Caustic Cleaner	2%	94.79	☒		

Conclusion:

FB-1000 at 10%, 2%, and 1% dilutions demonstrated grease removal effectiveness comparable to 2% Veracity Caustic Cleaner, both when heated and unheated, on stainless steel, plastic, and ceramic substrates.