

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2022

DateRun: 05/12/2022

Experimenters: Zoe Lawson

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Ceramics, Plastic, Painted metal

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the effectiveness of Libman All-Purpose Cleaner against a comparative brand after sitting for 7 days at 120F.

Experimental Procedure: The two cleaners used in the experiment were placed in an oven at 120F for 1 week to simulate how the product would perform after being exposed to hot enclosed conditions for long periods of time. The cleaners were allowed to sit at room temperature for 24 hours before being used. Nine pre-weighed coupons per cleaner, three of each substrate, were contaminated with Hucker's Soil Formulation (Jiff Creamy Peanut Butter 9.2%, Salted Butter 9.2%, Arrowhead Mills stone-ground wheat flour 9.2%, Egg Yolk 9.2%, Evaporated milk 13.8%, Distilled water 45.8%, Printer's ink with boiled linseed oil 0.9%, Shaws saline Solution 2.7%) using a handheld swab and dried for two hours at room temperature (68 F). The contaminated coupons were weighed before placing three coupons per cleaner of the same substrate into a Gardner Straight Line Washability (SLW) unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled. The Wypal and each coupon were treated with three sprays and cleaned for 20 cycles (~30 seconds of cleaning). Clean coupons dried for 24 hours before final weights were taken.

Results: After 1 week of treatment at 120F, both bottles did not appear to outwardly change and experience any melting issues.

Overall, Libman All-Purpose Cleaner was more effective at removing the contaminant than Weiman Cooktop Oven Cleaner. In comparison to the previous test (Trial #0) where the cleaners were used as is, without any heat treatment, these cleaners did not perform as well. Previously, with no heat treatment, Libman All-Purpose had an overall average removal of 97.63 compared to the heat treated 93.61. Weiman Cooktop's results followed a similar pattern with no heat treatment having a 94.85% over average removal and with heat treatment, 88%.

Cleaner	Substrate	Initial wt of cont.	Final wt of cont.	%Cont Removed	Average % Removal	Overall % Removal
Weiman Cooktop	Ceramic	0.1275	0.0416	67.37	84.86	88.00
		0.0687	0.0061	91.12		
		0.2778	0.0109	96.08		
	Plastic	0.3627	0.0471	87.01	87.96	
		0.3471	0.0583	83.20		
		0.3758	0.0238	93.67		
	Painted Metal	0.3229	0.0155	95.20	91.17	
		0.1602	0.0192	88.01		
		0.3389	0.0329	90.29		
Libman All- Purpose	Ceramic	0.1532	0.0036	97.65	98.01	93.61
		0.2695	0.0042	98.44		
		0.2519	0.0052	97.94		
	Plastic	0.4135	0.0608	85.30	91.80	
		0.3438	0.0177	94.85		
		0.3791	0.0180	95.25		
	Painted Metal	0.4940	0.0621	87.43	91.02	
		0.2731	0.0256	90.63		
		0.2618	0.0131	95.01		

Libman All-Purpose was still more effective than Weiman Cooktop under untreated and treated conditions.

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Cleaner	Condition	Overall % Removal
Libman All-Purpose	Untreated	97.63
	Treated for 1 week at 120F	93.61
Weiman Cooktop	Untreated	94.85
	Treated for 1 week at 120F	88.00

Summary:

Conclusion:

Both cleaners had reduced average percent removals after being treated for 1 week at 120F. Under both sets of conditions, Libman All-Purpose Cleaner (untreated and treated) remained more effective than Weiman Cooktop Oven Cleaner at removing Hucker's soil from ceramic, painted metal, and plastic substrates.