

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020
 DateRun: 07/15/2020
 Experimenters: Alicia McCarthy, Hayley Byra
 ClientType: Metal Working
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Buffing/Polishing Compounds
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to evaluate the effects of cleaners using unheated, heated, and heated immersion with agitation to remove the white buffing compound from aluminum substrates.

Experimental Procedure: The following cleaners were tested under specified conditions: Metalnox 6386 (100% concentration, 100°F), Liquinox (1% concentration, 170°F with a stir bar), Propylene carbonate (100% concentration, room temperature), SC Supersolve (5% concentration, room temperature), Dimethyl glutarate (100% concentration, 130°F). Three aluminum coupons were obtained and weighed for each of the five cleaners tested. Coupons were then soiled with the white buffing compound using a swab and a soiled weight was recorded. Coupons were then immersed into their respective cleaners under the listed conditions for five minutes. When five minutes passed, coupons were air dried, and a clean weight was obtained. Effectiveness of the cleaners was then determined.

Cleaner	Initial wt. of cont.	Final wt. of cont.	% Cont. Removed	%AVG
Metalnox 6386	0.0064	0.0034	46.88	32.11
	0.0138	0.011	20.29	
	0.0199	0.0141	29.15	
Liquinox	0.0052	0.0014	73.08	99.99
	0.0022	-0.0004	118.18	
	0.0023	-0.0002	108.7	
Propylene Carbonate	0.0206	0.0189	8.25	16.4
	0.0237	0.0217	8.44	
	0.0163	0.011	32.51	
SC Supersolve	0.0047	0.0032	31.91	15.35
	0.0052	0.0047	9.61	
	0.0044	0.0042	4.54	
Dimethyl glutarate	0.0031	0.0005	83.87	92.17
	0.0058	0.0002	96.55	
	0.0051	0.0002	96.08	

Substrates:		Aluminum			
Contaminants:		Buffing/Polishing Compounds			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Kyzen Corporation	Metalnox M6386	100%	32.11	<input type="checkbox"/>	
Alconox Inc	Liquinox	1%	99.99	<input checked="" type="checkbox"/>	
Fisher Scientific	Propylene carbonate 99.5% (CAS: 108-32-7)	100%	16.40	<input type="checkbox"/>	
Gemtek Products	SC Supersolve Safety Solvent	5%	15.35	<input type="checkbox"/>	
Fisher Scientific	Dimethyl glutarate (CAS:1119-40-0)	100%	92.17	<input checked="" type="checkbox"/>	

Conclusion: Liquinox was the most effective cleaner removing an average of 99.99% of white buffing compound from aluminum substrates using a 1% concentration solution at 170°F with agitation from a stir bar. Note that some coupons exceeded 100% removal using Liquinox, this means excess soil present from previous experiments was also removed. Dimethyl glutarate was the second most effective removing an average of 92.17% using a 100% concentration solution at 130°F.