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.

Results:

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	

Summary:

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

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.