CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 11/03/2020

Experimenters: Justin Kiander

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Lubricating/Lapping Oils

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to determine the effectiveness of cleaners in removing company provided oil from stainless steel via unheated immersion.

Experimental Procedure: Six cleaners were prepared to the following concentrations: Metalnox 6386 100%, Dimethyl Glutarate 100%, Smart Solve 605 100%, SC Aircraft & Metal Cleaner 20%, SC Supersolve 20%, Crystal Simple Green Industrial Cleaner 30 parts water. Three stainless steel coupons were obtained and weighed for each of the cleaners. Coupons were then soiled with grind oil provided by the company and a dirty weight was recorded. Once soiled, coupons were submerged into their respective cleaners for 15 minutes at room temperature. After 15 minutes, coupons were set aside to dry in air for 24 hours. After the drying period, a final clean weight was recorded. Effectiveness of the cleaners was determined.

Results:

Cleaner	Initial wt of Cont	Final wt of Cont	%Cont Removed	%AVG
Metalnox 6386	0.0375	0.0016	95.73	96.56%
	0.0390	0.0009	97.69	
	0.0775	0.0029	96.26	
Dimethyl Glutarate	0.0432	0.0664	-53.7	15.53%
	0.1002	0.0511	49.00	
	0.0854	0.0416	51.29	
Smart Solve 605	0.1169	0.1168	0.09	-10.5%
	0.0918	0.1088	-18.52	
	0.1239	0.1401	-13.08	
SC Aircraft and Metal	0.1096	0.0435	60.31	68.25%
	0.1480	0.0338	77.16	
	0.1076	0.0352	67.29	
SC Supersolve	0.1115	0.0502	54.98	60.96%
	0.0633	0.0356	43.76	
	0.1382	0.0219	84.15	
Crystal Simple Green	0.1266	0.0349	72.43	71.3%
	0.1875	0.0430	77.07	
	0.1475	0.0525	64.41	

Summary:

Substrates:	Stainless Steel				
Contaminants:	Lubricating/Lapping Oils				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Kyzen Corporation	Metalnox M6386	100%	96.56	☑	
Fisher Scientific	Dimethyl glutarate (CAS: 1119-40-0)	100%	15.53	☐	
United Laboratories International	Smart Solve 605	100%	-10.50	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	20%	68.25	☐	
Gemtek Products	SC Supersolve Safety Solvent	20%	60.96	☐	
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	30 Parts Water	71.30	☐	

Conclusion:

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Metalnox 6386 was the most effective at removing grind oil via unheated immersion with an average removal of 96.56%. Crystal Simple Green was the second most effective with a removal average of 71.3%. Next steps would be to conduct heated immersion at 100°F for 15 minutes. Less soil will be used on the coupons as well. A 30 second deionized water rinse step at 100°F will be included for Smart Solve and SC Aircraft.