

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020
 DateRun: 11/10/2020
 Experimenters: Justin Kiander
 ClientType: Metal Working
 ProjectNumber: Project #1
 Substrates: Stainless Steel
 PartType: Coupon
 Contaminants: Oil
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric, Visual

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

Experimental Procedure: Cleaners were prepared to the following concentrations: Dimethyl glutarate 100%, Smart Solve 605 100%, SC Aircraft & Metal 20%, SC Supersolve 20%, and Crystal Simple Green Industrial Cleaner 30 parts water. All cleaners were heated to 100°F. Three stainless steel coupons were obtained and weighed for each of the cleaners being tested. Cleaners were then soiled with the grind oil provided by the company and a dirty weight was recorded. Once solutions reached the proper temperature, coupons were submerged into their respective cleaners for 15 minutes. After the 15 minutes, coupons cleaned with Smart Solve 605 and SC Aircraft & Metal were submerged into a heated deionized water bath for 30 seconds. All coupons were then given an initial drying with a heat gun and finished drying overnight in air. A clean weight was then obtained. Effectiveness of the cleaners was determined.

Results:

Cleaner	Initial wt of cont	Final wt of cont	%Cont Removed	%AVG
Dimethyl glutarate	0.0192	0.0064	66.67	68.02%
	0.0438	0.0118	73.06	
	0.0387	0.0138	64.34	
Smart Solve 605	0.0250	0.0076	69.60	74.31%
	0.0344	0.0086	75.00	
	0.0226	0.0049	78.32	
SC Aircraft & Metal	0.0301	0.0048	84.05	79.55%
	0.0272	0.0045	83.46	
	0.0239	0.0069	71.13	
SC Supersolve	0.0692	0.0177	74.42	74.35%
	0.0579	0.0202	65.11	
	0.1123	0.0185	83.53	
Crystal Simple Green	0.0926	0.0026	97.19	82.87%
	0.0731	0.0081	88.92	
	0.0408	0.0153	62.50	

Summary:

Substrates:		Stainless Steel			
Contaminants:		Oil			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Fisher Scientific	Dimethyl glutarate (CAS: 1119-40-0)	100%	68.02	<input type="checkbox"/>	
United Laboratories International	Smart Solve 605	100%	74.31	<input type="checkbox"/>	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	20%	79.55	<input checked="" type="checkbox"/>	
Gemtek Products	SC Supersolve Safety Solvent	20%	74.35	<input type="checkbox"/>	
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	30 parts water	82.87	<input checked="" type="checkbox"/>	

Conclusion:

Crystal Simple Green was the most effective cleaner removing an average of 82.87% of oil from stainless steel substrates. SC Aircraft was the second most effective removing an average of 79.55%. Next steps would be to conduct heated immersion with agitation.