CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2019

DateRun: 07/01/2019

Experimenters: Julia Doyle

ClientType: Machinery Manufacturer

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Oil

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the effectiveness of aqueous cleaners at the removal of gundrill oil/coolant from stainless steel alloy.

Experimental Procedure: Initial weights were obtained for nine 2”x2” stainless steel alloy coupons. All coupons were soiled with gundrill oil/coolant mixture on half of the coupon on one side. All coupons were reweighed to obtain a dirty weight. One set of three coupons was immersed in each of the three cleaners. Cleaners and coupons were placed in heated ultrasonic machine for 25 minutes. Coupons were removed from cleaners and rinsed with DI water by spraying each coupon five times. Coupons were air dried for one hour at room temperature (68 F).

Chemistries Evaluated:

1. Buckeye Immersion Cleaner
2. Alconox Powdered Precision Cleaner
3. Micro 90 Concentrated Cleaning Solution

Company Name	Product Name	Concentration	Temperature
Buckeye International	Buckeye Immersion Cleaner	20%	125 F
Alconox Inc.	Alconox Powdered Precision Cleaner	1%	100 F
International Products	Micro 90 Concentrated Cleaning Solution	2%	100 F

Results: All three cleaners were effective in removing gundrill oil/coolant from stainless steel alloy. The gravimetric data for Buckeye Immersion Cleaner shows that one coupon was significantly less clean than the other two, causing the average percent removal to be under 90% clean. However, visually, this cleaner worked well and has worked well in the past experiments. Buckeye Immersion cleaner had an average removal of 83.74%, Alconox had an average removal of 97.65% and Micro 90 had an average of 94.57%.

Cleaner	Initial Weight of Cont.	Final Weight of Cont.	% Removed	Average
1	0.0042	0.0001	97.62	83.74
	0.0022	0.0004	81.82	
	0.0039	0.0011	71.79	
2	0.0048	0.0000	100.00	97.65
	0.0062	0.0003	95.16	
	0.0045	0.0001	97.78	
3	0.0050	0.0001	98.00	94.57
	0.0097	0.0007	92.78	
	0.0085	0.0006	92.94	

Summary:

Substrates:	Stainless Steel				
Contaminants:	Oil				
Company Name:		**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

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	Product Name:				
Buckeye International	Immersion Cleaner	20%	83.74	☑	Buckeye Immersion Cleaner was effective for the removal of oil/coolant on stainless steel coupons.
Alconox Inc	Alconox	1%	97.65	☑	Alconox was effective for the removal of oil/coolant on stainless steel coupons.
International Products Corporation	Micro 90 Conc.	2%	94.57	☑	Micro 90 was effective for the removal of oil/coolant on stainless steel coupons.

Conclusion: All cleaners were effective for the removal of oil/coolant on stainless steel coupons. Spray rinsing with deionized water was very effective in removing any chemical residue from the cleaners.