CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 07/25/2021

Experimenters: Zoe Lawson, Justin Kiander

ClientType: Metal Finishing

ProjectNumber: Project #3

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 alternatives with heated immersion and a heated rinse step.

Experimental Procedure: Cleaners were prepared to the following concentrations: Citranox 2%, Mirachem 500 20%, Water Works Heavy Duty Degreaser 7:1, SC Aircraft & Metal 20%, Aquaease 732 5%, Aquavantage 3800 GD 5%. All cleaners were heated to 100°F. Three stainless steel coupons were obtained and weighed for each of the cleaners being tested. Coupons were then soiled with a company provided oil and dirty weights were recorded. Once solutions reached the proper temperature, coupons were submerged into their respective cleaners for 15 minutes. After 15 minutes had passed, all coupons were submerged into a deionized water bath, also at 100°F, for 5 minutes. Coupons were then allowed to dry in air for 24 hours. Following the drying period, coupons were weighed again and a clean weight was recorded. Effectiveness of the cleaners was determined.

Results:

Cleaner	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG
Citranox	0.1205	0.0187	84.48	82.98
	0.1102	0.0197	82.12	
	0.1025	0.0181	82.34	
Mirachem 500	0.1210	0.0092	92.40	91.06
	0.1146	0.0093	91.88	
	0.1045	0.0116	88.90	
Water Works	0.1309	0.0135	89.69	86.48
	0.1214	0.0120	90.12	
	0.0511	0.0104	79.65	
SC Aircraft & Metal	0.1247	0.0103	91.74	89.81
	0.0540	0.0080	85.19	
	0.1281	0.0096	92.51	
Aquaease 732	0.0928	0.0131	85.88	87.49
	0.1532	0.0122	92.04	
	0.0802	0.0124	84.54	
Aquavantage 3800 GD	0.1500	0.0145	90.33	87.02
	0.0773	0.0186	75.94	
	0.1613	0.0084	94.79	

The addition of the extended heated rinse step did not increase removal percentages or eliminate the residue as expected. Although improvements were not achieved, all cleaners remain effective at mostly removing the oil. All solutions have undergone a color change from clear to milky white indicating the removal of the oil. Next steps would be to incorporate agitation or a heated dry step to remove the lingering residue.

Summary:

Substrates:	Stainless Steel				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Alconox Inc	Citranox	2%	82.98	☑	
Mirachem Corporation	Mirachem 500	20%	91.06	☑	
Keteca USA	Water Works Heavy Duty Degreaser	7:1	86.48	☑	

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Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	20%	89.81	☑	
Hubbard Hall Inc	Aquaease PL 732	5%	87.49	☑	
Brulin Corporation	Aquavantage 3800 GD	5%	87.02	☑	

Conclusion: Upon completion of testing, it was determined that the addition of the extended heated wash step did not remove the remaining residue as expected. Next steps would be to include agitation to the cleaning process, or to incorporate a heated dry step to remove the post clean residue.