CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006

DateRun: 09/11/2006

Experimenters: Jason Marshall

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate selected cleaners for removing quench oil from steel parts using immersion cleaning.

Experimental Procedure: Six alternative products were selected from the lab's database of testing results based on supplied client information. Products were selected based on oil removal potential and compatibility with brass, steel and stainless-steel metal substrate. Each product was diluted to 5% in 250 ml beakers using DI water and heated to 130 F on a hot plate.

Eighteen preweighed coupons were coated with the supplied quench oil using a handheld swab after. Coupons were weighed a second time to determine the amount of oil added. Three coupons were cleaned in each solution for five minutes using minimal stir bar agitation. Coupons were rinsed for 15 seconds in a tap water bath at 120 F and dried using a dry compressed air for 30 seconds. Once dry coupons were weighed a final time and product efficiencies were calculated.

Results: All six products removed over 95% of the quench oil within 5 minutes of immersion cleaning. Three of these products removed over 99.5%. The following table lists the amount of buffing compound applied, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Aquavantage 1400	0.1591	0.0027	98.30
	0.1252	0.0089	92.89
	0.2027	0.0071	96.50
Surface Cleanse 930	0.1523	0.0087	94.29
	0.2291	0.0060	97.38
	0.2147	0.0054	97.48
SeaWash Blue	0.2132	-0.0001	100.05
	0.2622	0.0001	99.96
	0.2490	0.0010	99.60
Inproclean 3800	0.2440	0.0008	99.67
	0.2161	0.0012	99.44
	0.2616	0.0011	99.58
Polyspray Jet 790 XS	0.2134	0.0007	99.67
	0.2992	0.0000	100.00
	0.2703	0.0007	99.74
Daraclean 283	0.2960	-0.0003	100.10
	0.1962	0.0025	98.73
	0.3180	0.0099	96.89

Summary:

Substrates:	Steel				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Brulin Corporation	Aquavantage 1400	5	95.90	☑	
International Products Corporation	Surface Cleanse Concentrated Neutral 930	5	96.38	☑	
Warren Chemical Company	Sea Wash Blue	5	99.87	☑	

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Oakite Products	Inproclean 3800	5	99.57	☑	
US Polychem Corporation	Polyspray Jet 790 XS	5	99.80	☑	
Magnaflux	Daraclean 283	5	98.57	☑	

Conclusion: All six products were found to work on the supplied quench oil. Cleaning with ultrasonic energy will increase the effectiveness of the products especially when dealing with intricate parts. Having found products successful on the quench oil, the next step will be to evaluate these cleaners on supplied parts at or after workshop.