CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002

DateRun: 10/08/2002

Experimenters: Jason Marshall

ClientType: Manufacturing

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate selected products for lubricant removal

Experimental Procedure: Eight cleaners were selected from the lab's database of effective testing and from clients previous testing based on supplied input. Seven were diluted to 5% and one was diulted to 3% (Citranox) in 600 ml beakers using DI water. Each solution was heated to 130 F on a hot plate. Twenty-four preweighed coupons were coated with Milacron Marketing Company CIMTECH® 310 metal working fluid concentrate (102-71-6, 78-96-6, 26896-20-8) using a hand held swab. Coupons were then reweighed using a Denver Instruments A250 balance to determine the amount of contaminant added. Three coupons were immersed into each solution and cleaned for 5 minutes using stir bar agitation. Coupons were rinsed for 15 seconds in a tap water bath at 120 F and finally dried using a Master Appliance Hot Air gun at 500 F for 30 seconds. After the coupons were dried, final weights were recorded and efficiencies calculated for each cleaning solution.

Results: All eight products removed over 92% of the contaminant from the aluminum coupons after 5 minutes of soaking. Four products removed over 97%. The table below lists the amount of contaminant applied, the amount remaining and the efficiency for each coupon cleaned.

Table 1. Contamination Removal

Cleaner	Initial wt	Final wt	% Removed
Citrinox	0.2207	0.0017	99.23
	0.3195	0.0048	98.50
	0.5490	0.0022	99.60
Exp 1400	0.3752	0.0050	98.67
	0.3514	0.0032	99.09
	0.0836	0.0014	98.33
Shopmaster	0.2727	0.0104	96.19
	0.3941	0.0124	96.85
	0.0669	0.0098	85.35
Bulldog	0.0968	0.0117	87.91
	0.2295	0.0059	97.43
	0.2658	0.0035	98.68
SC A&M	0.1045	0.0057	94.55
	0.2312	0.0002	99.91
	0.3328	0.0039	98.83
Amberclean	0.0693	0.0055	92.06
	0.2748	0.0083	96.98
	0.3000	0.0030	99.00
Daraclean	0.2124	0.0075	96.47
	0.3733	0.0076	97.96
	0.2425	0.0079	96.74
Inproclean	0.0802	0.0069	91.40
	0.5750	0.0090	98.43
	0.5497	0.0140	97.45

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Alconox Inc	Citranox	3	99.11	☑	

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Brulin Corporation	Aquavantage 1400	5	98.69	☑	
Buckeye International	Shopmaster	5	92.80	☐	
EcoLink	Bulldog	5	94.68	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	97.76	☑	
Innovative Organics Inc	Amberclean Q3	5	96.01	☐	
Magnaflux	Daraclean 282	5	97.06	☑	
Oakite Products	Inproclean 3800	5	95.76	☐	

Conclusion: The four products that removed over 97% will be used in the next phase of testing using ultrasonic energy.