CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 05/30/2001

Experimenters: Jason Marshall, John Brunelle

ClientType: Metal

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Cutting/Tapping Fluids

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To identify a cleaner to remove C-Eblis cutting oil from steel parts

Experimental Procedure: Eight cleaners were selected based on vendor information and from the lab's database of effective testing trials. Each solution was diluted to 5% using DI water and heated to 130 F on a hot plate. Twenty-four preweighed steel coupons were coated with C-Eblis Cutting Oil (64742-53-6, 64742-52-5) using a hand held swab. Coupons were weighed again. Three coupons were immersed in each solution and cleaned for 5 minutes using stir-bar agitation. Following cleaning, the coupons were rinsed in tap water at 120 F for 30 seconds and dried using a Master Appliance Heat Gun,model HG-301A, at 500 F for one minute. Once coupons were dry, a final weight was recorded and efficiency was calculated.

Results: Two of the products removed just over 80% of the oil from the coupons using stir bar agitation. The other cleaners removed between 70 and 75%. The following table lists the individual effectiveness for each coupon.

Cleaning Efficiencies

Cleaner	Coupon 1	Coupon 2	Coupon 3	Average	Std Dev
815 GD	79.08	69.5	68.78	72.45	5.75
Shopmaster	55.04	73.22	67.79	65.35	9.33
E 2001	68.02	82.19	69.44	73.22	7.8
Green Stuff	77.27	75.29	74.46	75.67	1.44
ND 17	68.89	69.24	83.97	74.03	8.61
Inproclean	80.08	71.98	90.71	80.92	9.39
Beyond 2001	69.92	78.37	76.74	75.01	4.48
Daraclean 283	77.47	83.44	81.47	80.79	3.04

After removing the agitation from the cleaning solutions, the oil migrated out of the solution to the top where it could be easily removed.

Summary:

Substrates:	Steel				
Contaminants:	Cutting/Tapping Fluids				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Buckeye International	Shopmaster	5	65.35	☐	
Bio Chem Systems	Green Stuff 6325	5	75.67	☐	
Brulin Corporation	Formula 815 GD	5	72.45	☐	
Church & Dwight Co Inc.	Armakleen E 2001	5	73.22	☐	
Oakite Products	Inproclean 3800	5	80.92	☑	
MacDermid Industrial Products	ND 17	5	74.03	☐	
Magnaflux	Daraclean 283	5	80.79	☑	
Today & Beyond	Beyond 2001	5	75.01	☐	

Conclusion: Daraclean 283 and Inproclean 3800 were moderately successful in removing the C-Eblis cutting oil from the steel coupons. With the addition of a more aggressive agitation method (ultrasonics) the cleaners should be more effective in cleaning the oil. Green Stuff and Beyond 2001 will also be evaluated in the next test.