CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 06/22/1999

Experimenters: Jason Marshall

ClientType: Metal Working

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 six aqueous cleaner on second contaminant.

Experimental Procedure: Six cleaners from the previous trial were retested for removal of the second contaminant. Five of the six cleaners were diluted to 5% by volume in 400 mL Pyrex beakers and heated to 130 F on a hot plate. The six cleaner was made into 7.7% mixture and only heated to 105 F as recommended by the vendor. Eighteen preweighed coupons were contaminated with vanishing film and weighed again. Three coupons were cleaned in each beaker and cleaned using stir-bar-agitation for five minutes. Coupons were rinsed in 120 F tap water for 30 seconds and dried using a Master Appliance Corp, Hot-air gun model HG-301A for one minute at 500 F. After cooling to room temperature, final weights were recorded and cleaning efficiencies were calculated.

SUBSTRATE MATERIAL: Aluminum Coupons (5052)
CONTAMINANTS: Lubricant Mix-Hydroil AW-3 9petroleum hydrocarbon); Express Gear Lubricant F
CONTAMINATING PROCESS USED: Coupons were coated using a hand held swab.

Results: Half of the cleaners were less efficient in the removal of the machine lubricant mix. The other cleaning products removed over 95% of the contaminant. Oakite and Calgon were the two most effective cleaners tested. Table 2 lists the calculated cleaning efficiencies for all the products evaluated.

Table 2. Cleaning Efficiencies

Cleaner	ForBest	Gemtek	US Polychem	Calgon	WR Grace	Oakite
Coupon 1	96.85	63.97	99.26	96.04	96.88	98.6
Coupon 2	90.6	70.38	93.17	99.77	64.58	99.58
Coupon 3	80.05	70.36	94.97	100	61.42	99.25
Average	89.16	68.24	95.8	98.6	74.29	99.14

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Oakite Products	Inproclean 3800	5	99.14	☑	
US Polychem Corporation	Polyspray Jet 790 XS	5	95.80	☑	
Magnaflux	Daraclean 232	5	74.29	☐	
Calgon Corporation	SMS 206 K	5	98.60	☑	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	68.24	☐	
Warren Chemical Company	Sea Wash 700 Old	5	89.16	☐	

Conclusion: Three of the six cleaners were effective in removing most of the contaminant from the coupons. These products, US Polychem Polyspray 790 XS, Calgon SMS 206 K, and Oakite Inproclean 3800 will be evaluated for removal of the final contaminant. In addition to this test, the current two cleaners will also be evaluated for the three contaminants.