CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 06/21/1999

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 possible aqueous cleaner to be used in ultrasonic cleaning of aluminum parts.

Experimental Procedure: Six cleaners were selected based on vendor supplied information and from the lab's Effective Tests Conditions Database. 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. Table 1 lists the cleaners selected and the dilutions used.

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: Tuf Draw Vanishing Film 2889 (CAS #: 64741-65-7)
CONTAMINATING PROCESS USED: Coupons were coated using a hand held swab.

Results: All of the cleaners selected removed over 98% of the contaminant from the aluminum coupons. The highest efficiency was the Oakite Inproclean 3800 at 99.74%. Table 2 lists the effectiveness of the six cleaners tested.

Table 2. Cleaning Efficiencies

Cleaner	ForBest	Gemtek	US Polychem	Calgon	WR Grace	Oakite
Coupon 1	98.99	99.18	99.36	99.58	99.58	99.62
Coupon 2	99.89	98.58	99.18	100	99.76	99.72
Coupon 3	99.20	98.56	99.77	99.17	97.8	99.89
Average	99.36	98.77	99.44	99.58	99.05	99.74

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Warren Chemical Company	Sea Wash 700 Old	5	99.36	☑	
US Polychem Corporation	Polyspray Jet 790 XS	5	99.44	☑	
Magnaflux	Daraclean 232	5	99.05	☑	
Calgon Corporation	SMS 206 K	5	99.58	☑	
Oakite Products	Inproclean 3800	5	99.74	☑	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	98.77	☑	

Conclusion: All six cleaners will be evaluated using the other process contaminant currently involved with manufacturing process.