

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 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	<input checked="" type="checkbox"/>	
US Polychem Corporation	Polyspray Jet 790 XS		5	99.44	<input checked="" type="checkbox"/>	
Magnaflux	Daraclean 232		5	99.05	<input checked="" type="checkbox"/>	
Calgon Corporation	SMS 206 K		5	99.58	<input checked="" type="checkbox"/>	
Oakite Products	Inproclean 3800		5	99.74	<input checked="" type="checkbox"/>	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate		5	98.77	<input checked="" type="checkbox"/>	

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