CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 03/25/1999

Experimenters: Jason Marshall

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Brass

PartType: Coupon

Contaminants: Buffing/Polishing Compounds

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To develop a new cleaning system to replace vapor degreasing w/ Trichloroethylene

Experimental Procedure: Eight cleaning chemistries were selected based on vendor supplied information and searching the lab's Effective Test Conditions Database. The cleaners were diluted to 5% by volume in 400 mL glass beakers and then heated to 130 F on a hot plate.
Twenty-four preweighed coupons were contaminated with a buffing compound and weighed again. Three coupons were cleaned for 5 minutes in a beaker using stir bar agitation. Coupons were rinsed in tap water at 120 oF for 30 seconds and dried using a Master Appliance Corp, Hot-air gun model HG-301A at 500 F for one minute. After the coupons cooled to room temperature, a final clean weight was recorded and cleaning efficiencies were calculated.

SUBSTRATE MATERIAL: Brass Coupons
CONTAMINANTS: Buffing Compound (Anchor Chemical Co, Anchor Spin G-10)
CONTAMINATING PROCESS USED: Compound rubbed onto coupons

Results: There were two cleaners which had excellent removal of the buffing compound, two which had moderate removal and the remaining four had little removal of the contaminant. Table 1 shows the cleaning efficiencies for each cleaner.

Table 1. Cleaning Efficiencies

Product	2215	212	820 N	SC 1000	Micro 90	790 P	CMF 240	3800
Coupon 1	99.63	25.71	48.96	18.48	45.61	65.73	66.83	97.74
Coupon 2	99.73	10.03	52.71	22.59	70.44	78.25	70.23	99.83
Coupon 3	99.93	28.94	41.54	15.73	39.39	23.67	77.48	97.58
Ave	99.76	21.56	47.74	18.93	51.81	55.89	71.51	98.39
Std Dev	0.15	10.11	5.68	3.45	16.43	28.59	5.44	1.26

Even though Calgon's Geo-Guard 2215 and Oakite's Inproclean 3800 removed nearly all of the contaminant, there was a noticeable layer of buffing compound still on the coupons. US Polychem's 790 P had good removal on two of the coupons. One way to increase the removal of the contaminant would be to increase the concentration of the cleaning solutions. Another way would be through the use of ultrasonics.

Summary:

Substrates:	Brass				
Contaminants:	Buffing/Polishing Compounds				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
AW Chesterton	KPC 820 N	5	47.74	☐	
Calgon Corporation	Geo Guard 2215	5	0.00	☑	
Chrisal USA Inc	Super CMF 240	5	71.51	☐	
Gemtek Products	SC 1000 Aqueous Cleaner Concentrate	5	18.93	☐	
International Products Corporation	Micro 90 Conc.	5	51.81	☐	
Oakite Products	Inproclean 3800	5	98.39	☑	
US Polychem Corporation	Polyspray Jet 790 P	5	55.89	☐	

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Magnaflux	Daraclean 212	5	21.56	☐	

Conclusion: Four cleaning solutions (Calgon, Oakite, US Polychem and Chirsal) will be used in the next trial. Coupons will be cleaned using increased concentration of the solutions.