CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 03/28/1999

Experimenters: Jason Marshall

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Brass

PartType: Coupon

Contaminants: Buffing/Polishing Compounds

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To determine if ultrasonic energy would increase the cleaning efficiency of the 5% solutions.

Experimental Procedure: Two cleaners were used from the first trial at 5% dilutions. The beakers were immersed in water in a Crest 40 kHz ultrasonic tank model 4Ht 1014-6 and heated to 130 F.
Preweighed coupons were contaminated with a buffing compound and weighed again. Three coupons were cleaned for 5 minutes in the ultrasonic unit. Coupons were rinsed in tap water at 120 F 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: Ultrasonic cleaning was determined to be effective in removing the buffing compound from the brass coupons using 5% cleaner dilution. Table 1 list the cleaning efficiencies for both cleaners.

Table 1. Cleaning Efficiencies

Cleaner	Oakite	Calgon
Coupon 1	104.73	105.6
Coupon 2	108.94	116.84
Coupon 3	124.81	109.17
Ave	112.83	110.54
Std Dev	10.59	5.74

The cleaning efficiencies were found to be over 100%. This excess cleaning can be contributed to the cleanliness of the coupons during the preweighing. The coupons may not have been completely cleaned prior to measurement. It may also be that the ultrasonic cleaning was damaging the coupons. This situation could be alleviated by using shorter cleaning time.

Summary:

Substrates:	Brass				
Contaminants:	Buffing/Polishing Compounds				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Calgon Corporation	Geo Guard 2215	5	112.00	☑	
Oakite Products	Inproclean 3800	5	110.54	☑	

Conclusion: Ultrasonic cleaning was determined to help increase the cleaning of both 5% solutions. Special attention should be made so that the ultrasonic system does not cause damage to the products being cleaned. Next testing will be performed on client supplied parts using 10% solutions and immersion cleaning.