CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1999
DateRun:	11/04/1999
Experimenters:	Jason Marshall
ClientType:	Bellows Mfr
ProjectNumber:	Project #1
Substrates:	Brass
PartType:	Part
Contaminants:	Fluxes, Resins/Rosins
Cleaning Methods:	Ultrasonics
Analytical Methods:	Visual
Purpose:	To evaluate cleaning of supplied parts using previously successful cleaning products.

Experimental Procedure:

Four products were selected based on the previous testing performed for the client. All products were heated to 130 F on a hot plate. Table 1 lists the products evaluated and the corresponding concentrations.

The cleaning solution/beaker was placed in a Crest 40 kHz ultrasonic tank model 4Ht 1014-6 filled with water heated to 130 F and degassed for five minutes. Two parts were placed into the suspended beaker and cleaned for five minutes. Rinsing used DI water at 130 F for 30 seconds. Drying took place in an oven at 240 F for 15 minutes. Parts were analyzed for appearance after cooling to room temperature.

SUBSTRATE MATERIAL: Brass parts-bellows
CONTAMINANTS: Kester Solder 1544 Rosin Flux-(Ethanol CAS#64-17-5;2-Butanol CAS#78-92-2*;Modified Rosin CAS#8050-09-7)

Results:

All four solutions were effective in removing bulk amounts of the flux. The surface of the bellows appeared to be brighter and free of contaminants. Table 2 lists the rankings of which cleaner made the parts look the best.

Table 2. Appearance After Cleaning

Cleaner	Armakleen E 2002	Bio-T 300 B	Inproclean 4000 T	Safety Wash CRC
Ranking (1 Cleanest)	3	2	4	1

All four cleaning solutions had liquid remaining inside the parts after the 15 minutes of drying. Bio-T 300 B had the least amount of solution based on tapping the parts on counter and observing the release of liquid.

Summary:

Substrates:	Brass				
Contaminants:	Fluxes, Resins/Rosins				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Church & Dwight Co Inc.	Armakleen E 2002	5	3.00	☐	Rank
Bio Chem Systems	Bio T 300 B	100	2.00	☑	Rank
Oakite Products	Inproclean 4000 T	5	4.00	☐	Rank
Emkay Chemical Company	Safety Wash CRC	10	1.00	☑	Rank

Conclusion:

During the next test, Armakleen and Inproclean will be used at 10%, while the other two will be used at the present strength. Drying will be performed using a vacuum oven in an effort to eliminate the moisture. The use of a centrifuge may also help with drying the inside of the parts