CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1996
DateRun:	10/21/1996
Experimenters:	Jay Jankauskas
ClientType:	Ornament Manufacturer
ProjectNumber:	Project #1
Substrates:	Brass
PartType:	Coupon
Contaminants:	Buffing/Polishing Compounds
Cleaning Methods:	Immersion/Soak
Analytical Methods:	FTIR
Purpose:	Determine cleaning product & equipment
Experimental Procedure:	The goal of this project was to determine a combination of cleaning chemical coupled with mechanical energy to achieve the desired cleanliness for Ornament Manufacturer. The testing was divided up into three phases. The first phase took eight different aqueous cleaning chemistries and tested their effectiveness in removing Learok 2360 Buffing Compound from Ornament Manufacturer's decorative brass parts. The second phase used three successful candidates from the first phase and tested their effectiveness when coupled with ultrasonics and low pressure (13 psi) spray wash. The final phase involved cleaning some of Ornament Manufacturer's parts under optimum conditions and shipping back to Ornament Manufacturer to see if they would take a laminate.
Results:	Phase I Testing Results: The first phase of the trial involved testing out eight different cleaning chemicals for their effectiveness in removing the Learok 2360 buffing compound from the samples received from Ornament Manufacturer. Two methods were used to determine the effectiveness of each chemical. FTIR was run on all sample parts before and after cleaning to determine a percent removal of the buffing compound, and to also determine if the chemicals left any organic residues after rinsing. The samples were also observed visually to see how each chemical removed the large deposits of buffing compound that were present on the backside of the parts. Cleaning was performed for 10 minutes in a beaker with stir-bar agitation. All cleaning chemistries were diluted to 4% by volume and heated to 130 F. After cleaning the parts were rinsed in room temperature DI water for one minute and then allowed to dry in a convection oven. Since FTIR will only pick up contamination on a small area, four scans were taken for each part. These scans were summed up and divided by four to obtain an average spectrum. Comments: FTIR peak data showed a 47.60 % removal. Took off all large buffing compound buildups. Will definitely test further. Comments: FTIR data showed some organic residue left after the rinse (Monoethanol Amine is my guess). Did an excellent job in removing large deposits. I will probably test out further. Comments: Quite a surprise since the 211 did an excellent job of cleaning buffing compounds in previous experiments. FTIR spectrum shows that some residue was left from the rinse. Comments: FTIR peak data showed a removal of 35.24%. Seemed to work well on the large deposits. Probably will not test out further since the Calgon AK-6215 performed much better. Comments: 49.44% removal rate determined from FTIR peak data. Worked out well on built up buffing compounds. Comments: FTIR spectra shows that some rinse residue was left. Did not do a good job in removing large buildups of buffing compound. Comments: an estimated 20% removal from FTIR peaks. Was not too effective in removing large deposits. Comments: 77.11% removal rate from FTIR peak data. Performed a good job on built up buffing compound. Will test out further.

Summary:

Substrates:	Brass				
Contaminants:	Buffing/Polishing Compounds				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Ardrox Inc	6333	4	0.00	☑	
Calgon Corporation	Geo Guard 2215	4	0.00	☐	
Calgon Corporation	AK 6215	4	0.00	☐	
Matchless Metal Polish Company	MC 580	4	0.00	☐	

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Petroferm Inc	Bioact 50 (no longer available)	4	0.00	☐	
Magnaflux	Daraclean 211	4	0.00	☐	
US Polychem Corporation	Polychem Ultra CR	4	0.00	☐	
US Polychem Corporation	Polychem A 2000 P	4	0.00	☐	

Conclusion: