CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1996
DateRun:	01/16/1996
Experimenters:	Jay Jankauskas
ClientType:	Silversmith
ProjectNumber:	Project #1
Substrates:	Brass, Sterling/Silver
PartType:	Part
Contaminants:	Buffing/Polishing Compounds
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Visual
Purpose:	To evaluate cleaners in Spray Washer
Experimental Procedure:	The purpose of this experiment is to test the WR Grace and the Calgon Geo-Guard 2215 in the Miele Spray Washer with Silversmith's silver and brass parts. The second chemistry was going to be the U.S. Polychem Spray Jet #790, but since it is not multimetal safe, the Calgon #2215 was chosen. One part will be cleaned at a time, until adequate washing and rinsing parameters are achieved. The first wash will be at 140 F for 10 minutes and rinsed with 110 F tap water for two minutes. Once the optimum is reached, a multitude of parts will be processed. The washing parameters used are noted in the results section. The best cleaning occurred with the WR Grace Daraclean 211 at 150 F and rinsed in tap water for 2 minutes at 140 F with Daraguard 416 rinse aid additive (.01% by volume). Cleaning time varied depended upon the parts configuration. The rest of the parts were cleaned with the optimum conditions. SUBSTRATE MATERIAL: Brass platters and forks, silver spoons CONTAMINANTS: Jackson-Lea Liquabrade Compound # 8205-20 CONTAMINATING PROCESS USED: As received from Silversmith
Results:	The Calgon Geo-Guard 2215 was very tough to rinse even with the Daraguard Rinse Aid. The WR Grace did very well on the other hand. The Daraguard rinse aid did an excellent job in sheeting of the rinse water thus providing more efficient rinsing and drying. Seven different cleaning parameters were used, they were: Trial #1: Chemistry- 10 % WR Grace Daraclean 211 Wash- 10 min. @ 140 F Rinse- tap water @ 110 F for 2 min Results- Brass has some spotting Trial #2: Chemistry- 10 % WR Grace Daraclean 211 Wash- 10 min. @ 160 F Rinse- tap water @ 130 F for 2 min Results- Silverware looked really good, one of the small platters appeared to be slightly discolored Trial #3 Chemistry- 10 % WR Grace Daraclean 211 Wash- 10 min. @ 150 F Rinse- tap water @ 130 F for 2 min Results- Excellent cleaning, rinsing looks very good but could be slightly better (one small platter had quite a bit of spotting). Trial #4 Chemistry- Calgon Geo-Guard #2215 Wash- 20 min. @ 150 F Rinse- tap water @ 130 F for 4 min Results- Not all buffing compound was removed, rinsing was very poor. Trial #5 Chemistry- Calgon Geo-Guard #2215 Wash- 15 min @ 160 F Rinse- tap water @ 140 F for 3 minutes with rinse aid additive(2 ml/5 gal water) Results- Buffing compound still remained, the rinse aid greatly improved rinsing, but there was still some spotting. Trial #6 Chemistry- WR Grace Daraclean 211 Wash- 15 min @ 150 F Rinse- tap water @ 140 F for 3 minutes with rinse aid additive(2 ml/5 gal water) Results- Most parts were cleaned excellent, but some of the heavy buildups of buffing compound did not remove totally (mostly on the small platters).

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Trial #7
Chemistry- WR Grace Daraclean 211
Wash- 20 min @ 150 F
Rinse- tap water @ 140 F for 3 minutes with rinse aid additive(2 ml/5 gal water)
Results- Removal of all buffing compound except for the outer lip. Increased cleaning time was necessary due to size and configuration of large platter.

Summary:

Substrates:	Brass, Sterling/Silver				
Contaminants:	Buffing/Polishing Compounds				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Magnaflux	Daraclean 211	10	0.00	☑	
Calgon Corporation	Geo Guard 2215	10	0.00	☐	

Conclusion:

One thing to note about this trial is that the Miele spray washer has many disadvantages to most industrial spray washers. For one thing the Miele only supports a pressure of 13 psi. The increased pressure of an industrial washer will increase the cleaning efficiency.
Another disadvantage is that spray jets are only located on the top and bottom, Due to this the platters could not be placed in an optimal position to be most affected by the spray while allowing the cleaning solution to run off. A system with spray-jets on the top, bottom and the sides would increase cleaning efficiency.
With all of this in mind, today's results were very successful. The Daraclean 211 did an excellent job in cleaning the brass while rinsing off with minimal streaking. The Daraguard 416 Rinse-Aid will definitely assist in rinsing. Foam level increased slightly as soil loading increased but it was not a problem, although this might change at a higher operating pressure.