CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 10/16/2001

Experimenters: Jason Marshall

ClientType: General

ProjectNumber: Project #1

Substrates: Brass

PartType: Part

Contaminants: Rust/Scale, Oxides

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: Second attempt to identify products that will brighten the brass parts after removing the paint.

Experimental Procedure: Three products were selected based on vendor supplied information for removal of oxides and rust. The first solution was used at 100, 50, 10, 5 and 1%. The second product was used at full strength. The last solution was used at 20%. Each of the diluted solutions were diluted with DI water in 100 ml beakers and used at room temperature. One brass part, free of paint, was immersed into each cleaner. Observations were made at 5 and 10 minutes. At the end of the 10 minutes, the parts were rinsed in tap water at 120 F and wiped dry with a paper towel.

Results: Nitric acid at full strength resulted in very quick brightening, less than one minute. The other dilutions of nitric acid did not do very much in terms of brightening. The Valtron SP 2700 KB did brighten the brass, but did not make it shine. The sulfuric acid did not work well. Table 1 lists the observations made.

Cleaner	Observations
Nitric Acid	
100%	less than 30 seconds, solution turned blue (copper);
50%	Some brightening, brown, copper color
10%	Solution turned yellow after 2 minutes, than light blue at the end, no brightening
5%	Solution turned yellow after 4 minutes, than a slight green, no brightening
1%	Solution turned yellow after 4 minutes, no brightening
Valtron SP 2700 KB	Started to brighten brass after 5 minutes, good brightening after 10 minutes, no shine, dull, pale, light brass color
Sulfuric Acid	Not very effective, no brightening, solution turned slightly yellow.

Product Name	Ranking
Nitric Acid 100%	1
Nitric Acid 50%	3
Nitric Acid 10%	4
Nitric Acid 5%	5
Nitric Acid 1%	6
Valtron SP 2700 KB	2
Sulfuric Acid 20%	7

Summary:

Substrates:	Brass				
Contaminants:	Rust/Scale, Oxides				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Fisher Scientific	Nitric Acid (CAS: 7697-37-2)	100	0.00	☑	
Fisher Scientific	Nitric Acid (CAS: 7697-37-2)	50	0.00	☐	

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Fisher Scientific	Nitric Acid (CAS: 7697-37-2)	10	0.00	☐	
Fisher Scientific	Nitric Acid (CAS: 7697-37-2)	5	0.00	☐	
Fisher Scientific	Nitric Acid (CAS: 7697-37-2)	1	0.00	☐	
Valtech Corporation	Valtron SP 2700 KB	100	0.00	☑	
Fisher Scientific	Sulfuric Acid (CAS: 7664-93-9)	20	0.00	☐	

Conclusion: Although Nitric Acid worked well to brighten the brass, it has many health considerations to be concerned with. The Valtech Valtron SP 2700 KB has been the most effective aqueous based solution to date. Additional testing will be performed when more samples arrive at SCL.