# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 09/12/2001

Experimenters: Jason Marshall

ClientType: General

ProjectNumber: Project #1

Substrates: Brass

PartType: Part

Contaminants: Rust/Scale, Oxides

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: To identify products that will brighten the brass parts after removing the paint.

Experimental Procedure: Six products were selected based on vendor supplied information for removal of oxides and rust. One solution was used at 2% and a second was used at 100%. The other four were diluted to 30%. Each solution was diluted with DI water in 140 ml beakers and heated to 150 F on a hot plate. One brass part, free of paint, was immersed into each cleaner. Observations were made at 5, 10 , 15 and 30 minutes. At the end of the 30 minutes, the parts were wiped dry with a paper towel.

Results: All six products changed the appearance of the tarnished parts. The Bio Z product brought the color of the brass closest to the desired end point, followed by Mirachem 250, Geo Guard 3015, Alukleen 36, Citranox, and the Glass Cleaner. Table 1 lists the observations made at each of the four time intervals.

| Cleaner | 5 minutes | 10 minutes | 15 minutes | 30 minutes |
|---|---|---|---|---|
| Citranox | Pale copper color | Green film | Copper color w/ spots of brass color | Flat brass color with green spots |
| Glass Cleaner | Little improvement | Turning dark green | Mostly green with some brass spots | Green coming off, more brass color |
| Geo Guard 3015 | Quick copper color | Red color | Red with brass color | Light brass with red tint |
| Alukleen 36 | Copper color | Pale purple | Pale purple with dark spots | Dark purple, lots of black |
| Bio Z | Bass & copper color | More brass than copper | Brass color with spots | Shiny spots, reddish brass color |
| Mirachem 250 | Pale copper color | Pale purple with brass color | More brass color than purple | Flat brass color with red spots |

Summary:

| **Substrates:** | Brass | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Rust/Scale, Oxides | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Alconox Inc | Citranox | 100 | 5.00 | ☐ | Rank |
| Rochester Midland Corporation | EnviroCare Glass Cleaner | 100 | 6.00 | ☐ | Rank |

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|---|---|---|---|---|---|
| Calgon Corporation | Geo Guard 3015 | 100 | 3.00 | ☑ | Rank |
| Heatbath Corporation | Alu-Kleen 36 | 100 | 4.00 | ☑ | Rank |
| International Bio System | Bio Z | 100 | 1.00 | ☑ | Rank |
| Mirachem Corporation | Mirachem 250 | 100 | 2.00 | ☑ | Rank |

Conclusion: The top four products will be used in follow evaluation at lower concentrations to determine if a better brightening can be achieved at lower concentrations.