# CLEANING LABORATORY EVALUATION SUMMARY

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|---|---|
| SCL #: | 2001 |
| DateRun: | 11/13/2001 |
| Experimenters: | Jason Marshall |
| ClientType: | Metal |
| ProjectNumber: | Project #1 |
| Substrates: | Steel |
| PartType: | Part |
| Contaminants: | Coatings, Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil |
| Cleaning Methods: | Ultrasonics |
| Analytical Methods: | Visual |
| Purpose: | To evaluate ultrasonic cleaning on supplied parts |
| Experimental Procedure: | The five chemistries from the previous trial were diluted to 5% using DI water and heated to 130 F in a Crest 40 kHz ultrasonic tank filled with tap water. Solutions were degassed for 5 minutes prior to cleaning parts. Four different substrates and contaminants were cleaned in each solution for 3 minutes. Parts were rinsed in tap water for 30 seconds at 120 F and dried using a heat gun at 500 F for 1 minute. Each of the four substrates were initial wiped with a white swab to determine how dirty the pieces were prior to cleaning. One swab was wiped across each surface of the metal for a total of four wipes. The cleaned parts were also subjected to the same white swab wipe and compared to the initial uncleaned piece as well as the four other cleaning solutions. Observations were recorded and the cleaning solutions were ranked for effectiveness. |
| Results: | The Oakite Inproclean 3800 was by far the most effective and consistent solutions used in cleaning the different rust preventatives from the steel pieces. The following table lists the observations made and the rankings for the different contaminant removal. |

Table 1. Observations

| Cleaner | Contaminant | Observation | Rank |
|---|---|---|---|
| 1 | A | Very clean, some rust spots | 1 |
| 2 | A | Very clean, some rust spots | 1 |
| 3 | A | Very clean, some rust spots | 1 |
| 4 | A | Very clean, some rust spots | 1 |
| 5 | A | Dirty, similar to uncleaned part | 5 |
| 1 | B | Rust, wipe off light brown | 4 |
| 2 | B | Little wipe off, light brown | 2 |
| 3 | B | Little wipe off, light brown | 1 |
| 4 | B | Little wipe off, light brown (<2) | 3 |
| 5 | B | Rust, wipe off light brown | 4 |
| 1 | C | Some oil, grey | 3 |
| 2 | C | little grey | 1 |
| 3 | C | lots of grey | 5 |
| 4 | C | little grey | 2 |
| 5 | C | lots of grey | 4 |
| 1 | D | little to no grey | 3 |
| 2 | D | clean | 1 |
| 3 | D | clean | 1 |
| 4 | D | little grey | 4 |
| 5 | D | Some oil, grey | 5 |

The overall rank of the products was based on the average of the individual rankings as shown in Table 2.

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Table 2. Overall Ranking Calculations.

| Cleaner | A | B | C | D | Ave Rank | Overall Ranking |
|---|---|---|---|---|---|---|
| 1 | 1 | 4 | 3 | 3 | 2.75 | 4 |
| 2 | 1 | 2 | 1 | 1 | 1.25 | 1 |
| 3 | 1 | 1 | 5 | 1 | 2.00 | 2 |
| 4 | 1 | 3 | 2 | 4 | 2.50 | 3 |
| 5 | 5 | 4 | 4 | 5 | 4.50 | 5 |

Summary:

| **Substrates:** | Steel |
|---|---|
| **Contaminants:** | Coatings, Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil |

| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|---|---|---|---|---|---|
| Heatbath Corporation | Multi-Kleen 1568 | 5 | 4.00 | ☐ | Rank |
| Oakite Products | Inproclean 3800 | 5 | 1.00 | ☑ | Rank |
| Today & Beyond | Beyond 2001 | 5 | 2.00 | ☑ | Rank |
| DA Stuart Company | Dasco Kleen 3250 | 5 | 3.00 | ☑ | Rank |
| Houghton International | Cerfa Kleen 5387 | 5 | 5.00 | ☐ | Rank |

Conclusion:

Oakite Inproclean 3800, Today & Beyond Beyond 2001 and one of the clients cleaners D.A. Stuart Dasco Kleen 3250 were the three most effective products evaluated.