# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2012

DateRun: 08/27/2012

Experimenters: Heidi Wilcox

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Brass, Stainless Steel

PartType: Part

Contaminants: Greases

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: The contract called for room temperature testing of immersion, manual wiping, ultrasonic and low pressure spray cleaning technology using the solvent provided to the TURI lab

Experimental Procedure: This testing was being performed to give baseline performance of the solvent for the metal working industry. Representative substrate coupons of stainless steel, mild steel, aluminum, brass and copper were used throughout the testing. The representative soils use for the industry sector were lithium grease, mineral oil, a general lubricant, buffing compound, cutting fluid, tapping fluid and GS 34 ASTM standard soils representing production and maintenance oils.

Overall testing has shown that all soils, except one, were able to be removed, to the satisfactory gravimetric removal percentage of 85%, by at least one cleaning equipment type. The one soil not removed to 85% efficiency was the printer's ink, which was only tested by manual wiping using the Gardner Straight Line Washability unit in the TURI lab to simulate standardized hand wiping cleaning. It was removed to 81.11 percent efficiency so a retest with the right dried film of ink may show a good removal efficiency. This test along with a test to further represent the products usage in the market permanent marker on metal coupons to simulate removal of printing ink will be done.

Other areas of interest in the preliminary results are that the solvent does not seem to be harming any of the softer metal coupons during testing. Grease was able to be removed by manual wiping, ultrasonics and low pressure spray but not immersion cleaning. This is not uncharacteristic. It shows that more energy will remove this soil. The buffing compound was not removed by room temperature immersion but this is to be expected. Buffing compound usually need heat or energy to remove it. As we see in subsequent testing low flow pressure was able to remove buffing compound at room temperature. This is a good result. Heated ultrasonics also removed the buffing compound, which was expected. Finally cutting fluid was removed by immersion cleaning at room temperature but not with low flow spray. This is questionable so we will be retesting this trial.

Results:

| Process | Soil Type | Substrate | Results | Overall Average grease |
|---|---|---|---|---|
| Immersion | General Lithium Grease | Stainless steel | 3.24 | 77.10 |
| Manual Wiping | Grease | Stainless Steel | 86.89 | |
| Ultrasonics (120 F) | Grease | Stainless Steel | 97.46 | |
| | | Brass | 98.87 | |
| Low Pressure Spray | General Lithium Grease | Stainless steel | 99.03 | |

Summary:

| **Substrates:** | Brass, Stainless Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Greases | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Kreussler | Kreussler K 4 | 100 | 77.10 | ☑ | |

Conclusion: Worked well for manual wiping and ultrasonics. Did not work well using immersion alone.