

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001
 DateRun: 06/13/2001
 Experimenters: Jason Marshall, Ravi Krishnappa
 ClientType: Metal
 ProjectNumber: Project #1
 Substrates: Steel
 PartType: Coupon
 Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil
 Cleaning Methods: Ultrasonics
 Analytical Methods: Gravimetric
 Purpose: To evaluate successful cleaners on sixth cleaner.

Experimental Procedure: The four successful cleaners from the previous trial were again diluted to 5% using DI water in 600 ml beakers and placed in a Crest 40 kHz ultrasonic tank model 4Ht 1014-6. Solutions were heated to 130 F. Twelve preweighed coupons were coated with Milacron Cimperial 1070 and reweighed. Three coupons were immersed into each solution and cleaned for two minutes. The coupons were rinsed in tap water at 120 F for 30 seconds and dried using a Master Appliance Corp, Hot-air gun model HG-301A at 500 F for 1 minute. Final "clean" weights were recorded and efficiencies were calculated.

Results: Each solution removed all of the Cimperial 1070 from the steel coupons. The contaminant caused the cleaning solutions to become cloudy, which could be a problem for treating the solutions after cleaning. The table lists the effectiveness for each cleaner.

| Cleaner | Coupon 1 | Coupon 2 | Coupon 3 | Average | Std Dev |
|-------------|----------|----------|----------|---------|---------|
| Inproclean | 100.00 | 100.05 | 99.98 | 100.01 | 0.04 |
| Daraclean | 100.12 | 100.09 | 100.08 | 100.09 | 0.02 |
| Green Stuff | 100.05 | 100.12 | 100.11 | 100.10 | 0.04 |
| Beyond | 100.01 | 100.06 | 100.15 | 100.08 | 0.07 |

Summary:

| Substrates: | | Steel | | | |
|----------------------|------------------|---|-------------|-------------------------------------|---------------|
| Contaminants: | | Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Oakite Products | Inproclean 3800 | 5 | 100.01 | <input checked="" type="checkbox"/> | |
| Magnaflux | Daraclean 283 | 5 | 100.09 | <input checked="" type="checkbox"/> | |
| Bio Chem Systems | Green Stuff 6325 | 5 | 100.10 | <input checked="" type="checkbox"/> | |
| Today & Beyond | Beyond 2001 | 5 | 100.08 | <input checked="" type="checkbox"/> | |

Conclusion: All four were effective in removing the metal working fluid. The next trial will evaluate the cleaners for removing the combination of MOAC and the additives.