

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001  
 DateRun: 06/12/2001  
 Experimenters: Jason Marshall  
 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 contaminant.

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 Precision Finishing Inc, Chemtrol 229 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 product removed over 99% of the Chemtrol 229 from the steel coupons in less than 30 seconds. The table below lists the effectiveness for each solution.

| Cleaner     | Coupon 1 | Coupon 2 | Coupon 3 | Average | Std Dev |
|-------------|----------|----------|----------|---------|---------|
| Inproclean  | 99.76    | 99.28    | 100.00   | 99.68   | 0.37    |
| Daraclean   | 100.08   | 99.94    | 99.79    | 99.94   | 0.15    |
| Green Stuff | 99.92    | 99.84    | 98.43    | 99.40   | 0.84    |
| Beyond      | 99.79    | 99.90    | 100.00   | 99.90   | 0.11    |

Summary:

| <b>Substrates:</b>   |                  | Steel                                                 |             |                                     |               |
|----------------------|------------------|-------------------------------------------------------|-------------|-------------------------------------|---------------|
| <b>Contaminants:</b> |                  | Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil |             |                                     |               |
| Company Name:        | Product Name:    | Conc.:                                                | Efficiency: | Effective:                          | Observations: |
| Oakite Products      | Inproclean 3800  | 5                                                     | 99.68       | <input checked="" type="checkbox"/> |               |
| Magnaflux            | Daraclean 283    | 5                                                     | 99.94       | <input checked="" type="checkbox"/> |               |
| Bio Chem Systems     | Green Stuff 6325 | 5                                                     | 99.40       | <input checked="" type="checkbox"/> |               |
| Today & Beyond       | Beyond 2001      | 5                                                     | 99.90       | <input checked="" type="checkbox"/> |               |

Conclusion: All four were successful in removing the burnishing compound from the coupons using ultrasonic energy.