

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002  
 DateRun: 02/21/2002  
 Experimenters: Jason Marshall, Heidi Wilcox  
 ClientType: Plating Job Shop  
 ProjectNumber: Project #1  
 Substrates: Stainless Steel  
 PartType: Coupon  
 Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric  
 Purpose: To evaluate cleaners for replacing TCE in removing oil from metal.

Experimental Procedure: Eight cleaners were selected from the lab's databases of testing and vendor information. Products were selected based on client supplied data. Each solution was diluted to 5% using DI water in a 600 ml beaker and heated to 130 F on a hot plate. Twenty-four preweighed coupons were contaminated with the New England Industrial Lubricants' NEILCUT 333 using a hand held swab. Coupons were weighed again to determine the amount of oil added. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. A 30 second rinse in tap water at 120 F followed cleaning. Coupons were dried using a Master Appliance heat gun at 500 F for 1 minute. Once coupons cooled to room temperature, final weights were recorded. Product efficiencies were calculated and recorded.

Results: Only two products, Warren Chemical Sea Wash 8 and International Products Surface Cleanse 930, removed over 80% of the oil from the stainless steel coupons. The following table lists the amount of contaminant added to each coupon as well as the effectiveness of each. (Three coupons per cleaner.)

| Cleaners           | Coupon 1 | Coupon 2 | Coupon 3 | Average |
|--------------------|----------|----------|----------|---------|
| Brulin             | 82.90    | 64.69    | 78.63    | 75.41   |
| Buckeye            | 27.31    | 37.56    | 40.43    | 35.10   |
| Heatbath           | 66.97    | 54.02    | 62.23    | 61.07   |
| Safe CleanUp       | 86.71    | 64.80    | 51.15    | 67.56   |
| Solvent Kleene     | 49.04    | 49.41    | 70.85    | 56.43   |
| International Prod | 78.70    | 76.83    | 87.98    | 81.17   |
| Warren             | 80.22    | 93.02    | 88.82    | 87.35   |
| Chem Free          | 57.69    | 21.74    | 25.43    | 34.95   |

Summary:

| <b>Substrates:</b>                 |  | Stainless Steel                                       |             |                                     |               |  |
|------------------------------------|--|---|-------------|-------------------------------------|---------------|--|
| <b>Contaminants:</b>               |  | Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil |             |                                     |               |  |
| Company Name:                      | Product Name:                            | Conc.:  | Efficiency: | Effective:                          | Observations: |  |
| Brulin Corporation                 | Aquavantage 1400                         | 5   | 75.41       | <input type="checkbox"/>            |               |  |
| Buckeye International              | Shopmaster LPH                           | 5   | 35.10       | <input type="checkbox"/>            |               |  |
| Heatbath Corporation               | MultiKleen LX 1573                       | 5   | 61.07       | <input type="checkbox"/>            |               |  |
| International Products Corporation | Surface Cleanse Concentrated Neutral 930 | 5   | 81.17       | <input checked="" type="checkbox"/> |               |  |
| Safe CleanUp Solutions             | Super Neutral                            | 5   | 67.56       | <input type="checkbox"/>            |               |  |
| Transene Company, Inc.             | D-Greeze GL 55                           | 5   | 56.43       | <input type="checkbox"/>            |               |  |
| Warren Chemical Company            | Sea Wash 8                               | 5   | 87.53       | <input checked="" type="checkbox"/> |               |  |
| Chem Free Corporation              | SW-1 Ozzy Juice                          | 5   | 34.95       | <input type="checkbox"/>            |               |  |

Conclusion: The two effective products will be reevaluated in the next trial at higher concentrations. An additional five new products will be evaluated at 5% concentrations as well.