

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999  
 DateRun: 12/14/1999  
 Experimenters: Jason Marshall  
 ClientType: Medical Instrument Mfr  
 ProjectNumber: Project #1  
 Substrates: Stainless Steel  
 PartType: Coupon  
 Contaminants: Buffing/Polishing Compounds  
 Cleaning Methods:  
 Analytical Methods: Gravimetric  
 Purpose: To identify alternative products for perchloroethylene

Experimental Procedure: Seven cleaning chemistries were selected based on vendor supplied information and searching the lab's Effective Test Conditions Database. Five of these products were diluted to five percent and one to two percent by volume in 600 ml beakers using DI water. These six solutions were heated to 130 F on a hot plate. The seventh product was used at full strength at room temperature. Table 1 lists the products evaluated. Twenty-one preweighed stainless steel coupons were coated with the buffing compound and dried for 30 minutes at room temperature and weighed again. (Note: The six contaminants provided were sub-grouped according to their make up. There were three Aluminum Oxide based buffing compounds, two mineral oil based products and one other. Separate testing will be performed according to these classifications.)

Three coupons were cleaned for three minutes in a beaker using stir bar agitation. Coupons were rinsed in DI water at 130 F for 30 seconds and dried using a Master Appliance Corp, Hot-air gun model HG-301A at 500 F for one minute. After the coupons cooled to room temperature, a final clean weight was recorded and cleaning efficiencies were calculated.

SUBSTRATE MATERIAL: Stainless steel coupons (202-316 B-80)

CONTAMINANTS: Buffing Compound (Jackson-Lea abrasive polishing & buffing compound, LTPL-22A)

CONTAMINATING PROCESS USED: Coupons covered with buffing compound and air dried for 30 minutes.

Results: All seven products were very effective in removing the buffing compound from the coupons. One observation made during the testing of the Safe Science product was that most of the contaminant was removed during the rinsing portion. All other solutions removed the buffing compound while immersed in the cleaning solution. These six product were noted to require less than two minutes for cleaning. Table 2 lists the cleaning efficiencies calculated for this trial.

Table 2. Cleaning Results

|          | Safe Science | Oakite | Texo Corp | US Polychem | Valtech | WR Grace | International |
|----------|--------------|--------|-----------|-------------|---------|----------|---------------|
| Coupon 1 | 99.45        | 99.88  | 99.76     | 101.34      | 100.14  | 99.52    | 100.07        |
| Coupon 2 | 99.35        | 99.88  | 99.78     | 100.06      | 100.09  | 100.12   | 100.76        |
| Coupon 3 | 98.53        | 100.10 | 100.23    | 100.09      | 100.00  | 100.00   | 100.27        |
| Average  | 99.11        | 99.95  | 99.92     | 100.5       | 100.08  | 99.88    | 100.37        |

Summary:

|                                    |                                            |        |             |                                     |               |
|------------------------------------|--------------------------------------------|--------|-------------|-------------------------------------|---------------|
| Substrates:                        | Stainless Steel                            |        |             |                                     |               |
| Contaminants:                      | Buffing/Polishing Compounds                |        |             |                                     |               |
| Company Name:                      | Product Name:                              | Conc.: | Efficiency: | Effective:                          | Observations: |
| Safe Science Inc                   | Safe Science Engine Degreaser (Industrial) | 100    | 99.11       | <input checked="" type="checkbox"/> |               |
| Oakite Products                    | Inproclean 3800                            | 5      | 99.95       | <input checked="" type="checkbox"/> |               |
| Texo Corporation                   | Texolite 1734 XL                           | 5      | 99.92       | <input checked="" type="checkbox"/> |               |
| US Polychem Corporation            | Polychem A 2000 XS                         | 5      | 100.50      | <input checked="" type="checkbox"/> |               |
| Valtech Corporation                | Valtron SP 2250 2LF                        | 5      | 100.08      | <input checked="" type="checkbox"/> |               |
| Magnaflux                          | Daraclean 282 GF                           | 5      | 99.88       | <input checked="" type="checkbox"/> |               |
| International Products Corporation | Micro 90 Conc.                             | 2      | 100.37      | <input checked="" type="checkbox"/> |               |

Conclusion:

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The same seven products will be evaluated on the additional contaminant groupings.