

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2011  
 DateRun: 03/07/2011  
 Experimenters: Heidi Wilcox, Junhee Cho  
 ClientType:  
 ProjectNumber: Project #1  
 Substrates: Ceramics, Stainless Steel  
 PartType: Coupon  
 Contaminants: Adhesive  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods:

Purpose: To find a substitution for M.E.K. as a cleaning agent to remove adhesive

Experimental Procedure: Four products were selected from the lab's on-line database, [www.cleansolutions.org](http://www.cleansolutions.org), based on past testing results matching client supplied information. Two products were used at full strength as recommended by the vendor and two products were diluted to 5% in 600 ml beakers. Four sets of twelve pre-weight ceramic and stainless steel coupons were coated with the supplied adhesive soil using a hand held swab. The coating was allowed to dry for one day at room temperature. Once dry, the coupons were weighed a second time to determine the amount of soil applied. Three coupons were immersed into each solution and cleaned for 15 minutes using stir-bar agitation. All four products were used at room temperature. After cleaning process, each coupon was wiped with paper towel manually. Final weights were recorded and efficiencies were calculated for each coupon cleaned.

Results: In this study, visual analysis was conducted for the ceramic coupons instead of gravimetric analysis because these coupons may absorb the cleaner excessively. This makes gravimetric results inconclusive. However, for stainless steel coupons, gravimetric analysis was conducted.

| Visual Table      |                |          |           |
|-------------------|----------------|----------|-----------|
| Cleaner           | Observation    |          |           |
| Bio T Max         | 5~10% removed  |          |           |
| Biosolv           | 80~85% removed |          |           |
| ND LF Supreme     | 70~75% removed |          |           |
| Amberclean SC11   | 5~10% removed  |          |           |
| Gravimetric Table |                |          |           |
| Cleaner           | Initial wt     | Final wt | % Removed |
| Bio T Max         |                |          |           |
|                   | 0.3018         | 0.2367   | 21.57     |
|                   | 0.1972         | 0.1804   | 8.52      |
|                   | 0.4045         | 0.3226   | 20.25     |
| Bio- Solv         |                |          |           |
|                   | 0.2169         | 0.0039   | 98.2      |
|                   | 0.253          | 0.0137   | 94.58     |
|                   | 0.2501         | 0.0174   | 93.04     |
| ND Supreme        |                |          |           |
|                   | 0.3551         | 0.2969   | 16.39     |
|                   | 0.2874         | 0.2411   | 16.11     |
|                   | 0.1979         | 0.1734   | 12.38     |
| Amberclean sc11   |                |          |           |
|                   | 0.363          | 0.2716   | 25.18     |
|                   | 0.2446         | 0.2055   | 15.99     |
|                   | 0.2046         | 0.1715   | 16.18     |

Summary:

|                    |                           |               |        |             |                                     |               |
|--------------------|---------------------------|---------------|--------|-------------|-------------------------------------|---------------|
| Substrates:        | Ceramics, Stainless Steel |               |        |             |                                     |               |
| Contaminants:      | Adhesive                  |               |        |             |                                     |               |
| Company Name:      |                           | Product Name: | Conc.: | Efficiency: | Effective:                          | Observations: |
| Bio Chem Systems   |                           | Bio T Max     | 100    | 16.78       | <input type="checkbox"/>            |               |
| Phoenix Resins Inc |                           | BioSolv       | 100    | 95.28       | <input checked="" type="checkbox"/> |               |

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|                               |                  |   |       |                          |  |
|-------------------------------|------------------|---|-------|--------------------------|--|
| MacDermid Industrial Products | ND Supreme       | 5 | 14.96 | <input type="checkbox"/> |  |
| Innovative Organics Inc       | Amberclean SC 11 | 5 | 19.11 | <input type="checkbox"/> |  |

Conclusion:

Bio Solv were effective to remove the adhesive soil on ceramic and stainless steel coupon with immersion cleaning. It may be possible substitute for M.E.K in current cleaning process.