

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004  
 DateRun: 05/06/2004  
 Experimenters: Jason Marshall  
 ClientType: Textile Mfr  
 ProjectNumber: Project #1  
 Substrates: Steel  
 PartType: Coupon  
 Contaminants: Oil  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric

Purpose: To evaluate products on supplied knitting oil

Experimental Procedure: Seven products were selected based on the previous two trials. Each product was used at full strength in a 250 ml beaker. Twenty-one preweighed steel copper coupons were coated with the Chevron Knit Oil ISO 32 using a hand held swab. Coupons were weighed a second time to determine the amount of soil added to each coupon. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. After cleaning parts were dried using air-blow off. Coupons were then weighed a final time and efficiencies were calculated.

Results: All seven products removed over 87% of the knit oil. Soy Gold 2000 and United 2002 both left residue behind after the air blow off. This residue was not oil but rather the cleaning product itself. The table below lists the amount of soil added, the amount remaining and the efficiency for each coupon.

| Cleaner                  | Initial wt | Final wt | % Removed |
|--------------------------|------------|----------|-----------|
| Soy Gold 2000            | 0.1717     | 0.0106   | 93.83     |
|                          | 0.1799     | 0.0102   | 94.33     |
|                          | 0.1511     | 0.0142   | 90.60     |
| 278 Super Solv           | 0.1607     | 0.0084   | 94.77     |
|                          | 0.1230     | 0.0021   | 98.29     |
|                          | 0.3058     | 0.0113   | 96.30     |
| Custom Clean NCC 2778    | 0.0831     | 0.0047   | 94.34     |
|                          | 0.1578     | 0.0016   | 98.99     |
|                          | 0.0870     | 0.0046   | 94.71     |
| Solsafe 245              | 0.1680     | 0.0022   | 98.69     |
|                          | 0.1664     | 0.0018   | 98.92     |
|                          | 0.1825     | 0.0004   | 99.78     |
| DS 108                   | 0.0799     | 0.0019   | 97.62     |
|                          | 0.1597     | 0.0022   | 98.62     |
|                          | 0.0898     | -0.0007  | 100.78    |
| D Greeze 500 LO          | 0.1148     | 0.0004   | 99.65     |
|                          | 0.1637     | 0.0017   | 98.96     |
|                          | 0.2288     | 0.0061   | 97.33     |
| United 2002 Harvest Gold | 0.0920     | 0.0127   | 86.20     |
|                          | 0.0769     | 0.0086   | 88.82     |
|                          | 0.1519     | 0.0207   | 86.37     |

Summary:

|                                |                        |               |                    |                                     |                      |
|--------------------------------|------------------------|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>             | Steel                  |               |                    |                                     |                      |
| <b>Contaminants:</b>           | Oil                    |               |                    |                                     |                      |
| <b>Company Name:</b>           | <b>Product Name:</b>   | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| AG Environmental Products      | Soy Gold 2000          | 100           | 92.92              | <input checked="" type="checkbox"/> | Residue              |
| AW Chesterton                  | 278 Super Solv         | 100           | 96.46              | <input checked="" type="checkbox"/> |                      |
| BetzDearborne Laboratories Inc | Custom Clean N CC 2278 | 100           | 96.01              | <input checked="" type="checkbox"/> |                      |
| Bio Chem Systems               | Solsafe 245            | 100           | 99.13              | <input checked="" type="checkbox"/> |                      |

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|                                   |                          |     |       |                                     |         |
|-----------------------------------|--------------------------|-----|-------|-------------------------------------|---------|
| Dysol                             | DS 108 Wipe Solvent      | 100 | 99.01 | <input checked="" type="checkbox"/> |         |
| Transene Company, Inc.            | D Greeze 500 LO          | 100 | 98.65 | <input checked="" type="checkbox"/> |         |
| United Laboratories International | United 2002 Harvest Gold | 100 | 87.13 | <input checked="" type="checkbox"/> | Residue |

Conclusion: Products will be tested on the supplied soiled wire.