

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
DateRun: 12/22/2008
Experimenters: Jason Marshall
ClientType: Electrical Manufacturer
ProjectNumber: Project #1
Substrates: Steel
PartType: Coupon
Contaminants: Greases
Cleaning Methods: Manual Wipe
Analytical Methods: Gravimetric

Purpose: To evaluate effective products on supplied white lithium grease using manual wiping.

Experimental Procedure: Ten products were selected from the previous two trials based on success on the supplied ink. All of the products were used at full strength at room temperature. Peweighed steel coupons were coated with the supplied white lithium grease using a handheld swab. The contaminant was allowed to dry for at least a day and then were weighed a second time to determine the amount of grease applied.

Three coupons were placed into a Gardner Straight Line washability unit (designed for manual cleaning testing). The cleaning solutions were applied to the three coupons and allowed to sit for one minute. Simulated manual cleaning was run for 40 cycles or about one minute. Following cleaning, the coupons were dried 30 seconds using air blow off with dry compressed air at room temperature. Final weights were measured, and efficiencies were calculated for each coupon cleaned.

Results: Eight of the ten removed more than 80% of the grease after one minute of cleaning. Two products removed more than 90%. The table lists the initial weight of the oil, the final weight and the cleaning efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Ink Zapper | 0.1163 | 0.0410 | 64.75 |
| | 0.1363 | 0.0429 | 68.53 |
| | 0.2650 | 0.0354 | 86.64 |
| Graffiti Remover SAC | 0.1392 | 0.0253 | 81.82 |
| | 0.1320 | 0.0205 | 84.47 |
| | 0.1453 | 0.0203 | 86.03 |
| Smart Solve 605 | 0.1491 | 0.0195 | 86.92 |
| | 0.1373 | 0.0169 | 87.69 |
| | 0.1360 | 0.0179 | 86.84 |
| EP 921 | 0.0925 | 0.0311 | 66.38 |
| | 0.0997 | 0.0221 | 77.83 |
| | 0.1039 | 0.0281 | 72.95 |
| Shopmaster RC | 0.1177 | 0.0127 | 89.21 |
| | 0.0796 | 0.0113 | 85.80 |
| | 0.1288 | 0.0118 | 90.84 |
| Solsafe 245 | 0.1090 | 0.0091 | 91.65 |
| | 0.1491 | 0.0059 | 96.04 |
| | 0.1539 | 0.0099 | 93.57 |
| Soyester | 0.1987 | 0.0287 | 85.56 |
| | 0.1757 | 0.0275 | 84.35 |
| | 0.1143 | 0.0296 | 74.10 |
| Maix Solve | 0.1074 | 0.0184 | 82.87 |
| | 0.1196 | 0.0119 | 90.05 |
| | 0.1785 | 0.0090 | 94.96 |
| Green Force Ultra | 0.2538 | 0.0101 | 96.02 |
| | 0.1589 | 0.0091 | 94.27 |
| | 0.1001 | 0.0073 | 92.71 |

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|-----------------|--------|--------|-------|
| Safety Strip HT | 0.2440 | 0.0309 | 87.34 |
| | 0.1285 | 0.0169 | 86.85 |
| | 0.1074 | 0.0148 | 86.22 |

Summary:

| Substrates: | | Steel | | | | |
|-----------------------------------|--|--------------------------|--------|-------------|-------------------------------------|---------------|
| Contaminants: | | Greases | | | | |
| Company Name: | | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Vertec BioSolvents | | Ink Zapper | 100 | 73.30 | <input type="checkbox"/> | |
| Spartan Chemical Company | | Graffiti Remover SAC | 100 | 84.11 | <input checked="" type="checkbox"/> | |
| United Laboratories International | | Smart Solve 605 | 100 | 87.15 | <input checked="" type="checkbox"/> | |
| Inland Technologies Inc | | EP 921 | 100 | 72.39 | <input type="checkbox"/> | |
| Buckeye International | | Shopmaster RC | 100 | 88.62 | <input checked="" type="checkbox"/> | |
| Bio Chem Systems | | Solsafe 245 | 100 | 93.75 | <input checked="" type="checkbox"/> | |
| Gemtek Products | | SC Soyester | 100 | 81.34 | <input checked="" type="checkbox"/> | |
| Gemtek Products | | Safe Care (SC) Maxi Solv | 100 | 89.29 | <input checked="" type="checkbox"/> | |
| Alex C Ferguson Inc | | Green Force Ultra | 100 | 94.33 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | | Safety Strip HT | 100 | 86.80 | <input checked="" type="checkbox"/> | |

Conclusion:

The next step will be to pilot the top products on parts, either in the lab or on site to determine the best fit.