

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999
 DateRun: 01/25/1999
 Experimenters: Jason Marshall
 ClientType: Electronics Manufacturer
 ProjectNumber: Project #1
 Substrates: Teflon
 PartType: Part
 Contaminants: Lubricating/Lapping Oils
 Cleaning Methods: Mechanical Agitation
 Analytical Methods: Visual

Purpose: To replace mineral spirits with a semi-aqueous cleaner

Experimental Procedure: Five semi-aqueous cleaners were selected from the lab's database of vendor product information based on compatibility with brass. Full strength solutions were poured into 50 mL beakers. Teflon shavings were immersed into the beakers at room temperature. The shavings were manually agitated by lifting and lowering. After one minute of cleaning the shavings and parts were rinsed for 15 seconds in tap water at 120 F. Samples were set aside to dry at room temperature. Observations were based on how white the Teflon was after cleaning. In addition to the substrate observations, the appearances of the cleaning solutions were recorded.

SUBSTRATE MATERIAL: Teflon parts and shavings

CONTAMINANTS: Oil-lubricating oil (CAS # 64742-53-6, 64742-52-5)

Results: All five chemistries performed much better than the aqueous cleaners in the previous tests. Two products had exceptional cleaning of the shavings in only one minute. Table 1 lists the observations and rankings of the five cleaners.

Table 1. Cleaning Observations.

| Chemistry | Observations | Ranking | Cleaner Status |
|---------------|----------------------------|---------|---|
| Soy Gold 2000 | Good cleaning | 4 | Hazy orange color (orange was its original color) |
| Vortex | Excellent cleaning | 1 | Clear Yellow (clear was its original color) |
| EP-921 | Okay cleaning | 5 | Cloudy Yellow (clear was its original color) |
| HTF-50 | Excellent to good cleaning | 2 | Cloudy Yellow (clear was its original color) |
| D-Limonene | Good cleaning | 3 | Clear Yellow (clear was its original color) |

Summary:

| Substrates: | | Teflon | | | |
|---------------------------|----------------|--------------------------|-------------|-------------------------------------|---------------|
| Contaminants: | | Lubricating/Lapping Oils | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| AG Environmental Products | Soy Gold 2000 | 100 | 4.00 | <input checked="" type="checkbox"/> | Rank |
| EcoLink | Vortex | 100 | 1.00 | <input checked="" type="checkbox"/> | Rank |
| Inland Technologies Inc | EP 921 | 100 | 5.00 | <input type="checkbox"/> | Rank |
| Tarksol Inc | Tarksol HTF-50 | 100 | 2.00 | <input checked="" type="checkbox"/> | Rank |

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|--------------------------|------------|-----|------|-------------------------------------|------|
| Florida Chemical Company | D-Limonene | 100 | 3.00 | <input checked="" type="checkbox"/> | Rank |
|--------------------------|------------|-----|------|-------------------------------------|------|

Conclusion:

Two cleaning products, Ecolink Vortex and T-Square HTF-50, showed excellent removal of the oil from the Teflon shavings and parts. Each removed nearly all of the oil from the shavings and parts in under one minute.

Technical information has been included for four of the products (the fifth from Florida Chemical will be similar to EP-921). This information can be obtained by running a query in C:\My Documents\CHEM USED\cleaner used. Select Hazinfoquery. Or it can be found in the hard copy of the notebook located in the locked closet in room 309.