

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 12/10/2008

Experimenters: Johanna Oviedo

ClientType: Lab

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Resins/Rosins

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: To test nontoxic industrial cleaning solutions for oil removal

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Products were selected based on the compatibility of substrate and removal of foreign substance. Used 5% concentration and heated the samples at 135F. The steel coupons were immersed in a product for 5 minutes, rinsed for 30 seconds in tap water at 120F and dried in 30 seconds using compressed air is room temperature. Coupons were coated with used oil. Using a handheld swab and allowed to dry for 144 minutes at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. After cleaning process, the final weights were recorded, efficiencies were calculated and recorded.

| Cleaner | Initial wt | Final wt | % Removed |
|-------------------|------------|----------|-----------|
| Sea Wash 77 | | | |
| | 0.5532 | 0.3600 | 34.92 |
| | 0.1223 | 0.1113 | 8.99 |
| | 0.9804 | 0.6202 | 36.74 |
| SW Wash 10 | 10.0000 | | |
| | 0.5245 | 0.3948 | 24.73 |
| | 0.2011 | 0.1369 | 31.92 |
| | 0.6825 | 0.5677 | 16.82 |
| Metalnox CP30 | | | |
| | 1.9783 | 1.9546 | 1.20 |
| | 0.8599 | 0.8703 | -1.21 |
| | 0.3391 | 0.3517 | -3.72 |
| Lonox 13302 | | | |
| | 1.6223 | 1.6305 | -0.51 |
| | 0.5654 | 0.5662 | -0.14 |
| | 1.1332 | 1.1398 | -0.58 |
| Nonsilicated HP | | | |
| | 0.6200 | 0.5735 | 7.50 |
| | 2.2645 | 1.9089 | 15.70 |
| | 0.4922 | 0.4930 | -0.16 |
| Safety Strip 5890 | | | |
| | 1.5213 | 1.3694 | 9.98 |
| | 0.5644 | 0.5902 | -4.57 |
| | 0.5036 | 0.5277 | -4.79 |

Summary:

| | | | | | | |
|-------------------------------|-----------------|-----------------------------|---------------|--------------------|--------------------------|----------------------|
| Substrates: | Stainless Steel | | | | | |
| Contaminants: | Resins/Rosins | | | | | |
| Company Name: | | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Warren Chemical Company | | Sea Wash 77 | 10 | 26.89 | <input type="checkbox"/> | good |
| A 1 Hydro Parke Hill Chemical | | SW Wash 10 Aircraft Cleaner | 10 | 24.49 | <input type="checkbox"/> | |
| Kyzen Corporation | | Metalnox CP 30 | 10 | -1.24 | <input type="checkbox"/> | |

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|--------------------|------------------------------|----|-------|--------------------------|--|
| Kyzen Corporation | Ionox 13302 | 10 | -0.41 | <input type="checkbox"/> | |
| Brulin Corporation | Non Silicated HTD | 10 | 7.68 | <input type="checkbox"/> | |
| Brulin Corporation | Safety Strip 5896 B Oil Seal | 10 | 0.21 | <input type="checkbox"/> | |

Conclusion: No product was effective at removing the resin from stainless steel using immersion cleaning.