

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 08/07/2001

Experimenters: Jason Marshall

ClientType: Electronics Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To identify a replacement cleaner for toluene to remove wax

Experimental Procedure: Fifteen cleaners were selected based on past laboratory testing and vendor information. Nine aqueous products and six semi-aqueous were chosen. The aqueous products were diluted to 5% using DI water in 250 ml beakers. The others were used at full strength in the same size beakers. Due to limited amount of wax, only one coupon was used in each solution. The wax was heated and applied to preweighed aluminum coupons. After the wax cooled, a second dirty weight was measured. Cleaning lasted for 30 minutes at room temperature, followed by a DI water spray rinse also at room temperature. Coupons were dried using an air gun. Once the coupons were dry, a final clean weight was made and cleaning efficiencies were calculated.

Results: Of the 15 cleaners only two product removed over 70% of the wax from the aluminum coupons. Bio T Max removed nearly all of the the wax, 99.36%, and D-Greeze 500 Lo removed just over 75% of the wax.

| Cleaner | Efficiency | Classification |
|--------------------|------------|----------------|
| Bio T Max | 99.36 | Semi-Aqueous |
| Green Stuff | 9.88 | Alk Aqueous |
| SC 1000 | 0.48 | Alk Aqueous |
| SC Aircraft | -0.04 | Alk Aqueous |
| Beyond 2003 | 0.66 | Alk Aqueous |
| DeOx 007 | -2.58 | Alk Aqueous |
| Valtron SP 2250 LF | 0.24 | Alk Aqueous |
| Daraclean 200 | -0.82 | Alk Aqueous |
| Inproclean 3800 | -3.06 | Alk Aqueous |
| KPC 820 N | 1.75 | Alk Aqueous |
| D Greeze 500 Lo | 76.16 | Hydrocarbon |
| EP 921 | 24.54 | D-Limonene |
| Engine Degreaser | 12.63 | Terpene |
| Methyl Ester 1618 | 28.46 | Methyl Ester |
| SI # 8 | 1.8 | Semi-Aqueous |

Summary:

| Substrates: | Aluminum | | | | |
|-------------------------|---|--------|-------------|-------------------------------------|---------------|
| Contaminants: | Waxes | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Magnaflux | Daraclean 200 | 5 | -0.82 | <input type="checkbox"/> | |
| Bio Chem Systems | Green Stuff 6325 | 5 | 9.88 | <input type="checkbox"/> | |
| US Polychem Corporation | Polychem DEOX 007 | 5 | -2.58 | <input type="checkbox"/> | |
| Gemtek Products | SC 1000 Aqueous Cleaner Concentrate | 5 | 0.48 | <input type="checkbox"/> | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 5 | -0.04 | <input type="checkbox"/> | |
| Savogran Company | SI #8 Coating Remover | 100 | 1.80 | <input type="checkbox"/> | |
| Today & Beyond | Beyond 2003 | 5 | 0.66 | <input type="checkbox"/> | |
| Transene Company, Inc. | D Greeze 500 LO | 100 | 76.16 | <input checked="" type="checkbox"/> | |

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|--------------------------|--|-----|-------|-------------------------------------|--|
| AW Chesterton | KPC 820 N | 5 | 1.75 | <input type="checkbox"/> | |
| Valtech Corporation | Valtron SP 2250 2LF | 5 | 0.24 | <input type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 5 | -3.06 | <input type="checkbox"/> | |
| Bio Chem Systems | Bio T Max | 100 | 99.36 | <input checked="" type="checkbox"/> | |
| Safe Science Inc | Safe Science Engine Degreaser (Industrial) | 100 | 12.63 | <input type="checkbox"/> | |
| Inland Technologies Inc | EP 921 | 100 | 24.54 | <input type="checkbox"/> | |
| Twin Rivers Technologies | Methyl Ester 1618 | 100 | 28.46 | <input type="checkbox"/> | |

Conclusion:

Bio T Max and D-Greeze 500 both were effective in removing the wax. The aqueous products were only capable of removing less than 10% of the wax if any at all.