

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 09/11/1998

Experimenters: Jason Marshall, Shyam Sarda

ClientType: Electromagnetic Manufacturer

ProjectNumber: Project #1

Substrates: Copper, Nickel

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To test previously tested cleaning chemistries on second contaminant oil.

Experimental Procedure: Six preweighed coupons were contaminated with oil using a hand held swab and then weighed. Two cleaning solutions were made into 15% solutions using DI water in a 600 mL beaker. The solutions were heated to 130 F on a hot plate. The beakers were then placed into a Crest 40 kHz ultrasonic tank model 4Ht 1014-6 also at 130 F. Three coupons were placed in each cleaner for a set cleaning time. The cleaning time was 5 minutes. Coupons were rinsed in tap water at 120 F for 30 seconds and air dried. Final weights were taken after drying was complete.

SUBSTRATE MATERIAL: Copper/Nickel 70/30
CONTAMINANTS: Oil- Indopol L-14 (Polybutene/butene copolymer CAS# 9003-29-6)

Results: The WR Grace had limited success in removing the oil after 5 minutes of cleaning in the ultrasonic tank. Calgon AK 6215 worked exceptionally well during the cleaning period. Table 1 lists the cleaning results from this trial.

Table 1. Cleaning Efficiencies

| Daraclean | Ak-6215 |
|-----------|---------|
| 5min | 5min |
| 60.21 | 94.65 |
| 76.39 | 97.12 |
| 90.22 | 100.4 |
| 75.61 | 97.39 |
| 15.02 | 2.884 |

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|----------|----------------------|----------------------|---|--------------------|-------------------------------------|----------------------|
| Summary: | Substrates: | | Copper, Nickel | | | |
| | Contaminants: | | Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil | | | |
| | Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| | Calgon Corporation | AK 6215 | 15 | 97.39 | <input checked="" type="checkbox"/> | |
| | Magnaflux | Daraclean 282 | 15 | 75.61 | <input type="checkbox"/> | |

Conclusion: Calgon's Ak-6215 removed almost all of the contaminant after 5 minutes of cleaning. MSDSs of both chemistries have been included with this report.