

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004
 DateRun: 07/08/2004
 Experimenters: Jason Marshall
 ClientType: Bicycle Manufacturer
 ProjectNumber: Project #1
 Substrates: Titanium
 PartType: Coupon
 Contaminants: Oil
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: To evaluate client requested products on the third supplied soil.

Experimental Procedure: The three cleaners were diluted to 5% using DI water in 600 ml beakers. All six products were heated to 120 F on a hot plate.
 Nine preweighed titanium coupons were coated with client supplied oil, Exxon Mobil DTE Light, using a hand held swab and then weighed a second time to determine the amount of soil added. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. Coupons were rinsed in tap water for 15 seconds at 120 F, followed by air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.

Results: Two of the three products removed over 85%. The third product removed just under the 85%. The table below lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-----------|------------|----------|-----------|
| M Aero | 0.2715 | 0.0000 | 100.00 |
| | 0.2305 | 0.0010 | 99.57 |
| | 0.3331 | 0.0014 | 99.58 |
| M Aero NS | 0.1425 | 0.0006 | 99.58 |
| | 0.2562 | 0.0015 | 99.41 |
| | 0.3962 | 0.0002 | 99.95 |
| M 400 | 0.2000 | 0.0478 | 76.10 |
| | 0.3585 | 0.0390 | 89.12 |
| | 0.2555 | 0.0279 | 89.08 |

Summary:

| Substrates: | | Titanium | | | |
|-------------------------|---------------------|----------|-------------|-------------------------------------|---------------|
| Contaminants: | | Oil | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Church & Dwight Co Inc. | Armakleen M Aero | 5 | 99.72 | <input checked="" type="checkbox"/> | |
| Church & Dwight Co Inc. | Armakleen M Aero NS | 5 | 99.65 | <input checked="" type="checkbox"/> | |
| Church & Dwight Co Inc. | Armakleen M-400 | 5 | 84.77 | <input type="checkbox"/> | |

Conclusion: The three requested products will be tested on the fourth supplied soil under the same conditions.