CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 07/07/2004

Experimenters: Jason Marshall

ClientType: Bicycle Manufacturer

ProjectNumber: Project #1

Substrates: Titanium

PartType: Coupon

Contaminants: Cutting/Tapping Fluids

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate client requested products on the first soil

Experimental Procedure: Three cleaners were requested from the client. Six aqueous based cleaners were diluted to 5% using DI water in 600 ml beakers. All three products were heated to 120 F on a hot plate.

Nine preweighed titanium coupons were coated with client supplied tapping fluid, Castrol Industries Moly Dee Tapping fluid (63449-39-8, 64741-96-4), 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	0.2398	0.0276	88.49
	0.2288	0.0381	83.35
	0.3865	0.0562	85.46
M Aero NS	0.2533	0.0440	82.63
	0.2507	0.0011	99.56
	0.4063	0.0015	99.63
M 400	0.2437	0.0316	87.03
	0.2773	0.0456	83.56
	0.2295	0.0376	83.62

Summary:

Substrates:	Titanium				
Contaminants:	Cutting/Tapping Fluids				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Church & Dwight Co Inc.	Armakleen M Aero	5	85.77	☑	
Church & Dwight Co Inc.	Armakleen M Aero NS	5	93.94	☑	
Church & Dwight Co Inc.	Armakleen M-400	5	84.74	☐	

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