CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 07/07/2004

Experimenters: Jason Marshall

ClientType: Bicycle Manufacturer

ProjectNumber: Project #1

Substrates: Titanium

PartType: Coupon

Contaminants: Fluxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate client requested products on the fifth soil.

Experimental Procedure: The three cleaners were diluted to 5% using DI water in 600 ml beakers and heated to 120 F on a hot plate.

Nine preweighed titanium coupons were coated with client supplied Wolverine Ultra Flux (1332-77-0, 10043-35-3, 7789-29-9, 11128-29-3, 151-21-3), using a hand held swab and then heated with a Master Appliance Heat Gun at 500 F for 10 minutes. Coupons were allowed to cool 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: All three products removed over 99% of the second oil. 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	1.1170	0.0014	99.87
	1.2380	0.0004	99.97
	0.8871	0.0069	99.22
M Aero NS	0.9014	0.0039	99.57
	1.3230	0.0009	99.93
	1.2541	0.0001	99.99
M 400	0.7871	0.0013	99.83
	0.9139	0.0038	99.58
	0.8060	0.0035	99.57

Summary:

Substrates:	Titanium
Contaminants:	Fluxes

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Church & Dwight Co Inc.	Armakleen M Aero	5	99.69	☑	
Church & Dwight Co Inc.	Armakleen M Aero NS	5	99.83	☑	
Church & Dwight Co Inc.	Armakleen M-400	5	99.66	☑	

Conclusion: The supplied products will be tested on the sixth supplied soil using manual wiping at room temperature.