CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 07/08/2004

Experimenters: Jason Marshall

ClientType: Bicycle Manufacturer

ProjectNumber: Project #1

Substrates: Titanium

PartType: Coupon

Contaminants: Inks

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

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

Experimental Procedure: The three cleaners were diluted to 5% using DI water in 600 ml beakers at room temperature.

Nine preweighed titanium coupons were coated with ink from a Sharpie marker. The ink was applied first in a side to side manner and then in an up and down direction. Coupons were then weighed a second time to determine the amount of soil added. Three coupons were cleaned for about 2 minutes using a Gardner Straight Line Washability unit. Three coupons were placed into a Gardner Straight Line Washability unit. A Professional Painter's Rag was immersed into a beaker of the cleaning solutions and then attached to the cleaning sled. The cleaning unit was run for 75 cycles (~2 minutes). At the end of the cleaning cycle, coupons were weighed again and efficiencies were calculated.

Results: One of the three products removed over 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	0.0019	0.0002	89.47
	0.0030	0.0004	86.67
	0.0014	0.0002	85.71
M Aero NS	0.0014	0.0003	78.57
	0.0024	0.0008	66.67
	0.0025	0.0006	76.00
M 400	0.0010	0.0007	30.00
	0.0011	0.0008	27.27
	0.0014	0.0010	28.57

Summary:

Substrates:	Titanium				
Contaminants:	Inks				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Church & Dwight Co Inc.	Armakleen M Aero	5	87.28	☑	
Church & Dwight Co Inc.	Armakleen M Aero NS	5	73.75	☐	
Church & Dwight Co Inc.	Armakleen M-400	5	28.61	☐	

Conclusion: The three supplied products have been tested on six soils. The M Aero was the only product to work on all six contaminants. The M Aero NS worked on all except the ink. With further cleaning time, the ink would have been removed by M Aero NS.