CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2007
DateRun:	10/17/2007
Experimenters:	Jason Marshall
ClientType:	Chemical Company
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Cutting/Tapping Fluids
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate requested products on fourth supplied contaminant using immersion cleaning.

Experimental Procedure:

Four products were diluted to the requested levels and heated to 135 F on a hot plate. In addition, water was used as a control solution. Eighteen preweighed Aluminum 6061 T6 coupons were coated with Haycut SW 22 tapping oil using a handheld swab. Coupons were weighed a second time to determine the amount of cutting fluid added.

Three coupons were immersed in each solution and cleaned for five minutes using minimal stir-bar agitation. Coupons were rinsed in either DI water or tap water heated to 135 F. One product was rinsed in room temperature tap water as requested. All coupons were dried for 10 minutes in an oven at 140 F. After drying, coupons were weighed a third time and product cleaning efficiencies were calculated.

Requested Procedure:
A. General Process
Soaking for 5 minutes at 135 degrees F and rinsing for 5 minutes at a temperature selected in procedure B below. During the soaking and rinsing the solution should be gently stirred to simulate effect of typical continuous flow filtering in both cleaning and rinse tanks. Then dry thoroughly in drying oven of type that is typically used in precision cleaning applications. The rinse water should be changed after each set of 3 tests to prevent contaminant buildup.

B. FPC testing.
Mix FPC 100-add 7 oz of concentrate to 123 oz of filtered tap water when both are at room temperature. Then run process of A above with rinse tank at room temperature and repeat with rinse tank at 135 degrees F.

C. Other products
Use process A above. at dilutions shown but rinsing with DI water instead of tap water for the Metalnox M6440.

Products to Evaluate
Metalnox M6440 @ 10% solution
Extreme Simple Green Aircraft Cleaner@10% solution.
Gemtec Aircraft cleaner @ 15% solution.
Kleen Tec 715@ 1 part concentrate to 11 parts water

Results:

The same four products removed over 94% of the Haycut SW 22 tapping oil. Water removed just over 80% of the lubricant. The FPC that was rinsed with room temperature water removed 85% of the tapping oil. The table lists the amount of soil added, the amount remaining and the calculated efficiencies.

Cleaner	Initial wt	Final wt	% Removed
Metalnox M6410	0.5736	0.0786	86.30
	0.6087	0.0016	99.74
	0.3612	0.0090	97.51
SC Aircraft	0.7064	0.0208	97.06
	0.4589	0.0322	92.98
	0.5497	0.0120	97.82
KT 715	0.4464	0.0072	98.39
	0.5377	0.0063	98.83
	0.5048	0.0074	98.53
FPC 100	0.4132	0.0188	95.45
	0.5633	0.0431	92.35
	0.5617	0.0244	95.66
Water	0.3494	0.0569	83.71
	0.6849	0.1412	79.38

CLEANING LABORATORY EVALUATION SUMMARY

	0.4876	0.0716	85.32
FPC 100 cold rinse	0.5089	0.0906	82.20
	0.5703	0.0918	83.90
	0.4854	0.0537	88.94

Summary:

Substrates:	Aluminum
Contaminants:	Cutting/Tapping Fluids

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Kyzen Corporation	Metalnox M6440	10	94.51	☑	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	95.95	☑	
Klean Tec	KT 715	8.3	98.58	☑	
Environmental Solution Products Inc	FPC 100	5.4	94.48	☑	
Water	Water	100	82.80	☐	
Environmental Solution Products Inc	FPC 100	5.4	85.01	☑	cold rinse

Conclusion: Cleaning of all four oils was successful by the client supplied product when using a hot water rinse.