CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 04/19/2004

Experimenters: Jason Marshall, Parvathy Vijayan Babu

ClientType: Capacitor Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate products on third supplied contaminant

Experimental Procedure: Six products were selected based on client request for vapor degreasing solvents. Each product was used at full strength in a 250 ml beaker and heated to 96 F on a hot plate. Eighteen preweighed aluminum coupons were coated with the Nisseki SAS 40 oil (27776-01-8, 612-00-0, 103-29-7, 101-81-5) using a hand held swab. Coupons were weighed a second time to determine the amount of soil added to each coupon. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. After cleaning parts were allowed to sit for 10 minutes for drying at room temperature. The coupons were weighed a final time and efficiencies were calculated.

Results: Four of the six products removed over 85% of the oil from the aluminum coupons within the five minutes of cleaning. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
HFE 7100	0.0903	0.0012	98.67
	0.1515	0.0020	98.68
	0.1511	-0.0021	101.39
HFE 7200	0.1497	-0.0006	100.40
	0.2091	-0.0043	102.06
	0.1768	-0.0040	102.26
HFE 71DE	0.1683	0.0353	79.03
	0.1773	0.0432	75.63
	0.2291	0.0489	78.66
AK 225	0.2132	0.0078	96.34
	0.2127	-0.0034	101.60
	0.1809	0.0120	93.37
Vertrel CCA	0.1769	0.0105	94.06
	0.1278	0.0173	86.46
	0.1619	0.0325	79.93
Vertrel MCA	0.1083	0.0371	65.74
	0.2009	0.0498	75.21
	0.2183	0.0412	81.13

Summary:

Substrates:	Aluminum				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
3M	HFE 7100	100	99.58	☑	
3M	HFE 7200	100	101.57	☑	
3M	HFE 71DE	100	77.77	☐	
AGA Chemical	AK 225	100	97.10	☑	
DuPont	Vertrel CCA	100	86.82	☑	
DuPont	Vertrel MCA	100	74.03	☐	

Conclusion: All six products will be tested on the fourth soil under the same conditions.