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 fourth supplied soil.

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 C.P. Hall Co. Plasthall ESO oil (8013-07-8) 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: Five minutes of cleaning did not appear to provide enough cleaning time for this oil. Three products removed over 80% but less than 85% of the soil in five minutes. Two products (HFE 7100 & 7200) removed under 60%. The table shows the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
HFE 7100	0.0913	0.0638	30.12
	0.2101	0.0712	66.11
	0.1712	0.0689	59.75
HFE 7200	0.2600	0.0776	70.15
	0.2033	0.1045	48.60
	0.1624	0.0690	57.51
HFE 71DE	0.2856	0.0366	87.18
	0.1735	0.0442	74.52
	0.2198	0.0440	79.98
AK 225	0.1733	0.0431	75.13
	0.2422	0.0176	92.73
	0.1711	0.0255	85.10
Vertrel CCA	0.2271	0.0516	77.28
	0.3007	0.0356	88.16
	0.2999	0.0318	89.40
Vertrel MCA	0.2571	0.0629	75.53
	0.2051	0.0472	76.99
	0.1928	0.0526	72.72

Summary:

Substrates:	Aluminum				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
3M	HFE 7100	100	52.00	☐	
3M	HFE 7200	100	58.75	☐	
3M	HFE 71DE	100	80.56	☑	
AGA Chemical	AK 225	100	84.32	☑	
DuPont	Vertrel CCA	100	84.95	☑	
DuPont	Vertrel MCA	100	75.08	☐	

Conclusion: Follow up tests will be conducted for all four contaminants using longer times. An attempt will be made to clean using vapor degreasing.

CLEANING LABORATORY EVALUATION SUMMARY