CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003

DateRun: 02/03/2003

Experimenters: Jason Marshall

ClientType: Manufactures parts for Semi-Conductor Industry

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Abrasive, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To find cleaners for oil and abrasive removal

Experimental Procedure: Five products were selected from the lab's database based on previous testing results. A sixth cleaner was selected based on supplied client data. The semi aqueous terpene was used at full strength in a 600 ml beaker. The other five products were diluted to 5% using DI water in 600 ml beakers. All six products were heated to 120 F on a hot plate. Eighteen preweighed coupons were coated with Speed Fam Industrial Applications Vehicle 210 with Boron Carbide abrasive using a hand held swab. The oil/abrasive mix was forced dry using a Master Appliance Heat Gun at 500 F for 3 minutes. Coupons were allowed to cool to room temperature and weighed a second time. Three coupons were immersed in each solution and cleaned for 5 minutes using stir-bar agitation, rinsed in tap water for 15 seconds at 120 F and dried with the heat gun for 30 seconds at 500 F. Once coupons were cooled to room temperature, final weights were recorded and cleaning efficiencies were calculated.

Results: Five of the six products removed over 85% of the oil/abrasive mix within five minutes of cleaning. Two products, Safety First and Polyspray Jet 790 XS removed over 95%. The table below lists the amount of oil/abrasive applied and removed for each coupon.

Table 1. Oil/Abrasive Removal

Cleaner	Initial wt	Final wt	% Removed
Safety First	0.053	-0.0006	101.13
	0.1152	0.0042	96.35
	0.111	-0.0008	100.72
Formula 815 GD	0.1113	0.0159	85.71
	0.1257	0.0089	92.92
	0.1430	0.0093	93.50
Amberclean L12	0.1149	0.0127	88.95
	0.137	0.0297	78.32
	0.1101	0.0069	93.73
LPS Precision Clean	0.1441	0.0218	84.87
	0.1150	0.0289	74.87
	0.1259	0.0057	95.47
California Parts Washer	0.1711	0.0322	81.18
	0.1218	0.0385	68.39
	0.1270	0.0486	61.73
Polyspray Jet 790 XS	0.1195	0.0009	99.25
	0.1126	0.0098	91.30
	0.0811	0.0010	98.77

Summary:

Substrates:	Ceramics
Contaminants:	Abrasive, Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Amax Corporation	Safety First	100	99.40	☑	
Brulin Corporation	Formula 815 GD	5	90.71	☑	
Innovative Organics Inc	Amberclean L 12	5	87.00		

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LPS Laboratories	Precision Clean Concentrate	5	85.07	☑	
Phase III Inc	California Parts Washer Solution	5	70.43	☐	
US Polychem Corporation	Polyspray Jet 790 XS	5	96.44	☑	

Conclusion: The five successful products will be used in the next trial with the aluminum oxide based abrasive. Cleaning times may be increased to improve efficiency.