CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003

DateRun: 02/05/2003

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 evaluate successful cleaners on second oil/abrasive mix.

Experimental Procedure: Six products were selected from the lab's database based on previous tests results. The semi aqueous terpenes were used at full strength in a 600 ml beaker. The other four 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 Aluminum Oxide 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: All six products removed over 95% of the oil/abrasive mix. Three cleaners, Safety First, LPS Precision Clean & US Polychemical removed over 99% leaving the coupons with no visible trace of the oil/abrasive mix. The table below lists the amount of oil/abrasive applied and removed.

Cleaner	Initial wt	Final wt	% Removed
Safety First	0.2234	0.0008	99.64
	0.1391	0.0030	97.84
	0.1617	0.0001	99.94
Formula 815 GD	0.1555	0.0085	94.53
	0.1373	0.0036	97.38
	0.1643	0.0012	99.27
Amberclean L12	0.1334	0.0067	94.98
	0.1644	0.0052	96.84
	0.1322	0.0048	96.37
LPS Precision Clean	0.1233	0.0003	99.76
	0.1211	0.0004	99.67
	0.1107	0.0006	99.46
Polyspray Jet 79 XS	0.1759	0.0002	99.89
	0.0929	0.0013	98.60
	0.1141	0.0011	99.04
Opt Clear	0.1317	0.0036	97.27
	0.1144	0.0080	93.01
	0.1520	0.0072	95.26

Summary:

Substrates:	Ceramics
Contaminants:	Abrasive, Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Amax Corporation	Safety First	100	99.14	☑	Clear
Brulin Corporation	Formula 815 GD	5	97.06	☑	Grey patch
Innovative Organics Inc	Amberclean L 12	5	96.06	☑	Some Grey patches
LPS Laboratories	Precision Clean Concentrate	5	99.63	☑	Clear

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US Polychem Corporation	Polyspray Jet 790 XS	5	99.17	☑	Clear
National Diagnostic	Opti Clear	100	95.18	☑	Grey film

Conclusion:

All six products were successful in removing the oil/abrasive mix within 5 minutes using immersion cleaning.

The next trial will be to remove mounted parts from the metal plates and remove the wax using immersion cleaning with manual wiping (if necessary).