CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 03/22/2001

Experimenters: Jason Marshall

ClientType: Electronics Manufacturer

ProjectNumber: Project #3

Substrates: Plastic

PartType: Part

Contaminants: Carbon Deposits, Resins/Rosins

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: To evaluate selected cleaners for the removal of epoxy resin and rubber gasket.

Experimental Procedure: Three products were selected for evaluation. All three were used at full strength and room temperature. A 500 ml beaker was filled with each solution. One part with gasket was immersed in the beaker. Observations were made at 5 minutes, 2, 3 and 4 hours. At each observation time, the part was removed from the beaker. The rubber gasket was checked for swelling and was removed when the gasket was easily separated from the potting fixture. The epoxy resin was wiped with a paper towel to determine if any epoxy could be removed.
SUBSTRATE MATERIAL: Potting fixture (Deiron plastic)
CONTAMINANTS: Emerson & Cuming Stycast 1090 Black, epoxy resin (DGEBA 1675-54-3, Carbon black 1333-86-4)

Results: Both Bio T Max and the D-limonene caused swelling of the rubber gasket after the first five minutes of soaking. The Ionox HC 2 required four hours for easy removal of the gasket. The epoxy was removed from the parts soaked in the Bio T Max after 4 hours of soaking. The resin was pealed off in one piece. The D-limonene did not remove the epoxy even after soaking overnight. Ionox HC 2 was successful in removing the epoxy after two hours. Table 2 lists the observations made at each time interval.

Product	5 min	2 hours	3 hours	4 hours	Overnight
Bio T Max	Swelling of ring- removed	Some removal of epoxy (flakes)	Some removal of epoxy (flakes)	Removal of epoxy (one piece)	N/A
Ionox HC 2	No swelling of ring flecks of epoxy removed	No swelling of ring Removal of epoxy (one piece)	Starting to swell	Ring removed	N/A
D-Limonene	Swelling of ring-removed	Some removal of epoxy (flakes)	Some removal of epoxy (flakes)	Bigger pieces removed	No complete removal of epoxy

Summary:

Substrates:	Plastic				
Contaminants:	Carbon Deposits, Resins/Rosins				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	0.00	☑	
Kyzen Corporation	Ionox HC 2	100	0.00	☑	
Florida Chemical Company	D-Limonene	100	0.00	☐	

Conclusion: The two products from the previous trials, Bio T Max and Ionox HC 2, were successful in removing the rubber gasket and the epoxy resin within 4 hours of soaking.