CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 05/19/1998

Experimenters: Jason Marshall

ClientType: Manufacturer of Ceramic Capacitors

ProjectNumber: Project #1

Substrates: Alloys

PartType: Part

Contaminants: Inks, Paints

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: Find cleaner capable of removing paint

Experimental Procedure: Zirconium oxide beads were poured into four different beakers. The beaker/bead weights were recorded. A white paint mixture was then poured into the beakers so that the beads were just barely covered. The beakers were covered and allowed to sit overnight. The weights of the beaker/bead/paint mixture were again recorded. Two cleaners from the previous trials, Inpro-Clean 3800 and Chrisal Super CMF-240, were used again in this test. Two other cleaners were selected on the basis of their abilities to clean paint from a variety of surfaces. The Inpro-Clean 4000T is a terpene based cleaner and the Emkay product is a new chemistry in the lab.

Five percent solutions of the chemistries were heated to 130 F in beakers. The solutions were poured into the individual beakers. The beakers were swirled for two minutes to allow all of the beads to become exposed to the cleaning solution. At the end of the cleaning the chemistries were poured out of the beakers. The beads were rinsed twice with DI water at room temperature. The beads were placed in a desiccator and allowed to dry overnight. The beaker/beads were weighed again and the percent efficiency was calculated.

SUBSTRATE MATERIAL: ZrO8 beads
CONTAMINANTS: Paint

Results: Upon initial observations, three of the four chemistries selected had little to no removal of the paint. Only Inpro-Clean 4000T had success in removing the paint from the beads. Gravimetric analysis of the four cleaning chemistries can be found in Table 1.

Table 1 Cleaning Efficiencies

Chemistry	Efficiency (%)
Inpro-Clean 3800	40
Inpro-Clean 4000T	68
Chrisal Super CMF-240	55
Safety Wash	56

Summary:

Substrates:	Alloys				
Contaminants:	Inks, Paints				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Oakite Products	Inproclean 3800	5	40.00	☐	
Oakite Products	Inproclean 4000 T	5	68.00	☑	
Chrisal USA Inc	Super CMF 240	5	55.00	☐	
Emkay Chemical Company	Safety Wash	5	56.00	☐	

Conclusion: Oakites Inpro-Clean 4000T was the only successful cleaner. To increase the efficiency of this product, ultrasonic energy can be implemented in addition to a longer cleaning cycle.