CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2003
DateRun:	03/12/2003
Experimenters:	Jason Marshall
ClientType:	Medical Instrument Mfr
ProjectNumber:	Project #1
Substrates:	Plastic
PartType:	Part
Contaminants:	Hucker's Soil
Cleaning Methods:	Mechanical Agitation
Analytical Methods:	FTIR, Gravimetric
Purpose:	To evaluate two process modifications in an attempt to improve cleaning

Experimental Procedure:

One product from the previous testing was diluted to 5% using DI water in a 600 ml beaker. The same product was mixed with Isopropyl alcohol and DI water (5% cleaner, 5% IPA, remaining water). Both solutions were heated to 130 F on a hot plate.

The inside of 6 preweighed PVC tubing pieces (3" long) were coated with the supplied Hucker' Soil (Creamy Peanut Butter, Salted Butter, Wheat glutton, Egg Yolk, Evaporated milk, DI water, Printer's ink with boiled linseed oil, India Ink, Saline Solution) using a squeeze bulb and then allowed to dry. The tubing was weighed again to determine the amount of soil added. Three pieces were cleaned in each solution for 5 minutes using mechanical agitation (moving pieces back and forth at an angle) at 130 F. Two rinsing protocols were used. The first rinsing method was for the parts cleaned with the product alone. The parts were rinsed in IPA for 15 seconds at room temperature. The second rinsing protocol was for the cleaner and IPA mix. These parts were rinsed in tap water for 15 seconds at 120 F. Both rinses were followed by drying with a forced air at for 30 seconds at 68 F. Once the tubing cooled to room temperature, final weights were recorded and efficiencies were calculated. In addition, the cleaned tubes were wiped with a swab soaked in IPA and applied to an FT-IR card for analysis.

Results:

The tubes cleaned in Micro 90 and rinsed in IPA were cleaner than Micro/IPA mix. The FT-IR spectra obtained were of the same shape as the previously measured samples. The Micro 90 and IPA rinse resulted in the least amount of residue left inside the tubing. The table below lists the amount of soil added and removed for both processes.

Table 1. Soil Removed

Cleaner	Initial wt	Final wt	% Removed
Micro 90 IPA Rinse	0.1952	0.0002	99.90
	0.5930	-0.0002	100.03
	0.4207	-0.0002	100.05
Micro 90 IPA mix water rinse	0.4443	0.0025	99.44
	0.4508	0.0030	99.33
	0.3233	0.0022	99.32

Summary:

Substrates:	Plastic				
Contaminants:	Hucker's Soil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
International Products Corporation	Micro 90 Conc.	5	99.99	☑	IPA rinse
International Products Corporation	Micro 90 Conc.	5	99.36	☑	with 5% IPA

Conclusion:

It appears that rinsing the tubing with IPA will improve the soil removal from the pvc tubing. The FT-IR spectra of the tubes also showed that the IPA rinsed tube had the least amount of residue remaining.