CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2000
DateRun:	01/27/2000
Experimenters:	Jason Marshall
ClientType:	Mfr Boating Accessories
ProjectNumber:	Project #1
Substrates:	Plastic
PartType:	Part
Contaminants:	Inks
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Visual, Wipe
Purpose:	To identify a low or non voc cleaner for the removal of ink from misprinted plastic parts.

Experimental Procedure:

Seven cleaners were selected the lab's database of effective testing and Industrial Cleaning Survey: Directory of Vendors 4th edition. Each solution was poured into a 250 ml glass beaker. A plastic part with ink printing was placed into each beaker and soaked for five minutes. After the soaking, the part was wiped with a paper towel for one minute. Observations were made and recorded. The parts were then re-immersed into the cleaning solution to soak for an additional ten minutes. Again, at the end of the soaking, parts were wiped and observed. Table 1 lists the cleaners used, the type of cleaning solution and the VOC contents.

Table 1 Chemistries Used

Company Name	Product Trade Name	VOC
Envirosolutions, Inc.	BIO T Max	780 g/l
Gemtek Products	SC 1000	0
Oakite Products	InproClean 3800	None listed
Oakite Products	InproClean 4000 T	Not applicable
Valtech Corporation	Valtron SP 2250-2LF	None listed
Tarksol, Inc.	HTF 85 B	None listed
U.S. Polychem Corp.	Polyspray Jet 790 P	0

SUBSTRATE MATERIAL: ABS Plastic Parts
CONTAMINANTS: Ink-RUCO Druckfarben Printing Ink 180-PE (G1-G12) (CAS#s: Cyclohexanone 108-94-1; Xylene 1330-20-7)
CONTAMINATING PROCESS USED: Received contaminated
CLEANING METHOD: Immersion and Manual wipe

Results:

Four of the products (Bio T Max, Valtron SP 2250-2LF, HTF 85 B, Inproclean 4000 T) showed some signs of removing the ink from the plastic parts after the initial soaking. Table 2 lists the observations made for each cleaning solution evaluated.

Table 2. Five Minute Cleaning

Product Trade Name	Observations
BIO T Max	Some ink removal observed on the part
SC 1000	No cleaning
InproClean 3800	No cleaning
InproClean 4000 T	Good Cleaning, ink on towel and part
Valtron SP 2250-2LF	Some ink removal on towel
HTF 85 B	Good removal, ink on towel and part
Polyspray Jet 790 P	No cleaning

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After cleaning for a total of 15 minutes, Bio T Max and Inproclean 4000 T were the only two products which had improved removal of the ink. Although HTF 85 B removed nearly all the ink, the cleaning solutions started to degrade the plastic material. Table 3 lists the results of the 15 minute cleaning.

Table 3. Extended Cleaning Time

Product Trade Name	Observations
BIO T Max	Excellent cleaning, no ink remaining on part
SC 1000	No improvement
InproClean 3800	No improvement
InproClean 4000 T	Nearly all ink removed from part
Valtron SP 2250-2LF	Some ink removal on towel, similar to 5 minute cleaning
HTF 85 B	Nearly all ink removed from part, part becoming altered, soft
Polyspray Jet 790 P	No improvement

Summary:

Substrates:	Plastic				
Contaminants:	Inks				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	0.00	☑	
Gemtek Products	SC 1000 Aqueous Cleaner Concentrate	100	0.00	☐	
Oakite Products	Inproclean 3800	100	0.00	☐	
Oakite Products	Inproclean 4000 T	100	0.00	☑	
Valtech Corporation	Valtron SP 2250 2LF	100	0.00	☐	
Tarksol Inc	Tarksol HTF 85 B	100	0.00	☐	
US Polychem Corporation	Polyspray Jet 790 P	100	0.00	☐	

Conclusion:

From the initial testing of the ink printed parts, two cleaning solutions were identified as potential replacement cleaners. The products were Envirosolutions Bio T Max and Oakite Products Inproclean 4000 T.