CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1996

DateRun: 03/19/1996

Experimenters: Jay Jankauskas

ClientType: Plastic Switch Maker

ProjectNumber: Project #1

Substrates: Plastic

PartType: Part

Contaminants: Cutting/Tapping Fluids, Greases, Inks, Lubricating/Lapping Oils, Oil

Cleaning Methods:

Analytical Methods: Visual

Purpose: Find alternative to ethanol

Experimental Procedure:

The purpose for this experiment is to test out several chemistries to determine an acceptable substitute for Plastic Switch Maker's ethanol usage.
The above chemistries will be tested against some isopropanol to see how well they allow ink to cure on the parts. Fourteen dirty parts obtained from Plastic Switch Maker were cleaned, stamped with the Markem Black Ink and then cured by the following steps:

1) The cleaning chemistry was wiped on a surface with a Styrofoam swab.
2) The cleaning chemistry was then rinsed off by wiping the surface with a Styrofoam swab saturated with water (This was not done for Asahiklin because it volatilizes pretty fast).
3) Pressurized air was then used to dry the part (drying time took between 5 and 10 seconds).
4) The Markem 9060 Black ink was then stamped on the cleaned surface using a handheld ink-stamp.
5) The parts were then allowed to cure for one hour in a convection oven at 200 F.
6) Adhesion was checked by rubbing the cured ink with isopropanol and analyzed to see if any smudging occurred.

SUBSTRATE MATERIAL: Plastic switch parts
CONTAMINANTS: Oils, greases Markem 9060 Black Ink
CONTAMINATING PROCESS USED: As received form Plastic Switch Maker

Results:

Cleaning Chemistry	Adhesion of Markem 9060 black ink
Isopropanol	Good
WR Grace Daraclean 294xx	None
Terpene Tech HTF 321	Good
Oakite Inproclean 1300	Good
Nalgene L-900	None
Mirachem 500	Good
Man-Gill Gillite 0650-CI	Excellent
MacDermid ND-17	Excellent
Finish Line Tech Degreaser	None
Ecobrite AK	None
CSA Biosafe 1024	None
AW Chesterton 803 Solvent	None
Kyzen Ionics FCR	None
Asahiklin AK-225	None

One of the problems encountered in this experiment was that a little smudging occurred with all chemistries due to the hand stamp used. Despite this setback a good idea of each chemistries effectiveness as compared to Isopropanol was determined.

Summary:

Substrates:	Plastic				
Contaminants:	Cutting/Tapping Fluids, Greases, Inks, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

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Magnaflux	Daraclean 294 xx	100	0.00	☐	
Oakite Products	Inproclean 1300	100	0.00	☐	
JDI Inc	Mirachem 500 RTU	100	0.00	☐	
MacDermid Industrial Products	ND 17	100	0.00	☐	
Eastern Color and Chemical Company	Ecobrite Cleaner AK	100	0.00	☐	
AW Chesterton	803 Industrial & Marine Solvent II	100	0.00	☐	
AGA Chemical	AK 225	100	0.00	☐	
Finish Line Technologies Inc	Bio Degradable Degreaser	100	0.00	☐	
CSA Inc	Bio Safe 1023	100	0.00	☐	
Kyzen Corporation	Ionox FCR (For Comparison Only)	100	0.00	☐	
Man Gill Chemical Company	Gillite 0650 Cl	100	0.00	☐	
Tarksol Inc	Tarksol HTF 321	100	0.00	☐	
Fisher Scientific	Isopropanol a459-4 70% VV (CAS:67-63-0)	100	0.00	☐	

Conclusion: All chemistries that showed some adhesion will be used in another experiment to test out their effectiveness in removing the greases and inks.