

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1996  
 DateRun: 03/20/1996  
 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-Cl   | 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:

|                      |  |               |                    |                   |                      |  |
|----------------------|--|---------------|--------------------|-------------------|----------------------|--|
| <b>Substrates:</b>   | Plastic  |               |                    |                   |                      |  |
| <b>Contaminants:</b> | Cutting/Tapping Fluids, Greases, Inks, Lubricating/Lapping Oils, Oil |               |                    |                   |                      |  |
| <b>Company Name:</b> | <b>Product Name:</b>   | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b> | <b>Observations:</b> |  |

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

Conclusion:

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