

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002
 DateRun: 06/04/2002
 Experimenters: Jason Marshall
 ClientType: Optical Manufacturer
 ProjectNumber: Project #1
 Substrates: Plastic
 PartType: Part
 Contaminants: Inks
 Cleaning Methods: Manual Wipe
 Analytical Methods: Visual, Wipe
 Purpose: To evaluate successful cleaners on supplied parts.

Experimental Procedure: The four products from the previous trial were used at full strength and heated to 130 F on a hot plate in 400 ml beakers. Using a soft paper towel soaked in each heated solution, lenses were wiped until the ink was removed. The time required to clean was recorded. A second evaluation with the products involved soaking the lenses in the solution for 5 minutes, making observations through out the soak. At the end, the lenses was wiped for a maximum of 10 seconds. The lenses were then rinsed in a tap water rinse at 120 F for 10 seconds and wiped dry.

Results: All products were able to remove all of the ink in less than 1 minute during the manual wipe cleaning. Loctite 7360 was the fastest, removing the ink within 17 seconds. None of the products dissolved the ink from the lenses within the 5 minute soak cleaning. The following table lists the observations made during each cleaning process.

| Wipe Observations | Soak Observations | W rank + | S rank / 2 | = | Overall Rank |
|-------------------|-------------------------------------|----------|------------|---|--------------|
| 24 seconds | No dissolving, wipe at end was easy | 3 | 2 | = | 2.5 |
| 19 seconds | Wipe did not remove all the ink | 2 | 4 | = | 3 |
| 17 seconds | Possible dissolving, easily wiped | 1 | 1 | = | 1 |
| 48 seconds | Small amount of ink left | 4 | 3 | = | 3.5 |

Summary:

| Substrates: | | Plastic | | | |
|--------------------------|-------------------|---------|-------------|-------------------------------------|---------------|
| Contaminants: | | Inks | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Bio Chem Systems | Bio T Max | 100 | 3.00 | <input checked="" type="checkbox"/> | Wipe Rank |
| National Diagnostic | Opti Clear | 100 | 2.00 | <input checked="" type="checkbox"/> | Wipe Rank |
| Loctite Corporation | 7360 | 100 | 1.00 | <input checked="" type="checkbox"/> | Wipe Rank |
| Twin Rivers Technologies | Methyl Ester 1618 | 100 | 4.00 | <input type="checkbox"/> | Wipe Rank |
| Bio Chem Systems | Bio T Max | 100 | 2.00 | <input checked="" type="checkbox"/> | Soak Rank |
| National Diagnostic | Opti Clear | 100 | 4.00 | <input type="checkbox"/> | Soak Rank |
| Loctite Corporation | 7360 | 100 | 1.00 | <input checked="" type="checkbox"/> | Soak Rank |
| Twin Rivers Technologies | Methyl Ester 1618 | 100 | 3.00 | <input checked="" type="checkbox"/> | Soak Rank |

Conclusion: A follow up test will be run on the top two products, Loctite 7360 and Bio T Max, to determine how long to soak the lenses to remove the ink with no wiping.