

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 12/12/2001

Experimenters: Jason Marshall

ClientType: Electronics Manufacturer

ProjectNumber: Project #1

Substrates: Steel

PartType: Part

Contaminants: Mold Releases, Rust/Scale, Oxides, Salts

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: To evaluate additional cleaners for the removal of the chemical vapor deposition

Experimental Procedure: Five solutions were selected based on meeting the following parameters:
System Requirements, high and low pressure spray wash
Contaminants: Salts or silicones
Four solutions were diluted to 20% with DI water in 1000 ml beakers. The fifth product was used at full strength. All five were heated to 140 F on a hot plate. One part was immersed in each solution and cleaned 20 minutes. Observations were made at 5 minute intervals. At the end of cleaning, the parts were rinsed in a tap water spray for 1 minute at 120 F. Parts were wiped dry and observed visually for cleanliness.

Results: The Buckeye Shopmaster LpH worked very well on the grey, black contaminant as well as the rust. The product was also moderately effective removing the white powders. The MacDermid ND LF Supreme worked very well on removing the rust but not very well on the white powders. The other three products were not effective on the white powders. The following table lists the observations made at 5 minute intervals.

Table 1. Observations

| Cleaner | Observations | |
|---------|----------------------------|-----------|
| 1 | 0- some dissolving | fair |
| | 5- cloudy | fair/okay |
| | 10- more removal | okay |
| | 15- very cloudy | okay/good |
| | 20- wipe off black | okay/good |
| 2 | 0- little/no dissolving | poor/fair |
| | 5- some dissolving | fair |
| | 10- removing rust film | fair/okay |
| | 15- | okay |
| | 20- wipe off rust | okay |
| 3 | 0- little/no dissolving | poor/fair |
| | 5- some dissolving | fair |
| | 10- no change | fair |
| | 15- no change | fair |
| | 20- no change | fair |
| 4 | 0- little/no dissolving | poor/fair |
| | 5- teflon coming off | fair |
| | 10- rust color in solution | fair/okay |
| | 15- still has white on | fair/okay |
| | 20- | fair/okay |
| 5 | 0- little/no dissolving | poor/fair |
| | 5- little/some dissolving | poor/fair |
| | 10- little/some dissolving | poor/fair |
| | 15- no change | poor/fair |
| | 20- no change | poor/fair |

Summary:

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|----------------------|--|
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| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|-------------------------------|---------------------------|--------|-------------|-------------------------------------|---------------|
| Buckeye International | Shopmaster LPH | 20 | | <input checked="" type="checkbox"/> | |
| MacDermid Industrial Products | New Dimensions LF Supreme | 20 | | <input checked="" type="checkbox"/> | |
| Today & Beyond | Beyond 2006 | 20 | | <input type="checkbox"/> | |
| US Polychem Corporation | Polyspray Jet 790 XS | 20 | | <input type="checkbox"/> | |
| Transene Company, Inc. | D Greeze 500 LO | 100 | | <input type="checkbox"/> | |

Conclusion:

Due to the design of the parts and the difficult nature of the contamination, ultrasonic cleaning should provide the extra cleaning that the spray cleaning is not achieving. A quick check of the Shopmaster LpH in an ultrasonic cleaner showed improved cleaning effectiveness in less time.