

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001  
 DateRun: 11/26/2001  
 Experimenters: Jason Marshall  
 ClientType: Electronics Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Steel  
 PartType: Part  
 Contaminants: Films, Salts  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Visual

Purpose: To evaluate cleaners using longer times and elevated temperature

Experimental Procedure: Three products from the previous trial were diluted to 20% using DI water in 1000 ml beakers. A fourth solution was used a full strength. All four products were heated to 140 F on a hot plate. One part was immersed half way into the solutions and cleaned for 20 minutes. At the end of cleaning the parts were rinsed with tap water at 120 F for 5 minutes. Parts were allowed to air dry. Observations were made at the 10 and 20 minutes. Contaminant: White powders (SiO<sub>2</sub>, NHCl, (NH<sub>4</sub>)<sub>2</sub>SiF<sub>6</sub>, or NH<sub>4</sub>HF<sub>2</sub>)

Results: Three of the four products were moderately successful after the 20 minute soaking. The DS 108 was not very effective. The following table lists observations made at T = 0, 10 and 20 minutes.

Table 1. Cleaning Observations

| Cleaner | T = 0              | T = 10  | T = 20  |
|---------|--------------------|---|---|
| 1       | Instantly cloudy   | Very dark and cloudy. Still white powder in holes     | White and crusty. Holes mostly clean          |
| 2       | Slowly clouding up | Cloudy grey. Flat sides look clean. Round edges white | White and flaky. Good hole cleaning           |
| 3       | Slowly clouding up | Cloudy. White still on part                           | White and crusty. Good hole cleaning          |
| 4       | Slowly clouding up | Not very cloudy. White still on part                  | Lots of white still on part. OK hole cleaning |

Summary:

| <b>Substrates:</b>      |                     | Steel        |             |                                     |               |  |
|-------------------------|---------------------|--------------|-------------|-------------------------------------|---------------|--|
| <b>Contaminants:</b>    |                     | Films, Salts |             |                                     |               |  |
| Company Name:           | Product Name:       | Conc.:       | Efficiency: | Effective:                          | Observations: |  |
| Buckeye International   | Shopmaster          | 20           | 0.00        | <input checked="" type="checkbox"/> |               |  |
| Innovative Organics Inc | Amberclean 527 L    | 20           | 0.00        | <input checked="" type="checkbox"/> |               |  |
| Today & Beyond          | Beyond 2001         | 20           | 0.00        | <input checked="" type="checkbox"/> |               |  |
| Dysol                   | DS 108 Wipe Solvent | 100          | 0.00        | <input type="checkbox"/>            |               |  |

Conclusion: The three successful products will be evaluated in the next trial using ultrasonic energy.