

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 05/28/1998

Experimenters: Jason Marshall

ClientType: Vessel Cleaning Company

ProjectNumber: Project #2

Substrates: Liquid

PartType: Part

Contaminants: Carbon Deposits, Mold Releases

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: To find a substitute for methyl chloride

Experimental Procedure: Ten chemistries were selected for testing based on the following: compatible with Aluminum and Stainless Steel, able to remove carbon deposits, able to be used in high pressure or immersion cleaning. Past laboratory experiments with similar conditions were examined to aid in selecting possible cleaning chemistries. Twenty-five milliliters of each cleaner were poured into a 30 mL beaker. A 0.5 gram of the contaminant was weighed and placed into each beaker. Each cleaner was stirred for 30 seconds with a glass rod. Observations were recorded. The stirring and observation cycle was repeated. The chemistries were then allowed to sit for 3 hours and then overnight. Stirring and observations took place after each interval.  
SUBSTRATE MATERIAL: N/A  
CONTAMINANTS: Carbon Black/ethyl acetate/silica mixture

Results: Table 1 lists the observations after each stirring.

Table 1 Observations of Cleaning Chemistries

| Chemistry | Weight Added (g) | 30 Seconds Observation | 60 Seconds Observation | 3HR Observation | 24HR Observation       |
|-----------|------------------|------------------------|------------------------|-----------------|------------------------|
| 1         | 0.5007           | No mixing              | Same                   | Same            | Same                   |
| 2         | 0.5007           | Some mixing            | Same                   | Same            | Same                   |
| 3         | 0.5014           | Some mixing            | Same                   | Same            | Same                   |
| 4         | 0.5005           | Blue/grey cloudy       | Black                  | Same            | Blue/grey settling out |
| 5         | 0.5009           | Some mixing            | Same                   | Same            | Same                   |
| 6         | 0.4998           | Little mixing          | Same                   | Same            | Same                   |
| 7         | 0.5003           | No mixing              | Same                   | Same            | Same                   |
| 8         | 0.5008           | No mixing              | Same                   | Same            | Same                   |
| 9         | 0.5003           | Some Mixing            | Same                   | Same            | Same                   |
| 10        | 0.4998           | Mixing                 | Lots of mixing         | Black           | Same                   |

Two of the chemistries proved to be effective in cleaning the contaminate. The number 4 and 10 cleaners showed immediate signs of dissolving the carbon black mixture after the first stirring. The number 4 cleaner appeared to dissolve more of the contaminant then the number 10 did. Both improved after the second mixing, again 4 more so than 10. After the third mixing both were about the same. After the final mixing, most of the contaminant was dissolved into solution for number 10. The carbon black started to settle out of cleaner number 4.

Summary:

|                      |  |               |                    |                          |                      |
|----------------------|--|---------------|--------------------|--------------------------|----------------------|
| <b>Substrates:</b>   | Liquid   |               |                    |                          |                      |
| <b>Contaminants:</b> | Carbon Deposits, Mold Releases                         |               |                    |                          |                      |
| <b>Company Name:</b> | <b>Product Name:</b>                                   | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>        | <b>Observations:</b> |
| Simple Green         | Concentrated Industrial Strength Cleaner and Degreaser | 100           | 1.00               | <input type="checkbox"/> |                      |

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|                              |                            |     |       |                                     |  |
|------------------------------|----------------------------|-----|-------|-------------------------------------|--|
| By Pas and Star Products     | Star Cleaning Miracle # 50 | 100 | 2.00  | <input type="checkbox"/>            |  |
| Chrisal USA Inc              | Super CMF 240              | 100 | 3.00  | <input type="checkbox"/>            |  |
| Buckeye International        | Shopmaster                 | 100 | 4.00  | <input checked="" type="checkbox"/> |  |
| Magnaflux                    | Daraclean 232              | 100 | 5.00  | <input type="checkbox"/>            |  |
| Delta Omega Technologies Ltd | DOT 111/113                | 100 | 6.00  | <input type="checkbox"/>            |  |
| Turco Products Inc           | Turco 5948 DPM             | 100 | 7.00  | <input type="checkbox"/>            |  |
| Emkay Chemical Company       | Safety Wash CRC            | 100 | 9.00  | <input type="checkbox"/>            |  |
| Safe CleanUp Solutions       | Super Neutral              | 100 | 10.00 | <input checked="" type="checkbox"/> |  |

**Conclusion:**

Two cleaners, 4-Buckeye Shopmaster and 10-Safe Cleanup Super Neutral, were effective in dissolving the carbon black mixture. MSDSs and Technical data sheets for both have been included with this report. The next test will be to find chemistries which can clean the supplied adhesive. The initial testing will be the same as this experiment.