

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 06/23/2008

Experimenters: Jason Marshall, Shweta Bansal

ClientType: Chemical Company

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Resins/Rosins

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate successful products for longer cleaning times on the resin.

Experimental Procedure: Six products were selected from the previous trial based on successful removal of the resin. Each product was used at full strength in 300 ml glass beakers. Solutions were used at room temperature. Eighteen preweighed aluminum coupons were coated with the Mereco ECN 809 Base Black resin using a swab. Coupons were weighed a second time to determine the amount of soil added. Three coupons were immersed into each product and cleaned for 20 minutes using no agitation. Following cleaning, coupons were rinsed for 15 seconds in tap water at 68 F and dried using air blow off for 30 seconds at room temperature. Final weights were recorded, and efficiencies were calculated.

Results: The extended cleaning time increased the efficiency for all six products. Two products removed more than 90% of the resin, three removed more than 80%. The last product removed just under 80%. The table lists the amount of resin added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| EZ Solv | 1.1997 | 0.0453 | 96.22 |
| | 1.4487 | 0.1141 | 92.12 |
| | 1.3278 | 0.0407 | 96.93 |
| Graffiti Remover SAC | 0.3810 | 0.0188 | 95.07 |
| | 1.8079 | 0.6413 | 64.53 |
| | 1.1350 | 0.1097 | 90.33 |
| Bio T Max | 0.9787 | 0.2780 | 71.59 |
| | 1.0709 | 0.1125 | 89.49 |
| | 1.3291 | 0.3124 | 76.50 |
| Graffiti Remover | 0.6904 | 0.0937 | 86.43 |
| | 0.7785 | 0.1053 | 86.47 |
| | 1.4637 | 0.1189 | 91.88 |
| Smart Solve 605 | 0.5207 | 0.0151 | 97.10 |
| | 0.1691 | 0.0175 | 89.65 |
| | 0.8487 | 0.0266 | 96.87 |
| Floor Finish Remover | 0.5708 | 0.0127 | 97.78 |
| | 1.1040 | 0.2609 | 76.37 |
| | 0.7661 | 0.0835 | 89.10 |

Summary:

| Substrates: | Aluminum | | | | |
|-----------------------------------|---------------------------|--------|-------------|-------------------------------------|---------------|
| Contaminants: | Resins/Rosins | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Gemtek Products | SC EZ Solv Safety Solvent | 100 | 95.09 | <input checked="" type="checkbox"/> | |
| Spartan Chemical Company | Graffiti Remover SAC | 100 | 83.31 | <input checked="" type="checkbox"/> | |
| Bio Chem Systems | Bio T Max | 100 | 79.20 | <input checked="" type="checkbox"/> | |
| Finger Lakes Chemical | Graffiti remover | 100 | 88.26 | <input checked="" type="checkbox"/> | |
| United Laboratories International | Smart Solve 605 | 100 | 94.54 | <input checked="" type="checkbox"/> | |

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| Spartan Chemical Company | Green Solutions Floor Stripper | 100 | 87.75 | <input checked="" type="checkbox"/> | |
|--------------------------|--------------------------------|-----|-------|-------------------------------------|--|

Conclusion:

Additional testing may be conducted to determine the optimum concentration for the products that can be diluted with water.