

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 06/24/2008
 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 at lower concentration

Experimental Procedure: Two products were selected from the previous trial based on successful removal of the resin and had the ability to be diluted. One product was included based on its similarity to a previously tested product which was not dilutable with water. Each of the three products were used at 50% strength in 300 ml glass beakers. Solutions were used at room temperature. Nine 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: Initial immersion for 20 minutes using the diluted solvents only had marginal success with the Smart Solve 605 working the best at 56.57%. The follow up immersion and single wipe improved the effectiveness of the cleaning solvents, with all three removing more than 85%. The table lists the amount of resin added, the amount remaining and the efficiency for each coupon cleaned using immersion cleaning and the results from the wiping action.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Smart Solve 605 | 2.4759 | 1.5069 | 39.14 |
| | 2.2929 | 0.8837 | 61.46 |
| | 1.6702 | 0.5161 | 69.10 |
| Floor Finish Remover | 3.4086 | 3.0423 | 10.75 |
| | 1.7261 | 1.0318 | 40.22 |
| | 1.7160 | 1.2178 | 29.03 |
| Maxi Solv | 3.2685 | 2.6068 | 20.24 |
| | 2.6387 | 1.8270 | 30.76 |
| | 2.4476 | 1.6394 | 33.02 |

Additional 5 minute soak with wiping

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Smart Solve 605 | 1.5069 | 0.0109 | 99.28 |
| | 0.8837 | 0.0537 | 93.92 |
| | 0.5161 | 0.0411 | 92.04 |
| Floor Finish Remover | 3.0423 | 0.4770 | 84.32 |
| | 1.0318 | 0.1447 | 85.98 |
| | 1.2178 | 0.1140 | 90.64 |
| Maxi Solv | 2.6068 | 0.1178 | 95.48 |
| | 1.8270 | 0.3517 | 80.75 |
| | 1.6394 | 0.1857 | 88.67 |

Summary:

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|----------------------|----------------------|---------------|--------------------|-------------------|----------------------|--|
| Substrates: | Aluminum | | | | | |
| Contaminants: | Resins/Rosins | | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |

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|-----------------------------------|--------------------------------|----|-------|-------------------------------------|--|
| United Laboratories International | Smart Solve 605 | 50 | 95.08 | <input checked="" type="checkbox"/> | |
| Spartan Chemical Company | Green Solutions Floor Stripper | 50 | 86.98 | <input checked="" type="checkbox"/> | |
| Gemtek Products | Safe Care (SC) Maxi Solv | 50 | 88.30 | <input checked="" type="checkbox"/> | |

Conclusion:

The same three dilutable products will be tested at longer times without the wipe.