# CLEANING LABORATORY EVALUATION SUMMARY

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|---|---|
| SCL #: | 2009 |
| DateRun: | 01/14/2009 |
| Experimenters: | Jason Marshall, Daniel Pina |
| ClientType: | Wire & Cable Mfr |
| ProjectNumber: | Project #2 |
| Substrates: | Galvinized Steel |
| PartType: | Coupon |
| Contaminants: | Inks |
| Cleaning Methods: | Manual Wipe |
| Analytical Methods: | Gravimetric |
| Purpose: | To evaluate products on ink removal from galvanized steel using manual wiping. |
| Experimental Procedure: | Seven products that were previously tested for client were based on performance. Each product was used at full strength and room temperature. Twenty-one preweighed galvanized steel coupons were coated with the supplied blue ink and allowed to dry. A second weighing was performed to determine the amount of ink added. Three coupons were placed into a Gardner Straight Line Washability unit. A 2-3 mL was applied to the coupons using a squeeze bulb. A Kimberly Clark Wypall X60 reinforced wiper was placed into the cleaning sled and also soaked with the cleaning solution. The machine was run for 30 seconds (~20 cycles), blotted dry with a fresh towel and weighed a final time to determine the effectiveness after 30 seconds. A second 30 second cleaning process was performed on the coupons to determine effectives after one minute of cleaning. |
| Results: | Cleaning after 30 seconds had limited to moderate success for the seven products tested. |

| Cleaner | Initial wt | Final wt | % Removed |
|---|---|---|---|
| DBE 6 | | | |
| | 0.0471 | 0.0293 | 37.79 |
| | 0.0457 | 0.0301 | 34.14 |
| | 0.0648 | 0.0350 | 45.99 |
| Soy Gold 1100 | | | |
| | 0.0461 | 0.0458 | 0.65 |
| | 0.0304 | 0.0300 | 1.32 |
| | 0.0585 | 0.0181 | 69.06 |
| Shopmaster RC | | | |
| | 0.0451 | 0.0199 | 55.88 |
| | 0.0392 | 0.0136 | 65.31 |
| | 0.0525 | 0.0095 | 81.9 |
| SC Soyester | | | |
| | 0.0569 | 0.0203 | 64.32 |
| | 0.0448 | 0.0167 | 62.72 |
| | 0.0378 | 0.0263 | 30.42 |
| Graffiti Remover SAC | | | |
| | 0.0624 | 0.0292 | 53.21 |
| | 0.0549 | 0.0190 | 65.39 |
| | 0.0461 | 0.0190 | 58.79 |
| Smart Solve 605 | | | |
| | 0.0528 | 0.0421 | 20.27 |
| | 0.0430 | 0.0246 | 42.79 |
| | 0.0532 | 0.0328 | 38.35 |
| Bean e Doo | | | |
| | 0.0506 | 0.0316 | 37.55 |
| | 0.0422 | 0.039 | 7.58 |
| | 0.0400 | 0.0321 | 19.75 |

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The additional 30 seconds improved efficiencies by 5-30% for the various products. The overall efficiencies were calculated for the full one minute of cleaning. The final removal rates were based on the data in the next table.

| Cleaner | Initial wt | Final wt | % Removed |
|---|---|---|---|
| DBE 6 | | | |
| | 0.0471 | 0.0224 | 52.44 |
| | 0.0457 | 0.0250 | 45.30 |
| | 0.0648 | 0.0237 | 63.43 |
| Soy Gold 1100 | | | |
| | 0.0461 | 0.0448 | 2.82 |
| | 0.0304 | 0.0226 | 25.66 |
| | 0.0585 | 0.0164 | 71.97 |
| Shopmaster RC | | | |
| | 0.0451 | 0.0104 | 76.94 |
| | 0.0392 | 0.0065 | 83.42 |
| | 0.0525 | 0.0042 | 92.00 |
| SC Soyester | | | |
| | 0.0569 | 0.0138 | 75.75 |
| | 0.0448 | 0.0134 | 70.09 |
| | 0.0378 | 0.0259 | 31.48 |
| Graffiti Remover SAC | | | |
| | 0.0624 | 0.0054 | 91.35 |
| | 0.0549 | 0.0053 | 90.35 |
| | 0.0461 | 0.0021 | 95.44 |
| Smart Solve 605 | | | |
| | 0.0528 | 0.0259 | 50.95 |
| | 0.0430 | 0.0116 | 73.02 |
| | 0.0532 | 0.0219 | 58.83 |
| Bean e Doo | | | |
| | 0.0506 | 0.0184 | 63.64 |
| | 0.0422 | 0.0324 | 23.22 |
| | 0.0400 | 0.0243 | 39.25 |

Summary:

| **Substrates:** | Galvinized Steel |
|---|---|
| **Contaminants:** | Inks |

| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|---|---|---|---|---|---|
| Invista S.a.r.l | Flexisolv DBE 6 ester | 100 | 53.72 | ☑ | |
| AG Environmental Products | Soy Gold 1000 | 100 | 33.48 | ☐ | |
| Buckeye International | Shopmaster RC | 100 | 84.12 | ☑ | |
| Gemtek Products | SC Soyester | 100 | 59.11 | ☑ | |
| Spartan Chemical Company | Graffiti Remover SAC | 100 | 92.38 | ☑ | |
| United Laboratories International | Smart Solve 605 | 100 | 60.93 | ☑ | |
| Franmar Chemical | Bean-e-doo (Parts Washer Solvent) | 100 | 42.03 | ☐ | |

Conclusion: The effective products will be evaluated on the supplied galvanized steel wire housing with ink markings.