

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2012

DateRun: 10/31/2012

Experimenters: Jason Marshall, Loc Nguyen

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: Degreasing evaluation following ASTM G122 or DCC 17 methods

Experimental Procedure: Production soil as described in Green Seal GS 34 was made by mixing 200 ml Quench Oil and 200 ml cutting oil for 20 minutes at room temperature using a magnetic stirrer in a second 750 ml beaker. Approximately 100 mg of each soil was applied to a precleaned and preweighed (initial mass = A) stainless steel coupon onto one side only with a handheld swab. The production soil on the coupons was baked in an oven for thirty minutes at 105° C (220 F). The coupons were then allowed to cool to room temperature and weigh a second time (soiled mass = B).

Three soiled coupons were placed in the tray of the Gardner Straight Line washability unit. Cleaning products were sprayed onto the coated surfaces using 1-3 sprays from manual spray pump and 1-3 sprays onto the reinforced Wypal X60 paper towel attached to the cleaning instrument. The cleaning was performed using Gardner Straight-line washability unit and conducted for the prescribed 5 cycles (10 strokes). The coupons were then weighed to determine amount of soil removed/remaining. A dry Wypal towel was used to remove excess cleaning product from surface if needed). A final dry/clean weight (clean weight = C) was recorded, and soil removal rates were calculated.

Results: Only one product, Misty Painless Stainless, was very effective when no dry towel wipe was employed, removing more than 90% of the soil. The other three removed less than 85% of the soil. However, when using a single dry wipe of the surface, all four removed more than 95% of the soil. Observations made after the initial cleaning revealed that nearly all of the soil was removed and that each cleaning solution left behind residue. This residue resulted in the low efficiencies. The dry wipe was used to only remove the cleaning product residue.

| Cleaner | Initial wt | Final wt | % Removed |
|-------------------------------------|------------|----------|-----------|
| EZ Finishes Wow | 0.0851 | 0.0267 | 68.63 |
| | 0.0876 | 0.0220 | 74.89 |
| | 0.0891 | 0.0132 | 85.19 |
| Bryson Industries Citrushine | 0.0906 | 0.0235 | 74.06 |
| | 0.0926 | 0.0150 | 83.80 |
| | 0.0883 | 0.0094 | 89.35 |
| 3M Stainless Steel Polish & Cleaner | 0.0918 | 0.0205 | 77.67 |
| | 0.0908 | 0.0146 | 83.92 |
| | 0.0910 | 0.0125 | 86.26 |
| Misty Painless Stainless | 0.0915 | 0.0066 | 92.79 |
| | 0.0915 | 0.0080 | 91.26 |
| | 0.0917 | 0.0066 | 92.80 |
| With Wipe | | | |
| EZ Finishes Wow | 0.0851 | 0.0038 | 95.53 |
| | 0.0876 | 0.0042 | 95.21 |
| | 0.0891 | 0.0022 | 97.53 |
| Bryson Industries Citrushine | 0.0906 | 0.0021 | 97.68 |
| | 0.0926 | 0.0024 | 97.41 |
| | 0.0883 | 0.0019 | 97.85 |
| 3M Stainless Steel Polish & Cleaner | 0.0918 | 0.0014 | 98.47 |

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|--------------------------|--------|--------|-------|
| | 0.0908 | 0.0027 | 97.03 |
| | 0.0910 | 0.0023 | 97.47 |
| Misty Painless Stainless | 0.0915 | 0.0015 | 98.36 |
| | 0.0915 | 0.0021 | 97.70 |
| | 0.0917 | 0.0017 | 98.15 |

Summary:

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|----------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Stainless Steel | | | | |
| Contaminants: | Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| 3M | Stainless Steel Cleaner & Polish Aerosol | 100 | 97.66 | <input checked="" type="checkbox"/> | w/o wipe 82.62 |
| Amrep Inc | Misty Painless Stainless A00142 Aerosol | 100 | 98.07 | <input checked="" type="checkbox"/> | w/o wipe 92.28 |
| EZ Finishes Inc. | WOW Stainless Steel Cleaner | 100 | 96.09 | <input checked="" type="checkbox"/> | w/o wipe 76.23 |
| Bryson Industries | Bryson Citrishine SS Polish | 100 | 97.65 | <input checked="" type="checkbox"/> | w/o wipe 82.41 |

Conclusion:

The supplied product was effective at removing the oil mixture from stainless steel using manual wiping and drying.