

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2011
 DateRun: 04/25/2011
 Experimenters: Timothy Weil, Johnny Le
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #1
 Substrates: Glass/Quartz, Chrome
 PartType: Coupon
 Contaminants: Films, Soaps
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric

Purpose: To evaluate supplied products for glass cleaning using manual cleaning

Experimental Procedure: Prew weighed chrome and glass coupons were coated with SSL Soil 2 Glass Soap Scum (SSL Soil 2 (Glass soap scum: Water 51.5%, hair gel 25.6%, toothpaste 10.4%, shaving cream 5.3%, hair spray 3.7% and spray deodorant 3.5%) using a handheld swab and allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.

Three coupons were placed into a Gardner Straight Line Washability unit. A Wypall X60 reinforced wipe was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 5 cycles (~10 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, and efficiencies recorded.

Results: The three products were all successful in removing the glass soap scum from the two surfaces using manual cleaning. The supplied product was the most consistent cleaner (lowest standard deviation) and had the highest average soil removal of the three products. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Orbio 5000SC Glass | Initial | Final | % Removal | Sub Ave | Over All Ave | Std Dev |
|--|---------|--------|--------------|------------|--------------------|------------|
| | 0.0311 | 0.0009 | 97.11 | 92.58 | 91.58 | 3.9 |
| | 0.0369 | 0.0044 | 88.08 | | | |
| | 0.0363 | 0.0027 | 92.56 | | | |
| Orbio 5000SC Chrome | | | | | | |
| | 0.0578 | 0.0032 | 94.46 | 90.58 | | |
| | 0.0300 | 0.0039 | 87.00 | | | |
| | 0.0494 | 0.0048 | 90.28 | | | |
| Windex Glass | | | | | | |
| | 0.0340 | 0.0040 | 88.24 | 80.77 | 88.16 | 9.6 |
| | 0.0375 | 0.0068 | 81.87 | | | |
| | 0.0457 | 0.0127 | 72.21 | | | |
| Windex Chrome | | | | | | |
| | 0.0743 | 0.0026 | 96.50 | 95.54 | | |
| | 0.0459 | 0.0021 | 95.42 | | | |
| | 0.0622 | 0.0033 | 94.69 | | | |
| 7th Gen- glass cleaner Glass | | | | | | |
| | 0.0714 | 0.0118 | 83.47 | 89.03 | 88.80 | 4.1 |
| | 0.0805 | 0.0060 | 92.55 | | | |
| | 0.0729 | 0.0065 | 91.08 | | | |

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|------------------------------|--------|--------|-------|-------|--|--|
| 7th Gen-glass cleaner Chrome | | | | | | |
| | 0.1263 | 0.0142 | 88.76 | 88.57 | | |
| | 0.0380 | 0.0060 | 84.21 | | | |
| | 0.0414 | 0.0030 | 92.75 | | | |

Summary:

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|----------------------|-------------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Glass/Quartz, Chrome | | | | |
| Contaminants: | Films, Soaps | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| SC Johnson & Son Inc | Windex Glass & More Cleaner (Spray) | 100 | 88.16 | <input checked="" type="checkbox"/> | |
| Seventh Generation | Natural Glass and Surface Cleaner | 100 | 88.80 | <input checked="" type="checkbox"/> | |
| Orbio Technologies | Orbio Multi-Surface Cleaner | 100 | 91.58 | <input checked="" type="checkbox"/> | |

Conclusion:

The supplied product worked as well as the two comparative products for glass soil removal using manual wiping.