

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 11/25/2008
 Experimenters: Jason Marshall, Junhee Cho
 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 product for glass cleaning.

Experimental Procedure: The supplied cleaning product was used at the supplied concentration (20:1). A second product, selected by the lab, was diluted with DI water to vendor recommended dilution (0.4%) for glass cleaning. Prew weighed chrome coupons were coated with 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 Kimberly Clark Reinforced paper towel 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 were calculated and recorded.

Results: The supplied product was effective in removing the glass soap scum with a manual wiping action. The table lists the amount of soil initially added and the amount remaining after cleaning and the product efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|--------------------|------------|----------|-----------|
| H2O2-glass | 0.0245 | 0.0021 | 91.43 |
| | 0.0317 | 0.0043 | 86.44 |
| | 0.0303 | 0.0038 | 87.46 |
| H2O2-chrome | 0.0510 | 0.0109 | 78.63 |
| | 0.0412 | 0.0076 | 81.55 |
| | 0.0344 | 0.0052 | 84.88 |
| Green Works-glass | 0.0378 | 0.0099 | 73.81 |
| | 0.0374 | 0.0067 | 82.09 |
| | 0.0455 | 0.0071 | 84.40 |
| Green Works-chrome | 0.0507 | 0.0104 | 79.49 |
| | 0.0454 | 0.0105 | 76.87 |
| | 0.0520 | 0.0105 | 79.81 |

Summary:

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|----------------------|-----------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Glass/Quartz, Chrome | | | | |
| Contaminants: | Films, Soaps | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Cleanline Products | H2O2 Super Citrus Concentrate | 0.4 | 85.06 | <input checked="" type="checkbox"/> | |
| Clorox Company | Green Works Natural Glass Cleaner | 100 | 79.41 | <input type="checkbox"/> | |

Conclusion: The supplied product had an overall average efficiency greater than 85% and would be considered effective based on the SSL testing methodology.