

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010

DateRun: 12/06/2010

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ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Glass/Quartz, Plastic

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: Supplied products were used at the supplied dilution with room temperature water to the requested dilution. Two products were included for comparative purposes, one conventional and one green product. To control for any residue that may be left behind from cleaning solutions, tap water that was used to dilute the products was included, one supplied from the company and the other from the TURI Lab.

Prewriteed chrome, mirror and glass 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 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 top three products for glass cleaning were Glassclene, All Purpose CL2 and Moby - 1750. Each were more effective than Windex and Seventh Generation Glass & Surface cleaner (comparative products). The two tap water samples were among the bottom three in cleaning performance. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-------------------------|------------|----------|-----------|
| Glassclene Pro - glass | | | |
| | 0.0119 | 0.0009 | 92.44 |
| | 0.0230 | 0.0006 | 97.39 |
| | 0.0483 | 0.0008 | 98.34 |
| Glassclene Pro - chrome | | | |
| | 0.0290 | -0.0003 | 101.03 |
| | 0.0365 | 0.0027 | 92.60 |
| | 0.0196 | 0.0016 | 91.84 |
| Glassclene Pro - mirror | | | |
| | 0.0220 | 0.0004 | 98.18 |
| | 0.0243 | 0.0007 | 97.12 |
| | 0.0363 | 0.0021 | 94.21 |
| Windex - glass | | | |
| | 0.0343 | 0.0024 | 93.00 |
| | 0.0330 | 0.0006 | 98.18 |
| | 0.0244 | 0.0014 | 94.26 |
| Windex - chrome | | | |
| | 0.0374 | 0.0011 | 97.06 |
| | 0.0383 | 0.0001 | 99.74 |
| | 0.0382 | 0.0009 | 97.64 |
| Windex - mirror | | | |
| | 0.0233 | 0.0018 | 92.27 |

CLEANING LABORATORY EVALUATION SUMMARY

| | | | |
|-----------------------------|--------|--------|-------|
| | 0.0150 | 0.0022 | 85.33 |
| | 0.0324 | 0.0026 | 91.98 |
| Moby - 1800 - glass | | | |
| | 0.0399 | 0.0020 | 94.99 |
| | 0.0392 | 0.0020 | 94.90 |
| | 0.0319 | 0.0014 | 95.61 |
| Moby - 1800 - chrome | | | |
| | 0.0257 | 0.0037 | 85.60 |
| | 0.0275 | 0.0041 | 85.09 |
| | 0.0343 | 0.0035 | 89.80 |
| Moby - 1800 - mirror | | | |
| | 0.0222 | 0.0029 | 86.94 |
| | 0.0304 | 0.0027 | 91.12 |
| | 0.0395 | 0.0003 | 99.24 |
| Seventh Generation - glass | | | |
| | 0.0402 | 0.0014 | 96.52 |
| | 0.0339 | 0.0014 | 95.87 |
| | 0.0281 | 0.0021 | 92.53 |
| Seventh Generation - chrome | | | |
| | 0.0437 | 0.0028 | 93.59 |
| | 0.0356 | 0.0035 | 90.17 |
| | 0.0370 | 0.0045 | 87.84 |
| Seventh Generation - mirror | | | |
| | 0.0237 | 0.0013 | 94.51 |
| | 0.0284 | 0.0014 | 95.07 |
| | 0.0200 | 0.0011 | 94.50 |
| Anolyte - glass | | | |
| | 0.0261 | 0.0011 | 95.79 |
| | 0.0248 | 0.0010 | 95.97 |
| | 0.0357 | 0.0026 | 92.72 |
| Anolyte - chrome | | | |
| | 0.0358 | 0.0056 | 84.36 |
| | 0.0485 | 0.0054 | 88.87 |
| | 0.0361 | 0.0052 | 85.60 |
| Anolyte - mirror | | | |
| | 0.0389 | 0.0033 | 91.52 |
| | 0.0266 | 0.0023 | 91.35 |
| | 0.0253 | 0.0028 | 88.93 |
| Sanimaster - glass | | | |
| | 0.0468 | 0.0022 | 95.30 |
| | 0.0209 | 0.0019 | 90.91 |
| | 0.0275 | 0.0016 | 94.18 |
| Sanimaster - chrome | | | |
| | 0.0367 | 0.0059 | 83.92 |
| | 0.0448 | 0.0035 | 92.19 |
| | 0.0299 | 0.0031 | 89.63 |
| Sanimaster - mirror | | | |
| | 0.0267 | 0.0014 | 94.76 |
| | 0.0270 | 0.0015 | 94.44 |
| | 0.0311 | 0.0014 | 95.50 |
| All Purpose CL2 - glass | | | |
| | 0.0142 | 0.0010 | 92.96 |

CLEANING LABORATORY EVALUATION SUMMARY

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|--------------------------|--------|--------|-------|
| | 0.0145 | 0.0007 | 95.17 |
| | 0.0197 | 0.0009 | 95.43 |
| All Purpose CL2 - chrome | | | |
| | 0.0278 | 0.0017 | 93.88 |
| | 0.0243 | 0.0017 | 93.00 |
| | 0.0290 | 0.0017 | 94.14 |
| All Purpose CL2 - mirror | | | |
| | 0.0354 | 0.0010 | 97.18 |
| | 0.0458 | 0.0002 | 99.56 |
| | 0.0513 | 0.0010 | 98.05 |
| Moby - 1750 - glass | | | |
| | 0.0474 | 0.0006 | 98.73 |
| | 0.0390 | 0.0006 | 98.46 |
| | 0.0380 | 0.0011 | 97.11 |
| Moby - 1750 - chrome | | | |
| | 0.0525 | 0.0046 | 91.24 |
| | 0.0300 | 0.0045 | 85.00 |
| | 0.0560 | 0.0035 | 93.75 |
| Moby - 1750 - mirror | | | |
| | 0.0477 | 0.0007 | 98.53 |
| | 0.0460 | 0.0006 | 98.70 |
| | 0.0451 | 0.0013 | 97.12 |
| Tap Water (Mn) - glass | | | |
| | 0.0176 | 0.0031 | 82.39 |
| | 0.0122 | 0.0001 | 99.18 |
| | 0.0116 | 0.0002 | 98.28 |
| Tap Water (Mn) - chrome | | | |
| | 0.0163 | 0.0010 | 93.87 |
| | 0.0350 | 0.0033 | 90.57 |
| | 0.0202 | 0.0017 | 91.58 |
| Tap Water (Mn) - mirror | | | |
| | 0.0249 | 0.0015 | 93.98 |
| | 0.0149 | 0.0025 | 83.22 |
| | 0.0186 | 0.0030 | 83.87 |
| Tap Water (MA) - glass | | | |
| | 0.0154 | 0.0024 | 84.42 |
| | 0.0183 | 0.0015 | 91.80 |
| | 0.0179 | 0.0023 | 87.15 |
| Tap Water (MA) - chrome | | | |
| | 0.0247 | 0.0025 | 89.88 |
| | 0.0198 | 0.0026 | 86.87 |
| | 0.0353 | 0.0033 | 90.65 |
| Tap Water (MA) - mirror | | | |
| | 0.0202 | 0.0016 | 92.08 |
| | 0.0129 | 0.0014 | 89.15 |
| | 0.0246 | 0.0017 | 93.09 |

Summary:

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|----------------------|-----------------------|---------------|--------------------|-------------------|----------------------|
| Substrates: | Glass/Quartz, Plastic | | | | |
| Contaminants: | Films, Soaps | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |

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|----------------------|-------------------------------------|-----|-------|-------------------------------------|--------|
| SC Johnson & Son Inc | Windex Glass & More Cleaner (Spray) | 100 | 94.39 | <input checked="" type="checkbox"/> | |
| Seventh Generation | Natural Glass and Surface Cleaner | 100 | 93.40 | <input checked="" type="checkbox"/> | |
| Water | Water | 100 | 90.77 | <input checked="" type="checkbox"/> | MN |
| Water | Water | 100 | 89.45 | <input checked="" type="checkbox"/> | Lowell |
| Servicemaster Clean | Glasscene Pro | 3.9 | 95.91 | <input checked="" type="checkbox"/> | |
| Orbio Technologies | Orbio Moby | | 91.48 | <input checked="" type="checkbox"/> | |
| Orbio Technologies | Orbio Annolyte | 100 | 90.57 | <input checked="" type="checkbox"/> | |

Conclusion:

All of the supplied products removed over 90% of the soil. Only the Anolyte product performed worse than the supplied tap water sample.