

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016

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ClientType: Cleaning Equipment Mfr

ProjectNumber: Project #1

Substrates: Glass/Quartz, Chrome

PartType: Coupon

Contaminants: Films, Soaps

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate three supplied cleaning products for glass soil removal from glass and chrome surfaces.

Experimental Procedure: Three cleaners (Catholyte NaOH, Anolyte Hypochlorous, and Windex) were received "Ready to Use" (RTU). Pre-weighed coupons (three glass, three chrome) were coated with one half of a gram of glass soil, at room temperature, using a hand held swab. The contaminated coupons were air dried for 24 hours at room temperature and weighed again to determine the amount of soil added.

Three coupons of each substrate were placed in the SLW unit and a KC Wypal reinforced paper towel was attached to the cleaning sled and treated with two sprays of cleaning solution. Each coupon was sprayed twice with the same cleaning solution. The cleaning unit was run for 5 cycles (equivalent of 10 seconds of cleaning). Coupons were dried and final weights were recorded. Efficiencies were calculated and recorded.

Results: Each product was evaluated for visual and gravimetric removal of glass soil. The three supplied products removed over 89% of the glass soil on each substrate using the manual wipe unit. After cleaning, glass substrates contained streaking and filming from the glass soil. The Catholyte solution had the best ranking for both streaking and filming when compared to Windex.

| Substrate |            |          |           |           |
|-----------|------------|----------|-----------|-----------|
| Cleaner   | Initial wt | Final wt | % Removed | % Average |
| Glass     |            |          |           |           |
|           | Catholyte  |          |           |           |
|           | 0.0509     | 0.0027   | 94.7      | 95.33     |
|           | 0.0522     | 0.0031   | 94.06     |           |
|           | 0.0471     | 0.0013   | 97.24     |           |
| Anolyte   |            |          |           |           |
|           | 0.0511     | 0.0025   | 95.11     | 92.89     |
|           | 0.0578     | 0.0022   | 96.19     |           |
|           | 0.0578     | 0.0073   | 87.37     |           |
| Windex    |            |          |           |           |
|           | 0.05       | 0.0041   | 91.8      | 91.81     |
|           | 0.0562     | 0.0053   | 90.57     |           |
|           | 0.0518     | 0.0036   | 93.05     |           |
| Chrome    |            |          |           |           |
|           | Catholyte  |          |           |           |
|           | 0.0567     | 0.0062   | 89.07     | 89.75     |
|           | 0.0541     | 0.0045   | 91.68     |           |
|           | 0.0531     | 0.0061   | 88.51     |           |
| Anolyte   |            |          |           |           |
|           | 0.0509     | 0.0036   | 92.93     | 92.92     |
|           | 0.0606     | 0.0048   | 92.08     |           |
|           | 0.0591     | 0.0037   | 93.74     |           |
| Windex    |            |          |           |           |
|           | 0.0626     | 0.0038   | 93.93     | 94.74     |
|           | 0.0568     | 0.0027   | 95.25     |           |
|           | 0.0747     | 0.0037   | 95.05     |           |

Visual

| Cleaner | Streaking | Film |
|---------|-----------|------|
|---------|-----------|------|

## CLEANING LABORATORY EVALUATION SUMMARY

|           | Tester<br>1 | Tester<br>2 | Tester<br>3 | Ave  | Tester<br>1 | Tester<br>2 | Tester<br>3 | Ave  |
|-----------|-------------|-------------|-------------|------|-------------|-------------|-------------|------|
| Glass     |             |             |             |      |             |             |             |      |
| Catholyte | 3           | 3           | 2.5         | 2.17 | 1.5         | 1           | 3           | 1.89 |
|           | 2.5         | 3           | 2           | 3    | 2           | 3           |             |      |
|           | 1.5         | 1           | 1           | 1.5  | 1           | 1           |             |      |
| Anolyte   | 4           | 2           | 3.5         | 2.28 | 3.5         | 2           | 2.5         | 2.72 |
|           | 3           | 2           | 1.5         | 2    | 1           | 2           |             |      |
|           | 1.5         | 1           | 2           | 4.5  | 3           | 4           |             |      |
| Windex    | 4.5         | 4           | 4           | 4    | 3.5         | 2           | 3.5         | 3.28 |
|           | 6           | 3           | 4           | 5    | 4           | 4           |             |      |
|           | 4           | 3           | 3.5         | 3    | 2           | 2.5         |             |      |

Summary:

|                      |                                     |               |                    |                                     |                      |  |
|----------------------|-------------------------------------|---------------|--------------------|-------------------------------------|----------------------|--|
| <b>Substrates:</b>   | Glass/Quartz, Chrome                |               |                    |                                     |                      |  |
| <b>Contaminants:</b> | Films, Soaps                        |               |                    |                                     |                      |  |
| <b>Company Name:</b> | <b>Product Name:</b>                | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |  |
| SC Johnson & Son Inc | Windex Glass & More Cleaner (Spray) | 100           | 92.38              | <input checked="" type="checkbox"/> | Streak 4, Film 3.3   |  |
| Annihilare           | Free (Catholyte)                    | 100           | 92.54              | <input checked="" type="checkbox"/> | Streak 2.2, Film 1.9 |  |
| Annihilare           | Annihilyte General Purpose Cleaner  | 100           | 92.91              | <input checked="" type="checkbox"/> | Streak 2.3, Film 2.7 |  |

Conclusion:

Catholyte NaOH, Anolyte Hypochlorous, and Windex efficiently removed Glass Soil on glass and chrome using the Manual SLW Unit. The Catholyte solution had the least amount of streaking and filming.