

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014  
 DateRun: 09/16/2014  
 Experimenters: Loc Nguyen, Digvijay Devkota  
 ClientType: Cleaning Equipment Mfr  
 ProjectNumber: Project #1  
 Substrates: Glass/Quartz  
 PartType: Coupon  
 Contaminants: Films, Soaps  
 Cleaning Methods: Manual Wipe  
 Analytical Methods: Gravimetric, Visual  
 Purpose: Comparative product was used at the supplied ready to use dilution.

**Experimental Procedure:** Prew weighed 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 1 spray of cleaning solutions. Each coupon was sprayed 1 time 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 measured and efficiencies recorded. Visual observations were made on the coupons for spotting and filming following the general guidelines set forth in the CSPA DCC 09A. Filming is best recognized as "haziness" or overall "miliness", while streaking is best identified as dried droplets or "spotting", usually found strung together into thin white lines. Each coupon was evaluated separately for filming and streaking, (i.e., product residues without added soil), according to a scale of "1" to "7" where:

| Filming                | Streaking  |
|------------------------|--|
| 7 = high filming       | 7 = high streaking (poor performance)            |
| 1 = no visible filming | 1 = no visible streaking (excellent performance) |

Chemistries Evaluated: Force of Nature; Windex;

| Cleaner                      | Initial wt | Final wt | % Removed |
|------------------------------|------------|----------|-----------|
| ForceOfNature_SSLSoil2_Glass |            |          |           |
|                              | 0.0416     | 0.0031   | 92.55     |
|                              | 0.0452     | 0.0036   | 92.04     |
|                              | 0.0385     | 0.0017   | 95.58     |
| ForceOfNature_SSLSoil2_Glass |            |          |           |
|                              | 0.0769     | 0.0036   | 95.32     |
|                              | 0.0561     | 0.0030   | 94.65     |
|                              | 0.0790     | 0.0034   | 95.7      |
| ForceOfNature_SSLSoil2_Glass |            |          |           |
|                              | 0.0747     | 0.0017   | 97.72     |
|                              | 0.0691     | 0.0015   | 97.83     |
|                              | 0.0522     | 0.0008   | 98.47     |
| Windex_SSLSoil2_Glass        |            |          |           |
|                              | 0.1006     | 0.0071   | 92.94     |
|                              | 0.0740     | 0.0058   | 92.16     |
|                              | 0.0814     | 0.0036   | 95.58     |
| Windex_SSLSoil2_Glass        |            |          |           |
|                              | 0.0921     | 0.0097   | 89.47     |
|                              | 0.0618     | 0.0039   | 93.69     |
|                              | 0.1034     | 0.0036   | 96.52     |
| Windex_SSLSoil2_Glass        |            |          |           |
|                              | 0.0499     | 0.0017   | 96.59     |

## CLEANING LABORATORY EVALUATION SUMMARY

|  |        |        |       |
|--|--------|--------|-------|
|  | 0.0490 | 0.0021 | 95.71 |
|  | 0.0637 | 0.0039 | 93.88 |

### Visual Observations

| Cleaners        | Subs  | S1  | F1 | S2  | F2  | S3  | F3  | Avg. S | Avg. F |
|-----------------|-------|-----|----|-----|-----|-----|-----|--------|--------|
| Force of Nature | Glass | 5   | 3  | 5   | 2.5 | 4   | 2   | 4.67   | 2.5    |
| Force of Nature | Glass | 4   | 2  | 5   | 2   | 3   | 2   | 4      | 1.5    |
| Force of Nature | Glass | 3   | 3  | 4.5 | 1.5 | 2   | 1.5 | 3.17   | 1.5    |
| Force of Nature | Glass | 4   | 4  | 4   | 3   | 5   | 4   | 4.33   | 2.75   |
| Force of Nature | Glass | 5   | 4  | 3   | 3   | 4   | 4   | 4      | 2.75   |
| Force of Nature | Glass | 3   | 2  | 3   | 2.5 | 3   | 3   | 3      | 1.88   |
| Force of Nature | Glass | 2   | 2  | 3   | 2   | 2   | 2   | 2.33   | 1.5    |
| Force of Nature | Glass | 2   | 1  | 2.5 | 2   | 1.5 | 1.5 | 2      | 1.13   |
| Force of Nature | Glass | 2   | 1  | 2   | 1.5 | 1.5 | 1.5 | 1.83   | 1      |
| Windex          | Glass | 4   | 3  | 3.5 | 3.5 | 4   | 3.5 | 3.83   | 2.5    |
| Windex          | Glass | 3   | 3  | 4   | 3   | 3   | 3.5 | 3.33   | 2.38   |
| Windex          | Glass | 4   | 5  | 4   | 5   | 4   | 5   | 4      | 3.75   |
| Windex          | Glass | 6   | 4  | 6   | 4   | 6   | 4   | 6      | 3      |
| Windex          | Glass | 4   | 2  | 5   | 3   | 4.5 | 3   | 4.5    | 2      |
| Windex          | Glass | 3   | 6  | 4   | 6   | 5   | 6   | 4      | 4.5    |
| Windex          | Glass | 4   | 6  | 4   | 6   | 4   | 6   | 4      | 4.5    |
| Windex          | Glass | 6   | 2  | 6   | 4   | 6   | 3   | 6      | 2.25   |
| Windex          | Glass | 6.5 | 3  | 6   | 3   | 6.5 | 4   | 6.33   | 2.5    |

### Summary:

|                                |                                     |               |                    |                                     |                          |
|--------------------------------|-------------------------------------|---------------|--------------------|-------------------------------------|--------------------------|
| <b>Substrates:</b>             | Glass/Quartz                        |               |                    |                                     |                          |
| <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>     |
| Healthier Cleaning Innovations | Force of Nature                     | 100           | 95.54              | <input checked="" type="checkbox"/> | Film - 1.83; Streak 3.26 |
| SC Johnson & Son Inc           | Windex Glass & More Cleaner (Spray) | 100           | 94.06              | <input checked="" type="checkbox"/> | Film 3.04; Streak 4.67   |

### Conclusion:

The Force of Nature cleaning solution cleaned a little bit more than the Windex comparative product. This translated to a much better rating for both streaking and filming, showing that Force of Nature performed as a better glass cleaning product.