

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005  
 DateRun: 05/15/2005  
 Experimenters: Jason Marshall, Ephraim Massawe  
 ClientType: Lab  
 ProjectNumber: Project #1  
 Substrates: Glass/Quartz  
 PartType: Coupon  
 Contaminants: Dirt, Fingerprints, Films  
 Cleaning Methods: Manual Wipe  
 Analytical Methods: Visual  
 Purpose: Laboratory evaluations of alternative cleaning products

**Experimental Procedure:** Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Fourteen products, including water were selected to determine their performance on glass window cleaning. The products were used at the dilution ratios as recommended by their manufacturers. Two products were used full strength; two at 10%; and one product at 25% and another at 20%. All other remaining products were used at concentrations less than 10%. Water was used as a universal solvent for comparative purposes.

Two hundred mills of each product were placed in a spraying bottle. The bottle was adjusted to the spraying mode and directed to a portion of the glass window followed by manual cleaning using paper towels. Paper towels were changed as soon as they got dirty. This was repeated until the paper towels had no more dirt stains on them. The remaining volume of cleaner was measured and the volume used for cleaning the window was determined by difference.

**Results:** All products showed tremendous performance (efficiencies were above 90%), some reaching 99%. For example, water performed equally well but a lot more energy had to be used for manual wiping.

| Product                   | #Paper Towels | ~Vol Used |
|---------------------------|---------------|-----------|
| Oasis 255                 | 5             | 80        |
| Gemtek SC More than Glass | 4             | 50        |
| Bi-O-Kleen Glass          | 5             | 105       |
| Glass and Hard Surface    | 4             | 100       |
| Stay Clean Colloidal      | 5             | 100       |
| Super H2O2                | ~5            | 115       |
| EZ Safe Solutions Cleaner | ~5            | 90        |
| VPW SC 1000               | 5             | 85        |
| Rochester Glass           | ~5            | 98        |
| 101 Neutral (0.2%)        | ~5            | 105       |
| 101 Neutral (1.0%)        | ~5            | 115       |
| H2Orange2 (0.8%)          | ~5            | 105       |
| H2Orange2 (1.0%)          | ~5            | 90        |
| Water                     | ~7            | 125       |

**Summary:**

|  |   |               |                    |                                     |                      |
|--|---|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>                       | Glass/Quartz  |               |                    |                                     |                      |
| <b>Contaminants:</b>                     | Dirt, Fingerprints, Films   |               |                    |                                     |                      |
| <b>Company Name:</b>                     | <b>Product Name:</b>  | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| EcoLab                                   | Oasis 255 Glass Cleaner   | 100           |                    | <input checked="" type="checkbox"/> |                      |
| Gemtek Products                          | SC More Than Glass Cleaner  | 100           |                    | <input checked="" type="checkbox"/> |                      |
| Bi-O-Kleen Industries                    | Bi-O-Kleen Glass Cleaner  | 10            |                    | <input checked="" type="checkbox"/> |                      |
| The Clean Environment Co                 | Glass and Hard Surface Cleaner                                      | 25            |                    | <input checked="" type="checkbox"/> |                      |
| 1st Envirosafety Inc. - No Longer Exists | Stay Cleaner Colloidal Glass Cleaner - For Comparison Purposes Only | 6.7           |                    | <input checked="" type="checkbox"/> |                      |

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|                               |                                       |     |  |                                     |  |
|-------------------------------|---------------------------------------|-----|--|-------------------------------------|--|
| Cleanline Products            | H2O2 Super Citrus Concentrate         | 0.4 |  | <input checked="" type="checkbox"/> |  |
| Orison Marketing              | EZ Safe Solutions Cleaner Concentrate | 10  |  | <input checked="" type="checkbox"/> |  |
| Orison Marketing              | VPW SC 1000                           | 20  |  | <input checked="" type="checkbox"/> |  |
| Rochester Midland Corporation | EnviroCare Glass Cleaner              | 3   |  | <input checked="" type="checkbox"/> |  |
| Next-Gen Supply Group         | PC 101 Neutral and Glass Cleaner      | 0.2 |  | <input checked="" type="checkbox"/> |  |
| Next-Gen Supply Group         | PC 101 Neutral and Glass Cleaner      | 1   |  | <input checked="" type="checkbox"/> |  |
| EnvirOx LLC                   | H2Orange2                             | 0.8 |  | <input checked="" type="checkbox"/> |  |
| EnvirOx LLC                   | H2Orange2                             | 1   |  | <input checked="" type="checkbox"/> |  |
| Water                         | Water                                 | 100 |  | <input type="checkbox"/>            |  |

Conclusion: All alternatives performed well on the glass window with the exception of a few which showed marks of dirt that remained on the window.