

# CLEANING LABORATORY EVALUATION SUMMARY

| SCL #:                  | 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|-------------------------------------|-------------------------------|--------|--------|----------------------|-------|-------|--------|--------|-------|----------------------|----------------------|---------------|--------------------|-------------------|----------------------|----------------|-----------|--------|--------|-------------------------------------|-------------------------------|--|--------|--------|-------|
| DateRun:                | 07/31/2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Experimenters:          | Jason Marshall, Heidi Wilcox                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| ClientType:             | State Agency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| ProjectNumber:          | Project #2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Substrates:             | Glass/Quartz, Chrome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| PartType:               | Coupon                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Contaminants:           | Soaps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Cleaning Methods:       | Manual Wipe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Analytical Methods:     | Gravimetric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Purpose:                | To reevaluate selected cleaner for glass cleaning at vendor recommended dilution ratio.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Experimental Procedure: | <p>The supplied cleaning product was diluted to vendor recommended concentration for glass cleaning. The products was diluted with DI water. Three preweighed chrome and three glass coupons were coated with SSL Soil 2 (Glass soap scum: Colgate Regular shaving cream 5.3%, Arid Extra Extra Spray Deodorant 3.5%, Suave Naturals Flexible Hold hair spray 3.7%, Aleeda Texurizing hair gel 25.6% Colgate Total toothpaste 10.4%, Water 51.5%) by pump spraying the mix. The soil was allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.</p> <p>Three coupons were placed into a Gardner Straight Line Washability unit. A Professional Painter's Rag 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 cleaning unit was run for 5 cycles (~9 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded. Efficiencies were calculated and recorded.</p> <p>Product Dilution Ratio<br/>Ramsey Free Fall 256:1</p> |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Results:                | <p>The product was successful in removing the soil from the glass substrates. The table below lists the amount of soil applied and removed from the coupons.</p> <p>Table 1. Soil Removal</p> <table border="1"> <thead> <tr> <th>Cleaner</th> <th>Initial wt</th> <th>Final wt</th> <th>% Removed</th> </tr> </thead> <tbody> <tr> <td>Ramsey</td> <td>0.0690</td> <td>0.0031</td> <td>95.51</td> </tr> <tr> <td>Glass</td> <td>0.0581</td> <td>0.0009</td> <td>98.45</td> </tr> <tr> <td></td> <td>0.0658</td> <td>0.0022</td> <td>96.66</td> </tr> <tr> <td>Ramsey</td> <td>0.0711</td> <td>0.0011</td> <td>98.45</td> </tr> <tr> <td>Chrome</td> <td>0.0924</td> <td>0.0054</td> <td>94.16</td> </tr> <tr> <td></td> <td>0.0881</td> <td>0.0016</td> <td>98.18</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                         | Cleaner            | Initial wt           | Final wt                            | % Removed                     | Ramsey | 0.0690 | 0.0031               | 95.51 | Glass | 0.0581 | 0.0009 | 98.45 |                      | 0.0658               | 0.0022        | 96.66              | Ramsey            | 0.0711               | 0.0011         | 98.45     | Chrome | 0.0924 | 0.0054                              | 94.16                         |  | 0.0881 | 0.0016 | 98.18 |
| Cleaner                 | Initial wt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Final wt           | % Removed            |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Ramsey                  | 0.0690                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0031             | 95.51                |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Glass                   | 0.0581                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0009             | 98.45                |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
|                         | 0.0658                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0022             | 96.66                |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Ramsey                  | 0.0711                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0011             | 98.45                |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Chrome                  | 0.0924                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0054             | 94.16                |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
|                         | 0.0881                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0016             | 98.18                |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Summary:                | <table border="1"> <tr> <td><b>Substrates:</b></td> <td colspan="5">Glass/Quartz, Chrome</td> </tr> <tr> <td><b>Contaminants:</b></td> <td colspan="5">Soaps</td> </tr> <tr> <td><b>Company Name:</b></td> <td><b>Product Name:</b></td> <td><b>Conc.:</b></td> <td><b>Efficiency:</b></td> <td><b>Effective:</b></td> <td><b>Observations:</b></td> </tr> <tr> <td>Ramsey Company</td> <td>Free Fall</td> <td>0</td> <td>96.90</td> <td><input checked="" type="checkbox"/></td> <td>Glass - 96.87, Chrome - 96.93</td> </tr> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Substrates:</b> | Glass/Quartz, Chrome |                                     |                               |        |        | <b>Contaminants:</b> | Soaps |       |        |        |       | <b>Company Name:</b> | <b>Product Name:</b> | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b> | <b>Observations:</b> | Ramsey Company | Free Fall | 0      | 96.90  | <input checked="" type="checkbox"/> | Glass - 96.87, Chrome - 96.93 |  |        |        |       |
| <b>Substrates:</b>      | Glass/Quartz, Chrome                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| <b>Contaminants:</b>    | Soaps                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| <b>Company Name:</b>    | <b>Product Name:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Conc.:</b>      | <b>Efficiency:</b>   | <b>Effective:</b>                   | <b>Observations:</b>          |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Ramsey Company          | Free Fall                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0                  | 96.90                | <input checked="" type="checkbox"/> | Glass - 96.87, Chrome - 96.93 |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |
| Conclusion:             | The product was successful at the vendor recommended dilution ratio.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                      |                                     |                               |        |        |                      |       |       |        |        |       |                      |                      |               |                    |                   |                      |                |           |        |        |                                     |                               |  |        |        |       |