

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2018  
 DateRun: 10/15/2018  
 Experimenters: Sabrina Apel, Ted Kearney  
 ClientType: Cleaner Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Marble  
 PartType: Coupon  
 Contaminants: Calcium/lime  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric

Purpose: To evaluate bathroom cleaners on effectiveness of cleaning water stains from marble pieces.

Experimental Procedure: To test the descaling performance, the marble block test method was used. In this test, a marble block is submerged for a period of time in five cleaner solutions. The weight of the marble block was measured before the immersion and after the immersion. Marble is chemically similar to hard water stains in that they both are made up of calcium carbonate. Results can be expressed in number of grams lost over time during the immersion process. This method is widely used due to its simplicity but has some restrictions. One such limitation is how other soils typically mixed with hard water stains are not taken into consideration.

Several marble chunks of similar size were weighed to determine the baseline weight of each piece. The marble chunks were then immersed in the five supplied products at vendor recommended dilutions and allowed to soak for 18 hours. For the first hour the marble chunks were taken out of the solutions every 5 minutes rinsed under deionized water, patted down to dry and then weighed. After the weight was taken after every 5 minutes for the first hour the marble chunks were then immersed in the solutions for the rest of the test (17 hours). The marble chunks were then removed after the full 18 hours and rinsed in a deionized water spray at 120 F for 3 minutes to remove any loose material from the chunks. The marble chunks were then dried for 15 minutes using a Master Appliance Heat gun at 500 F. When the marble chunks cooled to room temperature, final weights were recorded to determine weight loss, if any.

| Product  | Initial Wt Marble Chunk | Final Wt Marble Chunk | Wt Loss/Gain | % Change |
|--|-------------------------|-----------------------|--------------|----------|
| Fas-Pak MF Deep Foam Spray                       | 13.5090                 | 13.5038               | 0.0052       | 0.04     |
| Lysol Toilet Bowl Cleaner                        | 9.0236                  | 0.0000                | 9.0236       | 100      |
| Lysol Toilet Bowl Cleaner with Hydrogen Peroxide | 15.2679                 | 15.1591               | 0.1088       | 0.72     |
| Clorox Toilet Cleaning Gel                       | 18.8138                 | 18.4995               | 0.3143       | 1.67     |
| Scrubbing Bubbles Bubbly Bleach Gel              | 16.8353                 | 16.8327               | 0.0026       | 0.02     |

| Substrates:          |  | Marble       |             |                                     |                   |
|----------------------|--|--------------|-------------|-------------------------------------|-------------------|
| Contaminants:        |  | Calcium/lime |             |                                     |                   |
| Company Name:        | Product Name:                                    | Conc.:       | Efficiency: | Effective:                          | Observations:     |
| Fas-Pak Inc          | MF Deep Foam Spray                               | 100          |             | <input type="checkbox"/>            | Weight loss 0.04% |
| Reckitt Benckiser    | Lysol Power Toilet Bowl Cleaner                  | 100          |             | <input checked="" type="checkbox"/> | Weight loss 100%  |
| Reckitt Benckiser    | Lysol Toilet Bowl Cleaner with Hydrogen Peroxide | 100          |             | <input checked="" type="checkbox"/> | Weight loss 0.72% |
| Clorox Company       | Clorox Toilet Cleaning Gel                       | 100          |             | <input checked="" type="checkbox"/> | Weight loss 1.6%  |
| SC Johnson & Son Inc | Scrubbing Bubbles                                | 100          |             | <input type="checkbox"/>            | Weight loss 0.02% |

Conclusion: The supplied product had the second least weight loss (0.0052 g) when compared to conventional products of the same field of cleaning products. The most effective cleaner in terms of weight loss was Scrubbing Bubbles Bubbly Bleach Gel, with a loss of 0.0026 grams over 18 hours. The supplied product, Fas-Pak MF Deep Foam Spray would be recommended to clean marble surfaces contaminated with water stains.