

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016

DateRun: 01/05/2016

Experimenters: Luis Raudales, Alicia McCarthy

ClientType: Cleaner Manufacturer

ProjectNumber: Project #7

Substrates: Ceramics, Plastic, Stainless Steel

PartType: Coupon

Contaminants: Films, Soaps

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate three all-purpose cleaners supplied products for Bathroom Soil SSL-1 removal from various surfaces.

Experimental Procedure: Two cleaners, Lav Safe and Soap Scum, were both received "Ready to Use" (RTU). The third cleaner, Soap Scum Concentrate, was diluted at the recommended 15.6; (1:6.4) with tap water at room temperature (68°F). Nine pre-weighed coupons per cleaner (three Ceramic, three Plastic and three Stainless steel) were coated with one gram of Bathroom Soil SSL-1 (containing All-in-one shampoo and conditioner 28.6%, Dry skin lotion 21.4%, Liquid hand soap 21.4%, Liquid body wash 14.3%, Deodorant bar soap 7.2% and water 7.1%) at room temperature using a handheld swab. The contaminated coupons were air dried for 24 hours at room temperature and weighed again to determine the amount of soil added the following day.

The three coupons of each substrate were placed in the SLW equipment, and a KC Wypal reinforced paper towel was attached to the cleaning sled and soaked with two sprays of cleaning solution. Each coupon was sprayed twice with the same cleaning solution. The cleaning unit was run for 20 cycles (30 sec). At the end of the cleaning cycle, the coupons were wiped once with a dry paper towel. Coupons dried overnight and final weights were recorded. Efficiencies were calculated and recorded.

Cleaners evaluated: Soap Scum by EnvirOx; Soap Scum Conc. by EnvirOx, LAV Safe by MD Stetson Co Inc.

Results: After 20 cycles (30 seconds) on the SLW equipment, Lav Safe was most effective on ceramic and polycarbonate substrates. It had a harder time removing the Bathroom Soil from stainless steel. Soap Scum RTU was the least effective out of all of the cleaners on all the substrates. Soap Scum Conc. (1:6.4) had similar removal of soil from substrates as Lav Safe and had similar issues with removal of soil from stainless steel.

| Cleaner                 | Substrate       | Initial wt | Final wt | % Removed | %Average | %Overall Ave |
|-------------------------|-----------------|------------|----------|-----------|----------|--------------|
| Soap Scum RTU           |                 |            |          |           |          |              |
|                         | Ceramic         | 0.2814     | 0.0618   | 78.04     | 79.47    | 78.30        |
|                         |                 | 0.3073     | 0.0831   | 72.96     |          |              |
|                         |                 | 0.4163     | 0.0523   | 87.44     |          |              |
|                         |                 |            |          |           |          |              |
|                         | Polycarbonate   | 0.3356     | 0.1019   | 69.64     | 74.95    |              |
|                         |                 | 0.3297     | 0.0456   | 86.17     |          |              |
|                         |                 | 0.4520     | 0.1399   | 69.05     |          |              |
|                         |                 |            |          |           |          |              |
|                         | Stainless Steel | 0.3456     | 0.0890   | 74.25     | 80.48    |              |
|                         |                 | 0.3917     | 0.0529   | 86.49     |          |              |
|                         |                 | 0.4162     | 0.0803   | 80.71     |          |              |
|                         |                 |            |          |           |          |              |
| Soap Scum Conc. (1:6.4) |                 |            |          |           |          |              |
|                         | Ceramic         | 0.2993     | 0.0572   | 80.89     | 80.38    | 80.71        |
|                         |                 | 0.3033     | 0.0826   | 72.77     |          |              |
|                         |                 | 0.3321     | 0.0415   | 87.50     |          |              |
|                         |                 |            |          |           |          |              |

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|          |               |        |        |       |       |       |
|----------|---------------|--------|--------|-------|-------|-------|
|          | Polycarbonate | 0.3444 | 0.0213 | 93.82 | 90.23 |       |
|          |               | 0.3439 | 0.0258 | 92.50 |       |       |
|          |               | 0.3833 | 0.0599 | 84.37 |       |       |
|          |               |        |        |       |       |       |
|          | Painted metal | 0.2760 | 0.1127 | 59.17 | 71.52 |       |
|          |               | 0.2633 | 0.0638 | 75.77 |       |       |
|          |               | 0.2764 | 0.0563 | 79.63 |       |       |
|          |               |        |        |       |       |       |
| Lav Safe |               |        |        |       |       |       |
|          | Ceramic       | 0.3419 | 0.0122 | 96.43 | 87.08 | 85.55 |
|          |               | 0.3021 | 0.0308 | 89.80 |       |       |
|          |               | 0.2934 | 0.0733 | 75.02 |       |       |
|          |               |        |        |       |       |       |
|          | Polycarbonate | 0.3354 | 0.0115 | 96.57 | 96.36 |       |
|          |               | 0.3776 | 0.0110 | 97.09 |       |       |
|          |               | 0.3386 | 0.0155 | 95.42 |       |       |
|          |               |        |        |       |       |       |
|          | Painted metal | 0.3487 | 0.0907 | 73.99 | 73.20 |       |
|          |               | 0.3077 | 0.0943 | 69.35 |       |       |
|          |               | 0.3334 | 0.0221 | 93.37 |       |       |

Summary:

|                       |                              |                                    |                    |                                     |                      |  |
|-----------------------|------------------------------|------------------------------------|--------------------|-------------------------------------|----------------------|--|
| <b>Substrates:</b>    |                              | Ceramics, Plastic, Stainless Steel |                    |                                     |                      |  |
| <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> |  |
| Next-Gen Supply Group | LAV Safe 8                   | 100                                | 85.55              | <input checked="" type="checkbox"/> |                      |  |
| Envirox LLC           | Hard Water/Soap Scum Remover | 100                                | 78.43              | <input type="checkbox"/>            |                      |  |
| Envirox LLC           | Hard Water/Soap Scum Remover | 15.6                               | 80.71              | <input checked="" type="checkbox"/> |                      |  |

Conclusion:

At the end of the cycle (30 sec), Envirox Soap Scum RTU had the lowest removal rate of the Bathroom Soil SSL-1, followed by the concentrate and the comparative bathroom cleaning product Lav Safe. However, with the standard deviations factored in, the two supplied products could be considered to be comparable to the industry non-green product.