

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007

DateRun: 11/16/2007

Experimenters: Shweta Bansal

ClientType: Lab

ProjectNumber: Project #1

Substrates: Ceramics, Fiberglass, Chrome

PartType: Coupon

Contaminants: Films, Soaps

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: Laboratory evaluations of alternative cleaning products

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Several "do-it-yourself" home formulations were evaluated for performance on several substrates and typical soils for bathroom cleaning.

Cleaning: Spray cleaner on the coupons
30 secs Manual Wipe cleaning at 130 F
Contaminant SSL Soil 1 - Bathroom Soil
Substrate 2"x 4"x 0.06"
Chrome Plated
Ceramic Coupons
Fiberglass Coupons (3"x 4.5"x 0.125")

Bathroom Cleaners - Toilet
Home Formulation 17 - Baking soda and vinegar – sprinkle baking soda in bowl, then squirt with vinegar and scrub. Cleans & deodorizes

Home Formulation 18 - Borax and lemon juice or vinegar removes stubborn stains like toilet bowl ring. Make a paste with the borax and lemon juice. For a tough stain flush toilet to wet the bowl and then apply the paste to the stain and let sit for 2 hrs.

Home Formulation 19 - Denture tabs are good substitute for toilet cleaner. Drop 2 tablets in the bowl and scrub as usual.

Home Formulation 20 - Liquid castile soap and baking soda or borax & scrub toilet

Home Formulation 21 - Baking soda and Murphy's oil soap. Sprinkle baking soda in the wet bowl. Add a couple drops of soap and scrub bowl. Flush toilet to rinse.

Results:

| Product | Substrate | Average (%) |
|----------------|---------------|-------------|
| Formulation 17 | Chrome Plated | -38.49 |
| | Ceramic | -22.65 |
| | Fiberglass | -175.30 |
| Formulation 18 | Chrome plated | -125.48 |
| | Ceramic | -59.01 |
| | Fiberglass | -18.04 |
| Formulation 19 | Chrome Plated | 79.78 |
| | Ceramic | 46.38 |
| | Fiberglass | 104.75 |
| Formulation 20 | Chrome Plated | -332.75 |
| | Ceramic | -287.95 |
| | Fiber Glass | -438.26 |
| Formulation 21 | Chrome Plated | -346.59 |
| | Ceramic | -274.46 |
| | Fiber Glass | -494.98 |

Summary:

| | |
|----------------------|------------------------------|
| Substrates: | Ceramics, Fiberglass, Chrome |
| Contaminants: | Films, Soaps |

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| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|--------------------|---------------------|--------|-------------|-------------------------------------|---------------|
| No Specific Vendor | Home Formulation 17 | 100 | -70.81 | <input type="checkbox"/> | |
| No Specific Vendor | Home Formulation 18 | 100 | -67.51 | <input type="checkbox"/> | |
| No Specific Vendor | Home Formulation 19 | 100 | 76.97 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 20 | 100 | -352.99 | <input type="checkbox"/> | |
| No Specific Vendor | Home Formulation 21 | 100 | -372.01 | <input type="checkbox"/> | |

Conclusion:

Many of the mixtures left behind a lot of residue when using the standard laboratory procedures for commercial cleaning products. Modification of the cleaning process may improve the effectiveness of these "do-it-yourself" formulations. Formulation 19 was the only product to remove over 75% of the bathroom soil using manual wiping.