

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007

DateRun: 11/20/2007

Experimenters: Shweta Bansal

ClientType: Lab

ProjectNumber: Project #1

Substrates: Glass/Quartz, 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 glass cleaning.

Cleaning: Spray cleaner on the coupons
10 secs Manual Wipe cleaning at 130 F
Contaminant: SSL Soil 2 - Glass
Substrate 2"x 4"x 0.06
Glass Coupons
Chrome Coupons
Window & Glass cleaners
Home Formulation 10 - Undiluted vinegar in a bottle
Home Formulation 11 - Equal parts vinegar and water in a bottle
Home Formulation 12 - ½ cup lemon juice and 2 cups water in a spray bottle
Home Formulation 13 - ½ cup vinegar or lemon juice, 2 cups water, ¼ tsp veg oil-based soap (Murphy's) and put in bottle
Home Formulation 14 - ½ cup cornstarch with 2 qts warm water. Apply with sponge and wipe with absorbent towel or cloth. NOTE, do not do on a sunny day or when windows are warm. Solution will dry and cause streaking
Home Formulation 15 - NO Streak Glass Cleaning, ¼ cup white vinegar, 1tbsp corn starch and 1-quart warm water.
Home Formulation 16 - Rubbing alcohol will also clean windows and glass

Results:

| Product | Substrate | Average (%) |
|----------------|---------------|-------------|
| Formulation 10 | Glass | 90.05 |
| | Chrome Plated | 80.72 |
| Formulation 11 | Glass | 86.61 |
| | Chrome Plated | 89.1 |
| Formulation 12 | Glass | 82.81 |
| | Chrome Plated | 89 |
| Formulation 13 | Glass | 76.63 |
| | Chrome Plated | 83.4 |
| Formulation 14 | Glass | 80.21 |
| | Chrome Plated | 77.82 |
| Formulation 15 | Glass | 80.59 |
| | Chrome Plated | 87.28 |
| Formulation 16 | Glass | 85.39 |
| | Chrome Plated | 100.04 |

Summary:

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| | | | | | |
|----------------------|----------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Glass/Quartz, Chrome | | | | |
| Contaminants: | Films, Soaps | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| No Specific Vendor | Home Formulation 10 | 100 | 85.39 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 11 | 100 | 87.86 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 12 | 100 | 85.91 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 13 | 100 | 80.02 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 14 | 100 | 79.02 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 15 | 100 | 83.94 | <input checked="" type="checkbox"/> | |
| No Specific Vendor | Home Formulation 16 | 100 | 92.72 | <input checked="" type="checkbox"/> | |

Conclusion: All glass cleaning formulations removed over 75% of the glass soil using manual wiping.