

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2015
 DateRun: 04/09/2015
 Experimenters: Nicholas Landberg
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #5
 Substrates: Wood
 PartType: Coupon
 Contaminants: Greases, Food
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric
 Purpose: To evaluate supplied cleaning equipment for stainless steel polish as compared to conventional products

Experimental Procedure: Precleaned coupons were measured using a analytical balance and Spectro Guide Gloss-Color meter from BYK Gardner to evaluate weights and L-values. Baseline color-gloss readings of the surface were taken in five locations on the coated wood coupons. Coupons were then contaminated with a grease mix from three lab staff members. Weights and L-Value readings were taken a second time. Cleaning products were then sprayed onto the surface, wiped off with a micro fiber cloth attached to a Garnder Straight-line washability unit and cleaned for 5 cycles. Coupons were then dried with a single pass using a fresh micro fiber cloth. Gloss readings were taken again in the same five locations. The difference in weights gloss-color was then compared to determine effectiveness.

Cleaning data from the L-values can be calculated as percent detergency in the following equation:

$$\% \text{ DET} = \frac{L(\text{cleaned}) - L(\text{soiled})}{L(\text{unsoiled}) - L(\text{soiled})} \times 100$$

ChemistriesEvaluated: Product 1; Comparative Stainless Steel Polish; Water;

Results: The Pledge product resulted in marginally better soil removal rate based on gravimetric results as compared to Endust, Behold and PLZ. With the variance in the soil removal rates, there was no significant difference in the four products evaluated. Results for gravimetric results are listed in the table.

| Table of Soil Removal Rates | | | |
|-----------------------------|------------|----------|-----------|
| Cleaner | Initial wt | Final wt | % Removed |
| Pledge Furniture | | | |
| | 0.3005 | 0.094 | 68.72 |
| | 0.361 | 0.0921 | 74.49 |
| | 0.3422 | 0.0824 | 75.92 |
| PLZ Furniture | | | |
| | 0.4165 | 0.1591 | 61.8 |
| | 0.3866 | 0.1029 | 73.38 |
| | 0.23 | 0.1169 | 49.17 |
| Endust | | | |
| | 0.2696 | 0.0603 | 77.63 |
| | 0.367 | 0.1475 | 59.81 |
| | 0.4376 | 0.1353 | 69.08 |
| Behold | | | |
| | 0.5072 | 0.1552 | 69.4 |
| | 0.3327 | 0.151 | 54.61 |
| | 0.6145 | 0.1283 | 79.12 |

%DET

| Cleaner | Initial L | Dirty L | Final L | % DET | % AVG | Std Dev |
|------------------|-----------|---------|---------|-------|-------|---------|
| Pledge Furniture | | | | | | |
| | 59.60 | 36.18 | 50.90 | 62.85 | 71.00 | 18.97 |
| | 61.40 | 35.49 | 50.38 | 57.47 | | |
| | 61.76 | 31.24 | 59.53 | 92.69 | | |

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|---------------|-------|-------|-------|--------|-------|-------|
| PLZ Furniture | | | | | | |
| | 58.33 | 35.52 | 55.22 | 86.37 | 91.75 | 4.71 |
| | 61.55 | 32.68 | 59.74 | 93.73 | | |
| | 63.29 | 34.25 | 61.88 | 95.14 | | |
| Endust | | | | | | |
| | 63.85 | 32.27 | 61.84 | 93.64 | 89.72 | 4.75 |
| | 65.73 | 32.76 | 60.60 | 84.44 | | |
| | 61.70 | 33.85 | 59.22 | 91.10 | | |
| Behold | | | | | | |
| | 63.32 | 30.97 | 46.47 | 47.91 | 65.82 | 29.68 |
| | 65.21 | 36.77 | 50.84 | 49.47 | | |
| | 55.82 | 31.02 | 55.84 | 100.08 | | |

Summary:

| | | | | | | |
|----------------------|--|---------------|--------------------|-------------------------------------|----------------------|--|
| Substrates: | Wood | | | | | |
| Contaminants: | Greases, Food | | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| SC Johnson & Son Inc | Pledge Floor care Clean & Shine Multisurface | 100 | 71.00 | <input type="checkbox"/> | | |
| Brand Buzz | PLZ Furniture | 100 | 91.75 | <input checked="" type="checkbox"/> | | |
| EcoLab | Endust Dust & Clean | 100 | 89.72 | <input checked="" type="checkbox"/> | | |
| EcoLab | Behold Furniture pulish | 100 | 65.82 | <input type="checkbox"/> | | |

Conclusion:

The PLZ product performed comparably with the three supplied products.