# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010

DateRun: 07/15/2010

Experimenters: Jason Marshall, Timothy Weil

ClientType: Cleaning Equipment Mfr

ProjectNumber: Project #1

Substrates: Vinyl Composite Tiles

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Mechanical Agitation

Analytical Methods: Gloss-Color Meter

Purpose: Reevaluation to determine effectiveness of various cleaning liquids on soiled floor tiles using mechanical equipment.

Experimental Procedure: A four foot by eight-foot piece of plywood was covered with Armstrong Imperial texture standard Exceleron vinyl composition tiles (white). Tiles were adhered using Roberts Vinyl Composition Tile adhesive. The tiles were then coated with a standard floor wax.

Tiles were evaluated using a BYK Spectro Guide gloss/color meter to determine soiled baseline L-values of tiles previously coated with Hucker's Soil Formulation (Jiffy Creamy Peanut Butter 9.2%, Salted Butter 9.2%, Arrowhead Mills stone ground wheat flour 9.2%, Egg Yolk 9.2%, Evaporated milk 13.8%, Distilled water 45.8%, Printer's ink with boiled linseed oil 0.9%, Shaws saline solution 2.7%).

A modified Tennet T5 Echo floor scrubber machine was filled with room temperature tap water. Americo Red Buff floor maintenance pads were installed, and the brush setting was set to the lowest pressure level. With the squeegee system engaged the floor tiles were cleaned for five minutes. Cleaning took place over the smaller soiled section (four center tiles) of the 8'x4' flooring. Upon the completion of the cleaning, final L-values were recorded. The L-values were used to determine how close the cleaned floor was to the original appearance.

The cleaning process was repeated using hot water (100 F), electrolyzed water (supplied via the Tennet T5 machine), and Zep Commercial Neutral Floor Concentrate (1 oz/gallon).

Results: A retest was conducted to confirm cleaning results. The electrolyzed water system had the highest soil removal. No substantial difference was found between the other three, cold water working better than warm water and the neutral cleaner. The electrolyzed water was run first, followed by room temperature water, hot water then neutral cleaner. This trend was basically the order that the liquids were evaluated during the trial. The cleaning results and results are listed below.

| Process | Coupon | Initial L | Dirty L | Final L | %decrease | Cleaned | Ave L value | Run order |
|---|---|---|---|---|---|---|---|---|
| Cold Water | 1 | 84.83 | 27.72 | 47.95 | 32.68 | 56.52 | 56.55 | 2 |
| | 2 | 86.17 | 26.00 | 49.02 | 30.17 | 56.89 | | |
| | 3 | 81.07 | 26.78 | 44.88 | 33.03 | 55.36 | | |
| | 4 | 85.76 | 25.84 | 49.25 | 30.13 | 57.43 | | |
| Hot Water | 5 | 85.61 | 27.73 | 42.01 | 32.39 | 49.07 | 51.03 | 3 |
| | 6 | 84.14 | 29.65 | 40.52 | 35.24 | 48.16 | | |
| | 7 | 85.08 | 35.64 | 45.68 | 41.89 | 53.69 | | |
| | 8 | 85.48 | 26.37 | 45.46 | 30.85 | 53.18 | | |
| Electrolyzed | 9 | 85.33 | 32.08 | 72.76 | 37.60 | 85.27 | 85.31 | 1 |
| | 10 | 85.74 | 31.76 | 74.81 | 37.04 | 87.25 | | |
| | 11 | 84.72 | 31.90 | 75.04 | 37.65 | 88.57 | | |
| | 12 | 85.61 | 26.94 | 68.60 | 31.47 | 80.13 | | |
| Zep | 13 | 85.65 | 36.24 | 47.58 | 42.31 | 55.55 | 52.39 | 4 |
| | 14 | 85.85 | 29.28 | 44.87 | 34.11 | 52.27 | | |
| | 15 | 80.25 | 31.91 | 40.19 | 39.76 | 50.08 | | |
| | 16 | 85.35 | 32.74 | 44.09 | 38.36 | 51.66 | | |

Summary:

| **Substrates:** | Vinyl Composite Tiles | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Hucker's Soil | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Water | Water | 100 | 56.55 | ☑ | Rank 2 |

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|---|---|---|---|---|---|
| Water | Water | 100 | 51.03 | ☐ | Rank 3 |
| Tennent Corporation | Tennent Electrolyzed Water | 100 | 85.31 | ☑ | Rank 1 |
| ZEP Manufacturing Company | Neutral Floor Cleaner Concentrate | 0.78 | 52.39 | ☐ | Rank 4 |

Conclusion: The electrolyzed water system was the only process that showed significant difference from the other methods. The next follow up test will look at the run order of products to determine if the cleaning order effects performance of the cleaning systems.