CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2009
DateRun:	09/15/2009
Experimenters:	Jason Marshall, Junhee Cho
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Marble
PartType:	Coupon
Contaminants:	Calcium/lime
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric, Visual
Purpose:	To determine how well products work on hard water stains.
Experimental Procedure:	To test the descaling performance, the marble block test method was used. In this test, a marble block is submerged for period of time in a test solution. The weight is measured before and after. Marble is chemically similar to hard water stains in that they both are made up of calcium carbonate. Results can be expressed in grams lost over time. This method is widely used due to its simplicity but has some restrictions. One such limitation is how other soils typically mixed with hard water stains are not taken into consideration. Several marble chips of similar size and shape were weighed to determine the baseline weight of each piece. The selected chips were then immersed in the two supplied products at vendor recommended dilutions and allowed to soak for18 hours. The marble chips were removed from the products and rinsed in a tap water spray at 120 F for 3 minutes to remove loose material from the chips. Then the chips were dried for 15 minutes using a Master Appliance Heat gun at 500 F. When the chips cooled to room temperature, final weights were recorded to determine weight loss, if any. Observations were made and photographs were taken after the initial immersion of the chips into solutions (5 minutes), at 60 minutes and then following the overnight immersion.
Results:	The two supplied products all should signs of removing the calcium from the marble block. The two comparative products had less obvious changes. The non-acid comparative product resulted in a net weight gain over the 18 hours of soaking, although only minor in magnitude. For the supplied all-purpose cleaner at various dilutions, the most dilute solution was the only dilution that performed significantly lower than the comparative product.

Product	Marble piece	Initial wt	Final wt	wt loss/ gain	% change
PC 116	small	9.4224	8.6152	0.8072	8.57
	large	22.3224	21.2112	1.1112	4.98
PC 1201-64	small	6.6252	6.4836	0.1416	2.14
	large	26.8356	26.6639	0.1717	0.64
PC 1201-128	small	10.8646	10.8489	0.0157	0.14
	large	34.4596	34.2204	0.2392	0.69
PC 1201-256	small	14.3193	14.2733	0.0460	0.32
	large	38.6275	38.5665	0.0610	0.16
3M 19	small	7.9570	7.9644	-0.0074	-0.09
	large	26.4420	26.4470	-0.0050	-0.02
Lav Safe	small	7.3452	7.2906	0.0546	0.74
	large	36.4784	36.4173	0.0611	0.17
Water	small	14.0765	14.0728	0.0037	0.03
	large	35.3339	35.3237	0.0102	0.03

Summary by Type of Cleaning Product

	Average wt loss
PC 116 non acid bathroom cleaner	6.77

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3M 19 non acid bathroom cleaner	-0.06
PC 120 1:64	1.39
PC 120 1:128	0.42
PC 120 1:256	0.24
Lav Safe	0.46
Water	0.03

Summary:

Substrates:	Marble
Contaminants:	Calcium/lime

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Next-Gen Supply Group	PC 116 Non-acid restroom and shower cleaner	2		☑	0.96 g lost per 18 hours soak
Next-Gen Supply Group	PC 120 Peroxide Mulitsurface Cleaner	1.6		☑	0.16 g lost per 18 hours soak
Next-Gen Supply Group	PC 120 Peroxide Mulitsurface Cleaner	0.78		☑	0.13 g lost per 18 hours soak
Next-Gen Supply Group	PC 120 Peroxide Mulitsurface Cleaner	0.39		☐	0.05 g lost per 18 hours soak
Next-Gen Supply Group	LAV Safe 8	100		☐	0.05 g lost per 18 hours soak
Water	Water	100		☐	0.01 g lost per 18 hours soak

Conclusion: The two supplied products had the greater weight loss over time when compared to conventional products of the same field of cleaning products.