

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017

DateRun: 10/02/2017

Experimenters: Vinh Tran, Dan Aspach, Hayley Byra

ClientType:

ProjectNumber: Project #1

Substrates: Vinyl Composite Tiles, Painted metal

PartType: Coupon

Contaminants: Greases, Food

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric, Gloss-Color Meter

Purpose: To evaluate the effectiveness of the supplied cleaners with removing DCC-17 soil from painted steel and vinyl composite tiles

Experimental Procedure: A total of 12 coupons composed of six painted steel coupons and six painted vinyl composite tiles were aged in an oven for 24 hours. Initial weights were taken of these coupons using an analytical balance after the aging process. Initial color readings of L* and G* were measured using a glossimeter. The coupons were then soiled with half a gram of DCC-17 soil and allowed to age overnight. The following day dirty color readings were taken of the soiled coupons. The soiled coupons were weighed in order to determine the amount of soil applied. A set of three painted steel coupons were placed on the Gardner straight line washability unit. A Kimberly Clark Wypal reinforced paper towel was attached to the cleaning sled. The sled and coupons were each sprayed once with cleaning solution. The machine was then run for 20 cycles. This process was repeated for the remaining sets of painted steel and painted vinyl composite tiles with their respective cleaners. The coupons were allowed to dry overnight before taking clean color values and clean weights.

The ability of the cleaners to lift the soil from the surface, percent detergency, was determined by taking the ratio of the reflectance values as shown below:

$$\%det = ((L_Clean - L_Dirty) / ((L_Initial - L_Dirty))) * 100\%$$

Results: Table pertaining to the amount of contaminant added and removed using a gravimetric scale to measure the efficacy of the respective cleaners.

Cleaner	Coupon Type	Initial wt. of cont.	Final wt. of cont.	Cont. Removed (%)	Avg. Cont. Removed (%)	Overall Cont. Removed (%)
Neutral Floor Cleaner	Painted Steel	0.2465	0.0038	98.46	96.61	94.88
		0.3316	0.0150	95.48		
		0.3642	0.0150	95.88		
	Painted VCT	0.3312	0.0234	92.93	93.15	
		0.3279	0.0228	93.05		
		0.3243	0.0212	93.46		
Zep Neutral Floor Cleaner	Painted Steel	0.3170	0.0256	91.92	94.3	93.6
		0.3367	0.0150	95.54		
		0.3362	0.0154	95.42		
	Painted VCT	0.3362	0.0262	92.21	92.9	
		0.3432	0.0233	93.21		
		0.3434	0.0231	93.27		

Color Gloss Meter Results:

Cleaner	Substrate	Initial G	Initial L	Dirty G	Dirty L	Clean G	Clean L	% Detergency	Avg. % Detergency
Neutral Floor Cleaner	Painted Steel	3.0	87.12	5.3	46.87	33.1	71.03	60.02	74.37
		4.7	96.23	4.1	33.94	35.1	73.79	63.97	
		3.9	84.65	7.2	24.48	41.8	71.12	77.51	
	Painted VCT	76.2	89.87	8.4	28.37	13.0	77.51	79.9	
		74.6	89.89	11.0	29.46	24.5	80.04	83.7	
		86.0	89.89	10.6	25.58	15.4	77.75	81.12	
Zep Neutral Floor Cleaner	Painted Steel	4.0	86.58	15.9	26.2	18.5	71.76	75.46	80.52
		77.8	89.76	6.3	23.37	16.5	75.84	79.03	

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		87.1	90.10	8.8	25.38	18.5	77.94	81.34	
	Painted	82.8	89.97	10.4	24.24	9.4	77.2	80.57	
	VCT	63.3	88.62	14.8	24.93	10.3	79.01	84.91	
		79.9	90.11	13.0	23.88	17.6	78.08	81.84	

Summary:

Substrates:		Vinyl Composite Tiles, Painted metal			
Contaminants:		Greases, Food			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Pak It	Pak-it Heavy-Duty All Purpose Cleaner		95.41	<input checked="" type="checkbox"/>	1 pack per quart
Spartan Chemical Company	Tribase Multipurpose Cleaner	10	94.63	<input checked="" type="checkbox"/>	

Conclusion:

Heavy-Duty All Purpose Cleaner was as equal to or better than Spartan Tribase Multipurpose cleaner at removing DCC-17 from painted steel and vinyl.