

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016  
 DateRun: 01/22/2016  
 Experimenters: Russell Curtis, Alicia Melvin  
 ClientType: Cleaner Manufacturer  
 ProjectNumber: Project #2  
 Substrates: Textile  
 PartType: Coupon  
 Contaminants: Inks, Dirt, Oil, Food  
 Cleaning Methods: Manual Wipe  
 Analytical Methods: Visual, Gloss-Color Meter  
 Purpose: To evaluate supplied product for cloth stain cleaning.

Experimental Procedure: The purpose of this evaluation was to assess effectiveness of spot and stain removal chemicals by rating the removal of specific staining agents.

Eight almond white tufted cut pile test carpet measuring 18 inch by 24 inch were stained with eight staining agents for each cleaner. Two staining agents were applied to the test carpet in triplicate, spaced out at 2.5 inches. The staining agent was applied to the surface using a trigger pump spray bottle capable of delivering 2.5 +/- 0.5 ml of stain mixture. The spray was focused within a staining ring measuring 1.5 inches wide by 1.2 inches high.

PC 120 and Fibermaster All in 1 came ready to use with a dilution of 1:128 for PC 120 and 1:10 (volume 9%) for Fibermaster All in One. The eight staining agents included mustard, ketchup, coffee, grape juice, black permanent marker (2 1" lines instead of 2.5 ml), dirty motor oil, AATCC synthetic soil and chocolate syrup. These staining agents were used according to the dilution ratios listed in the table below:

Staining Agent Dilution ratio  
 Mustard 1:2 mustard: water  
 Catsup 1:3 ketchup: water  
 Hot Coffee 60 deg +/- 3C 1 teaspoon coffee to 175 ml water  
 Purple Grape Juice Full concentration  
 Black Permanent Marker N/A  
 Dirty Motor Oil 1:1 oil: heptane\*  
 AATCC Synthetic Soil 0.5 grams/100 ml water  
 Chocolate Syrup 1:4 chocolate: water  
 \*heptane used in place of tetradecane

The staining agent mixture was poured into the spray bottle. The nozzle of the bottle was centered inside the staining ring and three pumps of the spray bottle were performed to deliver the 2.5 ml of mixture to the test carpet. The staining ring was left in place until the staining agent was completely soaked into the test carpet. The ring was rinsed in between each staining location. The two completed test carpets were allowed to dry for 24 hours +/- 2 hours before conducting the stain removal procedure.

Following the overnight drying, any excess solid staining agent was removed from the test carpet. The cleaning agent was applied to the surface so that the stain was saturated. The solution was allowed to sit on the stain for two minutes. The saturated stain was blotted with a clean dry Wypal towel 30 times. Any transfer of the stain/cleaning agent to the towel was noted. At this point, the cleaning solution was applied to the surface and blotted until the stain was completely removed or three applications of the cleaning solution were performed. The total number of applications was recorded for each stain. The test carpet was allowed to sit for another 24 +/- 2 hours to dry before evaluating the stains.

A minimum of three lab personnel were used to evaluate the stain removal efficacy which were then averaged together for the final rating. The evaluations were based on the following scale:

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Clean Rating Key

- 1 No Stain
- 2 Faint Stain
- 3 Slight Stain
- 4 Slightly Noticeable Stain
- 5 Noticeable Stain
- 6 Considerable Stain
- 7 Severe Stain

Results: PC 120 Dilution: 1:128 by M.D Stetson Co. Inc.; Fibermaster All in 1 Dilution: 1:10 by MD Stetson Co. Inc.

Soil	Cleaner	Initial			Dirty			Final		
		L	a	b	L	a	b	L	a	b
Mustard	PC 120	65.31	0.51	10.32	62.04	3.97	29.03	64.61	2.31	23.30
					60.57	3.60	25.02	61.25	3.23	17.34

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					59.86	3.21	24.38	60.41	3.86	20.70
	Fibermaster All In 1	61.67	3.72	26.15	63.84	2.57	23.71			
					63.63	3.58	28.02	60.95	3.95	24.76
					59.24	3.84	26.83	59.80	4.33	24.42
Ketchup	PC 120	61.71	6.83	21.40	66.10	3.18	20.79			
					63.29	4.10	17.29	64.64	-3.60	19.97
					61.41	5.89	20.40	63.99	-2.43	20.97
	Fibermaster All In 1	61.00	6.26	20.88	64.89	-2.55	21.23			
					61.01	4.56	17.52	65.46	-2.49	19.80
					61.93	5.95	19.65	64.28	-1.67	21.46
Hot Coffee	PC 120	53.29	2.91	14.20	63.32	-4.61	16.77			
					53.09	3.96	15.58	56.73	-0.75	23.86
					61.93	5.95	19.65	59.62	-2.44	17.90
	Fibermaster All In 1	49.90	3.81	15.56	53.63	-1.00	23.15			
					52.84	4.77	17.26	55.61	-2.39	21.04
					52.89	3.78	14.91	58.43	-2.55	19.90
Grape Juice	PC 120	52.65	2.57	11.57	62.07	-4.92	17.19			
					56.41	2.96	11.84	62.93	-3.32	15.61
					55.10	2.16	9.95	62.16	-4.62	17.95
	Fibermaster All In 1	57.33	1.58	9.98	61.92	-4.70	17.66			
					57.96	2.18	10.09	65.48	-4.14	17.74
					56.26	2.60	11.77	63.62	-4.76	18.00
Black Marker	PC 120	28.32	-0.67	1.38	29.70	-4.25	4.81			
					28.56	-0.38	1.59	38.37	-4.96	8.61
					30.53	-0.55	1.75	30.58	-4.79	7.85
	Fibermaster All In 1	25.55	-0.37	1.79	29.38	-4.25	4.81			
					25.47	-0.44	1.91	28.19	-4.15	3.65
					24.91	-0.59	1.85	25.76	-4.08	5.24
Dirty Motor Oil	PC 120	40.99	-0.20	6.47	52.14	-3.81	17.28			
					33.81	0.00	6.55	44.15	-3.09	15.12
					35.40	-0.07	6.38	51.48	-4.20	15.04
	Fibermaster All In 1	38.46	0.44	7.44	52.12	-3.39	17.09			
					33.76	-0.38	5.60	46.93	-3.42	14.85
					32.73	-0.19	5.93	48.07	-3.80	15.29
AATC Dirt	PC 120	49.08	-7.00	5.66	37.21	-0.27	5.84			
					44.66	-0.66	5.22	33.34	0.32	5.73
					44.25	-0.77	4.59	36.89	-0.25	5.79
	Fibermaster All In 1	46.90	-0.76	4.92	39.44	-0.04	6.05			
					44.45	-0.68	5.51	38.40	0.07	6.06
					43.60	-0.74	4.84	33.76	-0.29	5.26
Chocolate Syrup	PC 120	49.62	3.87	12.94	58.23	-3.33	17.76			
					51.29	3.71	12.36	55.86	-2.84	17.15
					49.26	3.98	13.18	57.56	-2.82	19.02
	Fibermaster All In 1	55.50	4.70	13.12	57.25	-1.68	19.64			
					52.65	4.23	14.17	54.89	-2.29	17.96
					52.12	4.07	13.29	57.24	-2.31	19.52

Result of Visual Analysis:

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Soil	Cleaner	Visual Ratings			Average
		Spot 1	Spot 2	Spot 3	
Mustard	PC 120	4	4	3	4.3
		4	4	4	
		5	5	5	
	Fibermaster All In 1	4	4	3	4.4
		4	4	4	
Ketchup	PC 120	5	5	4	
		2	1.5	1.5	1.5
		2	2	2	
	Fibermaster All In 1	1	1	1	
		2	2	2	2
		2	2	2	
		2	2	2	
Hot Coffee	PC 120	1.5	1.5	1.5	1.2
		1	1	1	
		1	1	1	
	Fibermaster All In 1	1.5	1.5	1.5	1.2
		1	1	1	
		1	1	1	
Grape Juice	PC 120	1	1	1	1
		1	1	1	
		1	1	1	
	Fibermaster All In 1	1	1	1	1
		1	1	1	
		1	1	1	
Black Marker	PC 120	7	6.5	7	6.9
		7	7	7	
		7	7	7	
	Fibermaster All In 1	7	7	7	7
		7	7	7	
		7	7	7	
		7	7	7	
Dirty Motor Oil	PC 120	2	2	2	2
		1	1	1	
		3	3	3	
	Fibermaster All In 1	2	2	2	2
		1	1	1	
		3	3	3	
AATC	PC 120	5	5	5	4.6
		4	4	4	
		5	5	5	
	Fibermaster All In 1	5	5	5	4.6
		4	4	4	
		5	5	5	
Chocolate Syrup	PC 120	1	1	1	1.3
		1	1	1	
		2	2	2	

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	Fibermaster All In 1	1	1	1	1.3
		1	1	1	
		2	2	2	

Summary:

<b>Substrates:</b>		Textile			
<b>Contaminants:</b>		Inks, Dirt, Oil, Food			
<b>Company Name:</b>	<b>Product Name:</b>	<b>Conc.:</b>	<b>Efficiency:</b>	<b>Effective:</b>	<b>Observations:</b>
Next-Gen Supply Group	PC 120 Peroxide Multisurface Cleaner	1.5		<input checked="" type="checkbox"/>	Ketchup, Coffee, Grape juice, Motor oil, Chocolate syrup

Conclusion:

An average visual change of 4 and higher is considered to be visually ineffective. The least visually effective stains being removed both PC 120 and Fibermaster All in 1 were mustard, black permanent marker, and synthetic soil. Overall, PC 120 is a slightly better product to use for most of these contaminants than Fibermaster All in 1.