CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2019
DateRun:	06/30/2019
Experimenters:	Ross Goding
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Textile
PartType:	Coupon
Contaminants:	Inks, Dirt, Oil, Food
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Colorimeter, Visual
Purpose:	To evaluate the effectiveness of laundry pods in removing soils from cotton, purple nylon and green polypropylene.
Experimental Procedure:	Nine 4”x 5” swatches per cleaner, three of each fabric type, were contaminated with motor oil, ink, dirt, and mustard and air dried for 24 hours. Fabrics were washed at 88 degrees Fahrenheit for 12 minutes using both Better Life Laundry Pods and Seventh Generation Laundry Pods. Fabrics were placed in a five-minute spin cycle and a nine-minute rinse cycle before drying for 24 hours. A colorimeter was used to take initial, contaminated, and clean measurement values.

$SRI = 100 - ((Lc-Lw)^2 + (ac-aw)^2 + (bc-bw)^2)^{1/2}$

Where:

L=reflectance

A= redness/greenness

B= yellow/blueness

C= unstained fabric, washed in the treatment conditions

W= stained fabric, washed in the treatment conditions

Results: Change in L values denotes the change in concentration of stain while a and b values denote the spectrum on blue and green shades in the sample. Thus, these values denote the amount of stain that the detergent was capable of removing.

The SRI for all materials when the test was performed with supplied detergent is calculated as:

Table 1: Results from Cleaner 1 and 2

Cleaner	Fabric	Soil	SRI	Average % Removal
1	White Cotton	Oil	85.81	62.5975
		Ink	39.47	
		Dirt	49.23	
		Mustard	75.88	
	Purple Nylon	Oil	85.99	79.0125
		Ink	71.16	
		Dirt	80.71	
		Mustard	78.19	
	Green Polypropylene	Oil	52.15	45.6225
		Ink	30.41	
		Dirt	49.2	
		Mustard	50.73	
2	White Cotton	Oil	86.18	77.7475
		Ink	44.08	
		Dirt	88.08	
		Mustard	92.65	
	Purple Nylon	Oil	95.75	87.0775
		Ink	64.55	
		Dirt	91.62	
		Mustard	96.39	
		Oil	85.07	71.955

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	Green Polypropylene	Ink	28.88
		Dirt	78.71
		Mustard	95.16

Table 2**:** Color test for Cleaner 1

	Initial			Clean		
	L	a	b	L	a	b
White Cotton	91.18	-0.71	3.50	78.90	-0.12	10.52
	91.77	-0.83	3.51	40.62	0.02	2.09
	91.83	-19.86	3.39	69.64	0.23	4.41
	91.54	-0.66	3.67	85.38	-1.88	13.37
Purple Nylon	38.91	21.20	-28.16	33.19	18.95	-24.98
	37.20	23.11	-29.83	25.69	1.64	-2.31
	37.82	23.06	-29.56	34.20	17.42	-23.03
	37.35	22.15	-28.69	35.60	17.54	-23.45
Green Polypropylene	62.35	-57.52	41.73	52.26	-45.92	33.88
	62.09	-58.30	42.57	25.87	-8.46	6.50
	62.48	-59.52	43.89	52.14	-45.38	38.00
	62.79	-58.57	42.87	58.33	-52.57	39.05

Table 3: Color test for Cleaner 2

	Initial			Clean		
	L	a	b	L	a	b
White Cotton	91.38	-0.38	3.18	80.32	0.14	11.43
	91.64	-0.36	3.15	35.75	0.05	1.63
	91.91	-0.27	3.17	80.03	0.18	3.96
	90.77	-0.92	4.77	86.74	-1.30	10.39
Purple Nylon	38.08	22.56	-29.26	34.35	21.89	-27.99
	39.71	21.93	-28.92	26.88	1.89	-2.64
	39.73	22.07	-29.02	36.36	17.27	-23.04
	39.74	21.84	-28.90	37.58	20.38	-26.46
Green Polypropylene	62.11	-56.16	42.12	52.65	-46.93	35.20
	61.49	-57.99	42.72	24.93	-8.83	6.65
	61.90	-57.40	42.06	50.93	-42.10	32.14
	62.38	-57.30	41.58	59.23	-54.27	39.50

Table 4: Average percent change in fabric color

	% Change		
Better Life Pods	L	a	b
White Cotton	25.0258	26.0342	-113.7290
Purple Nylon	14.9729	37.1994	35.9760
Green Polypropylene	24.5391	34.9128	31.4608
7th Generation Pods	L	a	b
White Cotton	22.6138	93.4457	-88.3796
Purple Nylon	14.0042	30.6863	31.0643
Green Polypropylene	24.3630	33.2864	32.3622

Summary:

Substrates:	Textile
Contaminants:	Inks, Dirt, Oil, Food

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Better Life	Laundry Pods	100%	62.41	☐	
Seventh Generation	Laundry Detergent Packs - Citrus & Cedar Scent	100%	78.92	☐	

Conclusion: Better Life Laundry Pods were not as effective as the comparative product.