CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2019
DateRun:	12/10/2019
Experimenters:	Thalia BracamonteMoreno, Zoe Lawson, Phillip Demers, Othon Pagounes, Tuan Le, Ross Goding
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Textile
PartType:	Coupon
Contaminants:	Inks, Dirt, Oil, Food
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Light Meter, Visual
Purpose:	To evaluate the effectiveness of Cleanyst laundry detergent against Seventh Generation Laundry Detergent in the removal of various soils from cotton, nylon and polyester.
Experimental Procedure:	A total of twelve 4”x5” swatches of fabric per cleaner, were contaminated with motor oil, ink, dirt, and mustard. The fabrics used were a white cotton, a purple nylon, and an orange polyester. The soiled coupons were then air dried for 24 hours. The fabrics were then washed at 88˚ F for 12 minutes separated by cleaner, with a five-minute spin cycle and a nine-minute rinse cycle. Before being taken out of the washer and allowed to dry for 24 hours. A colorimeter was used to take initial, contaminated, and clean measurement values during the experiment.

Equation used: $SRI = 100 - ((L_c - L_w)^2 + (A_c - A_w)^2 + (B_c - B_w)^2)^{1/2}$

SRI = Stain Removal Index (0= No removal and 100 =Complete stain removal)

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:

Table 1: Results from Cleaner 1

Cleaner	Fabric	Soil	SRI	Average
1	White Cotton	Oil	18.88	77.36
		Ink	91.72	
		Dirt	99.32	
		Mustard	99.53	
	Purple Nylon	Oil	21.41	75.64
		Ink	85.27	
		Dirt	97.46	
		Mustard	98.40	
	Orange Polyester	Oil	97.36	79.56
		Ink	90.86	
		Dirt	98.88	
		Mustard	31.13	

Table 2: Results from Cleaner 2

Cleaner	Fabric	Soil	SRI	Average
2	White Cotton	Oil	87.08	94.40
		Ink	92.44	
		Dirt	99.02	
		Mustard	99.07	
	Purple Nylon	Oil	97.71	95.54
		Ink	87.21	
		Dirt	98.18	
		Mustard	99.07	
	Orange Polyester	Oil	97.46	95.87
		Ink	91.69	

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		Dirt	97.24	
		Mustard	97.12	

Table 3: Cleaner 1 L, A, and B values. % Difference

		Initial			Clean			% Difference		
		L	A	B	L	A	B	L	A	B
Cotton	Motor Oil	67.87	25.03	42.12	49.11	2.15	-33.35	28%	91%	179%
	Dirt	53.32	-0.22	-30.08	52.78	-0.14	-29.72	1%	-39%	-1%
	Food Stain	53.18	-0.30	-29.86	53.39	-0.46	-29.78	0%	-53%	0%
	Ink	53.18	-0.37	-29.78	46.28	-0.63	-27.04	13%	-71%	-9%
Nylon	Motor Oil	53.18	-0.22	-29.99	64.49	28.24	42.38	21%	-13132%	-241%
	Dirt	66.07	25.63	42.40	65.32	27.10	41.91	1%	6%	1%
	Food Stain	67.74	26.92	42.65	66.98	27.96	43.10	1%	4%	1%
	Ink	68.24	27.70	42.38	56.95	23.09	34.19	17%	17%	19%
Polyester	Motor Oil	30.00	16.83	-35.10	27.86	17.99	-34.09	7%	7%	-3%
	Dirt	30.05	16.62	-34.92	29.08	16.26	-34.57	3%	2%	-1%
	Food Stain	29.98	16.67	34.80	29.28	15.92	-34.06	2%	5%	198%
	Ink	30.13	16.60	-34.99	27.57	11.93	-27.57	9%	28%	-21%

Table 4: Cleaner 2 L, A, and B values. % Difference

		Initial			Clean			% Difference		
		L	A	B	L	A	B	L	A	B
Cotton	Motor Oil	39.85	-0.27	-29.67	49.66	1.47	-32.68	25%	-639%	-10%
	Dirt	53.54	-0.73	-29.47	52.77	-0.51	-29.04	1%	-31%	-1%
	Food Stain	53.70	-0.08	-29.69	53.40	-0.49	-28.97	1%	-513%	-2%
	Ink	47.34	-0.50	-29.10	41.16	-0.64	-24.77	13%	-26%	-15%
Nylon	Motor Oil	66.49	26.82	42.19	65.64	27.94	43.13	1%	4%	2%
	Dirt	67.29	27.11	42.72	66.30	27.15	42.17	1%	0%	1%
	Food Stain	66.84	27.39	43.00	67.22	27.88	42.77	1%	2%	1%
	Ink	67.11	26.93	42.73	57.6	23.29	35.04	14%	14%	18%
Polyester	Motor Oil	29.73	16.95	-34.71	28.55	15.54	-32.98	4%	8%	-5%
	Dirt	30.02	16.75	-34.97	27.75	17.87	-33.93	8%	7%	-3%
	Food Stain	29.80	14.82	-34.76	29.17	15.89	-33.96	2%	7%	-2%
	Ink	30.08	17.03	-35.33	28.20	12.60	-28.57	6%	26%	-19%

Table 5: Cleaner 1 L, A, and B values. % Difference Average

Cleaner	Fabric	Soil	L	A	B
1	White Cotton	Oil	28%	91%	179%
		Ink	1%	-39%	-1%
		Dirt	0%	-53%	0%
		Mustard	13%	-71%	-9%
		Average	11%	-18%	42%
	Purple Nylon	Oil	21%	-13132%	-241%
		Ink	1%	6%	1%
		Dirt	1%	4%	1%
		Mustard	17%	17%	19%
		Average	10%	-3276%	-55%
	Orange Polyester	Oil	7%	7%	-3%
		Ink	3%	2%	-1%

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		Dirt	2%	5%	198%
		Mustard	9%	28%	-21%
		Average	5%	11%	43%

Table 6: Cleaner 2 L, A, and B values. % Difference Average

Cleaner	Fabric	Soil	L	A	B
1	White Cotton	Oil	25%	-639%	-10%
		Ink	1%	-31%	-1%
		Dirt	1%	-513%	-2%
		Mustard	13%	-26%	-15%
		Average	10%	-302%	-7%
	Purple Nylon	Oil	1%	4%	2%
		Ink	1%	0%	1%
		Dirt	1%	2%	1%
		Mustard	14%	14%	18%
		Average	4%	5%	6%
	Orange Polyester	Oil	4%	8%	-5%
		Ink	8%	7%	-3%
		Dirt	2%	7%	-2%
		Mustard	6%	26%	-19%
		Average	5%	12%	-7%

Summary:

Substrates:	Textile				
Contaminants:	Inks, Dirt, Oil, Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Seventh Generation	Laundry Detergent	1.5 oz	0.00	☐	
Cleanyst	Cleanyst Laundry Detergent	1.25 oz	0.00	☑	

Conclusion: Cleanyst Laundry Detergent was more effective than the comparative product for cleaning and removing stains on white cotton, purple nylon, and orange polyester fabric.