

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2025  
 DateRun: 02/18/2025  
 Experimenters: Cindy McClaughlin, Alex Joga  
 ClientType: Cleaner Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Textile  
 PartType: Coupon  
 Contaminants: Greases, Inks, Oil  
 Cleaning Methods: Manual Wipe  
 Analytical Methods: Colorimeter, Visual  
 Purpose: To test the efficiency of ServeCo Red Upholstery Stain Remover against Guardsman Stain & Odor Eliminator in removing different contaminants from three fabric substrates.

Experimental Procedure: Three fabric swatches per product, one of each fabric type (microsuede, polyester/cotton blend, and polyester, were cut into equal sizes to fit three stained circles for each contaminant type. Initial colorimeter measurements were taken using a BYK-Gardner Colorimeter to record L\* (lightness), a\* (red/green value), and b\* (blue/yellow value) before staining (Unstained Fabric), after applying and drying the three staining agents (ink, grease, and oil) to the textile surface (*Untreated Stain*), and after treating the stains with the product (*Treated Stain*).

The staining agents were applied evenly to the textile surface with a swab three times to create three individual circular stains on the surface of the fabric. Textile coupons air dried for 24 hours +/- 2 hours at room temperature (68F) before Untreated Stain values were recorded. Each stain was treated with three sprays of their respective cleaning product and allowed to sit on the stain for two minutes before blotting the saturated stain 30 times with a clean cotton towel. Treated textile coupons air dried at room temperature (68F) for 24 +/-2 hours to dry before Treated Stain values were recorded.

The performance of each product was evaluated instrumentally using the Stain Removal Index (SRI), a scale from 0 to 100, where 0 indicates no stain removal and 100 represents complete stain removal. The SRI was calculated as:

The performance of each product was evaluated using the Stain Removal Index (SRI), a scale from 0 to 100, where 0 indicates no stain removal and 100 represents complete stain removal. The SRI was calculated as:

$$SRI = 100 \times (\Delta E * (US - UF) - \Delta E * (TS - UF))$$

where:

- US = Untreated stain area
- UF = Untreated (unstained) fabric area
- TS = Treated stain area
- $\Delta E(US - UF)^*$  = Color difference between the unwashed stain and the unwashed fabric
- $\Delta E(TS - UF)^*$  = Color difference between the treated stain and the unwashed fabric

# CLEANING LABORATORY EVALUATION SUMMARY

Results:

## ServeCo Red Upholstery Stain Remover

Substrate	Contaminant	Measurement	L	a	b	$\Delta E^*$	SRI	Overall SRI
Microsuede	Ink	Unstained Fabric (UF)	71.69	2.72	8.13	40.07	45.60	44.05
		Untreated Stain (US)	32.11	0.88	2.18			
		Treated Stain (TS)	26.40	0.04	3.51			
		Unstained Fabric (UF)	71.73	2.85	8.41	39.56	41.91	
		Untreated Stain (US)	32.82	0.79	1.55			
		Treated Stain (TS)	30.18	0.11	3.66			
		Unstained Fabric (UF)	71.06	2.84	8.43	41.61	44.64	
		Untreated Stain (US)	30.02	0.92	1.82			
		Treated Stain (TS)	26.76	0.32	3.52			
	Grease	Unstained Fabric (UF)	71.77	2.89	8.05	19.60	11.10	9.82
		Untreated Stain (US)	52.30	0.82	8.89			
		Treated Stain (TS)	60.71	2.14	8.56			
		Unstained Fabric (UF)	71.55	2.72	8.06	16.33	9.34	
		Untreated Stain (US)	55.29	1.27	8.53			
		Treated Stain (TS)	62.22	2.33	7.96			
		Unstained Fabric (UF)	70.74	2.74	8.08	15.87	9.04	
		Untreated Stain (US)	55.01	0.98	9.19			
		Treated Stain (TS)	61.74	1.92	8.17			
	Oil	Unstained Fabric (UF)	71.48	2.34	7.99	17.03	12.44	10.13
		Untreated Stain (US)	54.51	1.01	8.58			
		Treated Stain (TS)	59.11	1.58	9.06			
		Unstained Fabric (UF)	71.54	2.59	7.97	14.02	9.43	
		Untreated Stain (US)	57.58	1.33	8.10			
		Treated Stain (TS)	62.13	2.10	8.20			
		Unstained Fabric (UF)	71.37	2.67	7.87	13.54	8.52	
		Untreated Stain (US)	57.87	1.61	8.12			
		Treated Stain (TS)	62.87	2.04	7.94			
Polyester/ Cotton Blend	Ink	Unstained Fabric (UF)	76.68	3.14	5.20	40.91	38.13	37.66
		Untreated Stain (US)	35.90	0.16	3.94			
		Treated Stain (TS)	38.89	0.03	1.16			
		Unstained Fabric (UF)	76.87	3.14	5.01	41.06	39.13	

## CLEANING LABORATORY EVALUATION SUMMARY

		Untreated Stain (US)	35.91	0.99	3.16			
		Treated Stain (TS)	38.04	0.07	1.26			
		Unstained Fabric (UF)	76.87	3.17	5.05	38.42	35.73	
		Untreated Stain (US)	38.58	0.88	2.79			
		Treated Stain (TS)	41.59	0.07	0.35			
	Grease	Unstained Fabric (UF)	76.45	3.17	5.10	7.14	5.91	5.07
		Untreated Stain (US)	71.54	1.92	10.13			
		Treated Stain (TS)	72.90	2.09	9.70			
		Unstained Fabric (UF)	76.52	3.15	5.09	7.28	4.33	
		Untreated Stain (US)	71.21	1.82	9.89			
		Treated Stain (TS)	73.56	1.96	8.02			
		Unstained Fabric (UF)	76.62	3.20	5.26	5.56	4.96	
		Untreated Stain (US)	72.80	2.05	9.13			
		Treated Stain (TS)	73.02	1.98	8.45			
		Unstained Fabric (UF)	76.05	2.75	5.75	6.26	4.64	4.95
	Oil	Untreated Stain (US)	71.45	1.84	9.90			
		Treated Stain (TS)	72.66	1.88	8.80			
		Unstained Fabric (UF)	76.47	3.19	5.37	7.04	4.61	
		Untreated Stain (US)	70.88	1.80	9.42			
		Treated Stain (TS)	73.37	1.94	8.55			
		Unstained Fabric (UF)	76.63	3.13	5.38	6.14	5.60	
		Untreated Stain (US)	71.86	1.89	9.05			
		Treated Stain (TS)	73.41	2.06	9.83			
	Polyester	Unstained Fabric (UF)	49.08	4.04	23.95	26.16	26.80	24.62
		Untreated Stain (US)	28.54	1.60	7.93			
		Treated Stain (TS)	27.19	2.38	8.58			
		Unstained Fabric (UF)	49.14	4.06	23.96	27.79	25.91	
		Untreated Stain (US)	27.40	1.39	6.86			
		Treated Stain (TS)	28.08	2.31	8.97			
		Unstained Fabric (UF)	49.36	4.18	23.75	26.75	21.16	
		Untreated Stain (US)	27.58	1.00	8.54			
		Treated Stain (TS)	31.83	2.52	12.01			
	Ink	Unstained Fabric (UF)	49.08	4.04	23.95	26.16	26.80	24.62
		Untreated Stain (US)	28.54	1.60	7.93			

## CLEANING LABORATORY EVALUATION SUMMARY

Grease	Unstained Fabric (UF)	49.05	4.05	24.02	11.55	13.46	14.89
	Untreated Stain (US)	41.27	1.40	32.14			
	Treated Stain (TS)	41.73	2.11	35.15			
	Unstained Fabric (UF)	49.18	4.19	23.85	11.72	14.60	
	Untreated Stain (US)	41.64	1.68	32.46			
	Treated Stain (TS)	41.66	2.89	36.30			
	Unstained Fabric (UF)	49.08	4.13	23.71	10.96	16.59	
	Untreated Stain (US)	41.93	1.48	31.58			
	Treated Stain (TS)	42.02	2.72	38.66			
Oil	Unstained Fabric (UF)	49.31	4.18	24.04	11.89	10.81	10.78
	Untreated Stain (US)	41.14	0.66	31.93			
	Treated Stain (TS)	44.89	0.89	33.34			
	Unstained Fabric (UF)	48.99	4.05	24.07	13.17	10.70	
	Untreated Stain (US)	40.16	1.60	33.53			
	Treated Stain (TS)	45.06	1.10	33.57			
	Unstained Fabric (UF)	49.08	4.07	23.99	12.96	10.83	
	Untreated Stain (US)	40.32	1.37	33.15			
	Treated Stain (TS)	44.73	0.95	33.41			

# CLEANING LABORATORY EVALUATION SUMMARY

## Guardsman Stain & Odor Eliminator

Substrate	Contaminant	Measurement	L	a	b	ΔE*	SRI	Overall SRI
Microsuede	Ink	Unstained Fabric (UF)	71.85	2.66	8.18	43.12	24.94	23.09
		Untreated Stain (US)	29.20	0.33	2.25			
		Treated Stain (TS)	47.33	0.32	4.25			
		Unstained Fabric (UF)	72.14	2.34	8.28	39.80	24.35	
		Untreated Stain (US)	32.85	0.63	2.18			
		Treated Stain (TS)	48.10	0.21	5.01			
		Unstained Fabric (UF)	71.90	2.48	7.25	37.34	19.97	
		Untreated Stain (US)	35.07	0.34	1.48			
		Treated Stain (TS)	53.30	0.21	0.34			
	Grease	Unstained Fabric (UF)	71.79	2.37	8.08	18.65	16.30	17.49
		Untreated Stain (US)	53.21	0.96	8.89			
		Treated Stain (TS)	55.59	1.06	9.28			
		Unstained Fabric (UF)	71.83	2.68	8.05	20.88	18.32	
		Untreated Stain (US)	51.11	0.66	9.63			
		Treated Stain (TS)	53.71	0.48	9.63			
		Unstained Fabric (UF)	71.96	2.24	8.20	18.97	17.87	
		Untreated Stain (US)	53.08	0.98	9.52			
		Treated Stain (TS)	54.25	0.69	9.97			
	Oil	Unstained Fabric (UF)	71.89	2.39	8.25	15.67	13.65	13.57
		Untreated Stain (US)	56.25	1.36	8.11			
		Treated Stain (TS)	58.30	1.31	8.87			
		Unstained Fabric (UF)	72.13	2.86	8.06	15.56	13.47	
		Untreated Stain (US)	56.65	1.36	8.39			
		Treated Stain (TS)	58.76	1.38	8.71			
		Unstained Fabric (UF)	72.40	2.64	8.46	14.57	13.59	
		Untreated Stain (US)	57.87	1.63	8.47			
		Treated Stain (TS)	58.88	1.36	8.99			
Polyester/ Cotton Blend	Ink	Unstained Fabric (UF)	78.20	3.09	6.31	45.02	38.05	41.73
		Untreated Stain (US)	33.34	0.21	3.83			
		Treated Stain (TS)	40.69	0.82	0.32			
		Unstained Fabric (UF)	78.17	2.97	6.07	43.44	43.42	

## CLEANING LABORATORY EVALUATION SUMMARY

		Untreated Stain (US)	34.86	0.39	3.90	43.78	43.71		
		Treated Stain (TS)	34.96	1.17	2.16				
		Unstained Fabric (UF)	78.09	3.02	6.20				
		Untreated Stain (US)	34.49	0.32	3.23				
		Treated Stain (TS)	34.76	1.17	0.74				
	Grease	Unstained Fabric (UF)	78.35	3.00	6.11	7.36	8.13	7.55	
		Untreated Stain (US)	71.74	2.30	9.28	6.30	7.42		
		Treated Stain (TS)	70.95	1.89	9.28				
		Unstained Fabric (UF)	78.09	2.79	6.14				
		Untreated Stain (US)	72.43	2.34	8.86	6.08	7.10		
		Treated Stain (TS)	71.32	1.87	9.03				
		Unstained Fabric (UF)	78.25	3.06	6.06				
		Untreated Stain (US)	72.80	2.63	8.71	6.08	7.10		
		Treated Stain (TS)	71.78	1.98	8.78				
	Oil	Unstained Fabric (UF)	78.18	2.76	6.23	6.71	6.43	6.61	
		Untreated Stain (US)	72.08	2.26	8.97	7.38	6.99		
		Treated Stain (TS)	72.17	1.88	8.33				
		Unstained Fabric (UF)	78.95	3.01	6.23				6.78
		Untreated Stain (US)	72.06	2.10	8.71				
		Treated Stain (TS)	72.29	1.87	8.03				
		Unstained Fabric (UF)	78.59	2.67	6.04	6.78	6.40		
		Untreated Stain (US)	72.36	2.12	8.66				
		Treated Stain (TS)	72.51	1.89	7.88				
	Polyester	Ink	Unstained Fabric (UF)	50.43	2.74	26.99	28.14	30.68	30.51
			Untreated Stain (US)	28.67	1.27	9.21	29.95	31.69	
Treated Stain (TS)			25.75	0.90	8.86				
Unstained Fabric (UF)			50.55	2.89	26.96	28.02			
Untreated Stain (US)			27.27	0.82	8.23				
Treated Stain (TS)			25.16	0.67	8.12				
Unstained Fabric (UF)			50.27	2.79	26.75	28.02	29.17		
Untreated Stain (US)			28.20	0.80	9.60				
Treated Stain (TS)			26.72	0.88	9.65				

## CLEANING LABORATORY EVALUATION SUMMARY

Grease	Unstained Fabric (UF)	50.21	2.72	26.80	10.55	12.42	12.50
	Untreated Stain (US)	40.75	1.31	31.25			
	Treated Stain (TS)	39.35	1.22	32.64			
	Unstained Fabric (UF)	50.17	2.77	27.02	10.01	12.33	
	Untreated Stain (US)	41.11	1.13	30.94			
	Treated Stain (TS)	39.32	1.34	32.71			
	Unstained Fabric (UF)	50.52	2.69	27.06	9.50	12.76	
	Untreated Stain (US)	42.03	1.10	31.01			
	Treated Stain (TS)	39.47	1.74	33.36			
Oil	Unstained Fabric (UF)	50.20	2.64	26.98	12.53	9.44	9.63
	Untreated Stain (US)	39.75	2.04	33.87			
	Treated Stain (TS)	42.03	0.14	30.99			
	Unstained Fabric (UF)	50.19	2.64	26.96	12.22	9.65	
	Untreated Stain (US)	40.11	1.71	33.80			
	Treated Stain (TS)	41.96	0.17	31.35			
	Unstained Fabric (UF)	50.23	2.64	26.96	12.65	9.80	
	Untreated Stain (US)	39.62	2.01	33.82			
	Treated Stain (TS)	41.88	0.37	31.57			

# CLEANING LABORATORY EVALUATION SUMMARY

## Overall SRI Table Summary

Substrate	Contaminant	ServeCo Red SRI	Guardsman SRI
Microsuede	Ink	<b>44.05</b>	23.09
	Grease	9.82	<b>17.49</b>
	Oil	10.13	<b>13.57</b>
Polyester/ Cotton Blend	Ink	37.66	<b>41.73</b>
	Grease	5.07	<b>7.55</b>
	Oil	4.95	<b>6.61</b>
Polyester	Ink	24.62	<b>30.51</b>
	Grease	<b>14.89</b>	12.50
	Oil	<b>10.78</b>	9.63

ServeCo Red Upholstery Stain Remover was more effective than Guardsman Stain & Odor Eliminator at removing ink from microsuede, as well as grease and oil from polyester.

Guardsman Stain & Odor Eliminator was more effective at removing most stains from microsuede and polyester/cotton blend substrates, whereas ServeCo performed better on polyester substrates.

## Overall SRI by Staining Agent

Contaminant	ServeCo Red SRI	Guardsman SRI
Ink	35.44	31.78
Grease	9.93	12.51
Oil	8.62	9.94

The averages of each staining agent (contaminant) across all three textile substrates show that, overall, both products perform similarly in removing these contaminants from textiles, with only slight variations in effectiveness.

Summary:

<b>Substrates:</b>	Textile				
<b>Contaminants:</b>	Greases, Inks, Oil				
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
ServeCo North America	Red Upholstery Stain Remover	100%		<input checked="" type="checkbox"/>	
Guardsman Protection Products	Stain and Odor Eliminator	100%		<input checked="" type="checkbox"/>	

Conclusion:

ServeCo Red Upholstery Stain Remover performs as well as, or very similarly to, Guardsman Stain & Odor Eliminator in removing ink, grease, and oil from textile substrates after one treatment.