

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2025

DateRun: 01/22/2025

Experimenters: Tatyanna Moreland Junior, Cindy McClaughlin

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Textile

PartType: Coupon

Contaminants: Inks

Cleaning Methods: Manual Wipe

Analytical Methods: Colorimeter, Visual

Purpose: To test the efficiency of ServeCo Ink & Stain Stick against UNITER'S Leather Master Ink Lifter in removing ink from leather.

Experimental Procedure: Six leather swatches were cut into uniform rectangular samples and divided into two groups, with three swatches assigned to each ink remover. 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 staining with ink (*Untreated Stain*), and after treating the stain with the product (*Treated Stain*).

A black permanent marker was applied to the center of each swatch to create consistent ink stains across all leather samples. Each product was applied to its respective leather swatches directly onto the stained area by the same evaluator using five complete circular motions, followed by a 30-second wait to allow the product to penetrate. The stain was then lightly dabbed once with a clean cloth to remove residual product and any ink loosened by the treatment.

The performance of each ink remover 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:

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

Where:

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

The value  $\Delta E^*$  (absolute color difference) is calculated as:

$$\Delta E^* = \sqrt{\Delta L^{*2} + \Delta a^{*2} + \Delta b^{*2}}$$

Where:

L = reflectance

a = redness/greenness

b = yellowness/blueness

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Results:

Product	Measurement	L	a	b	$\Delta E^*$	SRI	Overall SRI
ServeCo Ink & Stain Stick	Unstained Fabric (UF)	28.79	5.83	6.73	8.59	7.67	7.04
	Untreated Stain (US)	22.18	3.46	1.78			
	Treated Stain (TS)	23.42	3.89	1.61			
	Unstained Fabric (UF)	28.36	5.78	6.74	7.58	7.10	
	Untreated Stain (US)	22.88	3.58	1.99			
	Treated Stain (TS)	23.61	4.14	1.72			
	Unstained Fabric (UF)	28.24	5.76	6.51	7.92	6.35	
	Untreated Stain (US)	22.12	3.81	1.88			
	Treated Stain (TS)	23.71	4.79	2.17			
UNITERS Leather Master Ink Lifter	Unstained Fabric (UF)	28.31	5.73	6.49	5.94	6.93	5.82
	Untreated Stain (US)	23.64	4.41	3.06			
	Treated Stain (TS)	23.17	4.19	2.11			
	Unstained Fabric (UF)	28.23	5.8	6.77	7.52	5.34	
	Untreated Stain (US)	22.56	4.37	2.04			
	Treated Stain (TS)	24.17	4.90	3.42			
	Unstained Fabric (UF)	28.14	5.75	6.58	7.47	5.19	
	Untreated Stain (US)	22.53	4.16	1.91			
	Treated Stain (TS)	24.44	4.62	3.12			

ServeCo Ink & Stain Remover removed more of the ink stain than UNITERS Leather Master Ink Lifter visually and based on SRI calculations after one treatment on each leather surface.

Summary:

Substrates:	Textile					
Contaminants:	Inks					
Company Name:		Product Name:	Conc.:	Efficiency:	Effective:	Observations:
ServeCo North America		ServeCo Ink & Stain Stick	100%		<input checked="" type="checkbox"/>	
UNITERS North America, LLC		Leather Master Ink Lifter	100%		<input type="checkbox"/>	

Conclusion:

ServeCo Ink & Stain Stick performed better than UNITERS Leather Master Ink Lifter at removing ink from leather substrates.