TDResearch

Repellency and Color Stability Study

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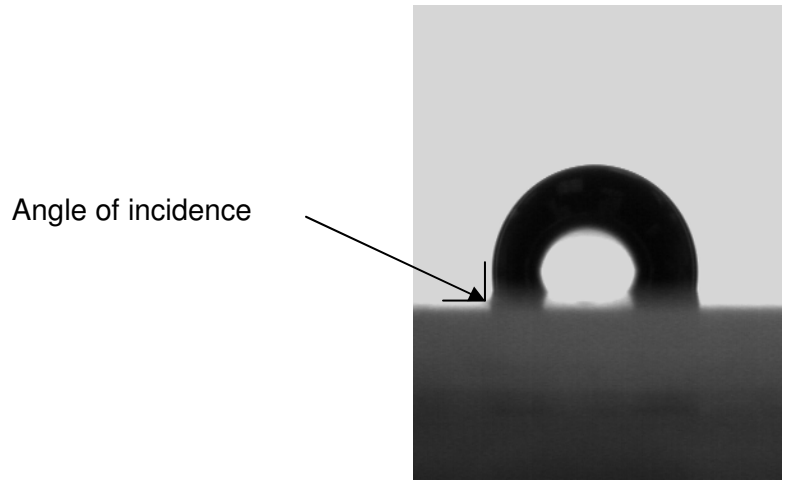
Scope: The purpose of this study is to compare the ability of fabric treatments to maintain repellency and color stability after extended UV exposure.

Products Tested:

Products	UPC#	Lot#
Bleached Cotton 400	-	1745
Poly-cotton	-	-
Nylon LC#11-T0017	-	-
Leather LC#10-T0214	-	-
Texturized Dacron 56T Double Knit Jersey (polyester)	-	4970
Eliane White Ceramic 4inx4in	-	-
Nano 4 Life Bathcare LC#12-T0446	-	206774445022
Nano 4 Life Premium Textile Concentrate LC#12-T0447	-	206774335101

Equipment Used: Drop Shape Analysis System (model# Kruss DSA 10 Mk2)
Biuged Instruments UV Weatherometer (LUV-III)
Konica Minolta Chromameter (CR-410)

Procedure: Each test product is sprayed onto various fabric swatches and allowed to dry for approximately 24hours before initial contact angle measurements are taken using the Drop Shape Analysis System, (model# DSA 10 Mk2), which measures the angle of incidence of an ultra low volume water drop on a horizontal surface, (see photo below). Initial L, a, b, color readings are also taken for each fabric after treatment using the Minolta Chromameter. Each test fabric is then exposed to UV light for four weeks before the color readings are re-read. Final contact angle measurements are also taken. The difference in color from the initial color readings and the color after UV exposure is expressed as delta E, (ΔE).



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Results:

Table I: Contact Angle Study for Textiles

Products	Dilution	Fabric	Initial Contact Angle	Final Contact Angle (4 week exposure)
Nano 4 Life Premium Textile Concentrate LC#12-T0447	9:1	Leather	117.4°	116.9°
		Nylon	136.2°	130.7°
		Polyester	125.4°	131.3°
	19:1	Cotton	115.1°	134.5°
		Poly-Cotton	126.1°	130.1°

Table I: Contact Angle Study for Bathcare

Products	Dilution	Substrate	Initial Contact Angle	Final Contact Angle (4 week exposure)
Nano 4 Life Bathcare LC#12-T0446	RTU	Ceramic	85.9°	102.8°

Table III: ΔE Color Change Study for Textiles

Products	Dilution	Fabric	4 week Color Change (ΔE)
Nano 4 Life Premium Textile Concentrate LC#12-T0447	9:1	Leather	0.87
		Nylon	2.86
		Polyester	2.22
	19:1	Cotton	0.75
		Poly-Cotton	3.41

Table IV: ΔE Color Change Study for Bathcare

Products	Dilution	Substrate	4 week Color Change (ΔE)
Nano 4 Life Bathcare LC#12-T0446	RTU	Ceramic	0.26

Delta-E Explained: Delta-E is used to describe (mathematically) the distance between two colors, (color of unlaundered fabric and color after laundering of the fabric). To calculate the delta-E of any two colors, you need to know their L,a,b values.
The average, casual viewer can notice the difference between two colors that are 5-6 delta-E apart. A trained eye is capable of differentiating two colors that are closer to 3-4 delta-E apart.

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Tested by: _____
Lab Supervisor

Approved by: _____
Technical Manager

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