

NuWet* 550

NuWet* 550 Hydrophilic Silicone Finish

nonmigrating finish for nonwovens

Description

NuWet 550 hydrophilic silicone finish is a novel water dispersible, nonmigrating organomodified durable hydrophilic silicone finish for polyester, polypropylene and polyethylene nonwovens. It helps enhance the hydrophilic properties of diaper coverstock, transition layers, shoe interliners, adult incontinence products, surgical and facial wipes, as well as feminine care products. NuWet 550 hydrophilic finish, once applied to the nonwoven, can help minimize migration to unwanted areas such as the hydrophobic leggings and waist areas of a diaper.

NuWet 550 hydrophilic finish is an excellent material in terms of all the attributes desired in a hydrophilic finish. This patented technology combines softening, wettability, durability and non-migrating properties into one molecule. NuWet 550 hydrophilic finish can be applied by pad bath, spray or printing equipment. Depending on the composition and geometry of the nonwoven, typical application concentrations range from 0.2 to 1.0 weight percent.

Key Features and Benefits

- Durable hydrophilic finish
- Rapid strike-thru
- Non-migrating
- Softening properties
- Low VOC
- Water dispersible

Typical Physical Properties

Percent Actives	100
Form	Liquid
Appearance	Clear
Color, GVS (Gardner Varnish Scale)	2
Nominal Viscosity, cSt, 25°C	1000
Ionic Nature	Nonionic
Specific Gravity, 25°C	1.02

Processing Recommendations

Performance Data

100% Spunbonded Polypropylene Nonwoven (22.0 g/m², 0.65 oz/yd²)

Test Protocol

1. Application

The finishes were spray-applied to one side of the nonwoven from aqueous dispersions such that after air drying, 0.5 or 1.0 weight percent silicone solids resulted on the nonwoven.

2. Hydrophilicity

Two test procedures were used:

- (a) AATCC Test Method 79-1995 (Absorbency of Bleached Textiles)
- (b) EDANA, Liquid Strike-Through Time (Method 150.3-96)

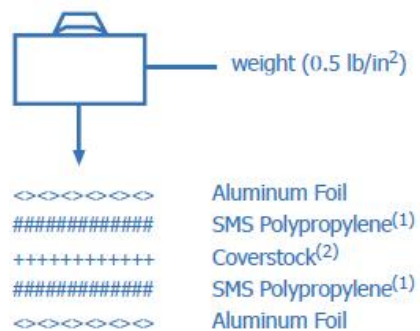
3. Durability

The EDANA Liquid Strike-Through Time (Method 150.3-96) was repeated 5 times on treated and untreated 100% spunbonded poly propylene nonwoven samples to simulate durability. Three hours elapsed time was allowed between insults. In the EDANA test, any value ≥5.0 seconds is judged as being not durable (see Table 1).

Note: The aqueous media used for all the testing (hydrophilicity, migration, and durability) was a 0.9 weight percent sodium chloride solution.

4. Migration

Untreated 100% spunbonded SMS polypropylene webs (Spunbonded/Meltblown/Spunbonded) were placed beneath and above the 100% spunbonded polypropylene non woven web treated on one side only. A weight (0.5 lb/in²) was placed on the nonwovens for 1 week at 50°C to simulate storage and all layers evaluated for hydrophilicity. The desired result is to have the top and bottom layers remain hydrophobic and the treated nonwoven to remain hydrophilic (see Table 2).



The nonwovens were stacked as follows:

- (1) 18.0 g/m² (0.53 oz/yd²), Untreated
- (2) 22.0 g/m² (0.65 oz/yd²), Treated with Hydrophilic Finish

Test Results

Test results are shown in the following Tables.

Table 1: Wetting Times for 100% Spunbonded Polypropylene Nonwoven Using 0.9% NaCl Solution

Durability Test: EDANA Strike-Through Time (Method 150.3-96)	Wetting Time, sec					
	Untreated	Product A		Product B	NuWet 550 Hydrophilic Finish	
	(As Rec'd)	0.5% ⁽²⁾	1.0% ⁽²⁾	0.5% ⁽²⁾	0.5% ⁽²⁾	1.0% ⁽²⁾
1 Insult	>180 ⁽¹⁾	3.0	2.6	2.8	2.9	2.8
2 Insult	>180 ⁽¹⁾	11.8	9.1	3.4	2.7	2.7
3 Insult	>180 ⁽¹⁾	10.6	8.4	3.8	3.1	2.9
4 Insult	>180 ⁽¹⁾	18.0	15.1	4.7	2.6	2.4
5 Insult	>180 ⁽¹⁾	19.5	19.4	9.1	2.9	2.7

(1) Test terminated after 180 sec; treatment considered hydrophobic

(2) Total finish level added to fabric on a dry weight basis

Table 2: Wetting Times for 100% Spunbonded Polypropylene Nonwoven Using 0.9% NaCl Solution

Migration Test: TAATCC Test 79-1995 (After aging under pressure for 5 days at 50°C)	Wetting Time, sec					
	Untreated	Product A		Product B	NuWet 550 Hydrophilic Finish	
	(As Rec'd)	0.5% ⁽²⁾	1.0% ⁽²⁾	0.5% ⁽²⁾	0.5% ⁽²⁾	1.0% ⁽²⁾
SMS Top Sheet	>180 ⁽¹⁾	>180 ⁽¹⁾	2.6	2.8	>180 ⁽¹⁾	>180 ⁽¹⁾
Coverstock (0.65 oz/yd ²)	>180 ⁽¹⁾	2.0	1.4	1.4	20.0	13.0
SMS Bottom Sheet	>180 ⁽¹⁾	>180 ⁽¹⁾	17.0	5.0	>180	>180 ⁽¹⁾

(1) Test terminated after 180 sec; treatment considered hydrophobic

(2) Total finish level added to fabric on a dry weight basis

Patent Status

Protected by U.S. Patent 5,811,482.

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