

# **baby care**

## TRIAL REPORT



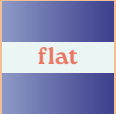




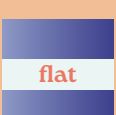
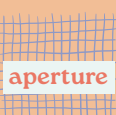
## developing better baby care

When it comes to the fiber they trust against babies' sensitive skin, parents prefer cotton.<sup>1</sup>

**Durable, breathable, absorbent, and naturally hypoallergenic,**<sup>2</sup> cotton is a premier ingredient for baby care product performance and appeals to parents.

The Cotton Incorporated 2024 100% Cotton Nonwoven Baby Care Trials include a pilot portfolio of carded webs of bleached and virgin cotton fiber spunlaced into nonwoven substrates for baby care products. Over the course of a year, a quest for proven performance was actualized in seven nonwoven grades, including three premium baby wipes, two diaper topsheets, and two diaper backsheets.



PROJECT ID	PATTERN	SUB-CLASS	PILOT LINE	GSM	FIBER CONTENT
NW-1047	 flat	Baby Wipe	ANDRITZ Perfojet SAS	65	50% TruCotton™ 50% HighQ®
NW-1048	 wave	Baby Wipe	ANDRITZ Perfojet SAS	65	50% TruCotton™ 50% HighQ®
NW-1049	 small square	Baby Wipe	ANDRITZ Perfojet SAS	65	70% TruCotton™ 30% HighQ®
NW-1050A	 flat	Baby Backsheet	ANDRITZ Perfojet SAS	33	70% TruCotton™ 30% HyDri®
NW-1050B	 wave	Baby Backsheet	ANDRITZ Perfojet SAS	33	70% TruCotton™ 30% HyDri®
NW-1051A	 flat	Baby Topsheet	ANDRITZ Perfojet SAS	35	70% TruCotton™ 30% HighQ®
NW-1051B	 aperture	Baby Topsheet	ANDRITZ Perfojet SAS	35	70% TruCotton™ 30% HighQ®

The HyDri® and HighQ® bleached, purified cotton for the pilot came from Barnhardt Manufacturing Company. The TruCotton™ virgin cotton came from Wildwood Technologies. The nonwovens were produced at Andritz Perfojet SAS in Montbonnot, France on their pilot line, and the NW-1047 baby wipe was converted at Pacon Manufacturing in Leland, NC. Use of these collaborators is for illustrative purposes only and does not imply endorsement.

GSM listed is a nominal target. Actual GSM data is within tolerance of specification and may vary.

## three fibers used and their details

The trials used 100% cotton fibers, gentle on sensitive skin for baby and proven to perform



### Barnhardt Purified Cotton<sup>3</sup>

High quality,  
U.S. grown, upland cotton

Pure, clean fiber with no  
residual pesticides, herbicides,  
or chemicals

Renewable natural fiber

High absorbency rate  
and retention

Can meet all USP/EP/JP &  
pharmacopoeia standards  
for purified cotton



### Wildwood Technologies<sup>5</sup>

TC-1S is a high grade,  
virgin, 100% cotton

No chemical scouring or  
bleaching, and naturally  
hydrophobic

Contains less than 0.02% of  
visible foreign matter

Ideal for the most discerning  
personal care products

Biobased and plant-based  
via USDA Biopreferred

TUV Biodegradability  
Certification

Regenagri<sup>®</sup> Certification

Verified Carbon Footprint  
Certification



### Barnhardt Purified Cotton<sup>4</sup>

Improved durability that  
withstands rigorous  
hydroentangling processes

Over 35% more hydrophobic  
than previous

Nonabsorbent, with  
hydrophobicity that promotes  
dryness and comfort

White and natural, replaces  
synthetic and manmade fibers  
in nonwoven applications

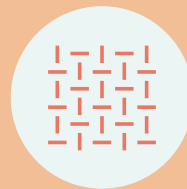
Organic and conventional  
cotton available, purified with  
GOTS-approved chemistry

## pilot supply chain



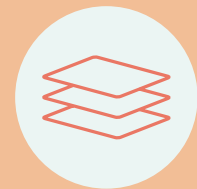
### FIBER

All cotton used in the trials is U.S. grown. The cotton is available in either standard or organic form. All bleached cotton came from Barnhardt, and virgin, mechanically cleaned came from Wildwood.



### MANUFACTURER

The pilot was developed on Andritz equipment. Examples of North American providers that can supply 100% cotton spunlace include Fibertex, Sandler, and Norafin.



### CONVERTERS

Cotton Incorporated partnered with converter Pacon for this particular pilot work. Converter examples include Rockline, Premier Care, Guy & O'Neil, Nice-Pak, and Kleen-Test. All are capable of converting baby wipes.



Fiber producers and manufacturers are listed for illustrative purposes only and does not imply endorsement. Scan the QR code or visit [CottonWorks.com/Sourcing](https://CottonWorks.com/Sourcing) to explore Cotton Incorporated's complimentary sourcing directories and build your baby care supply chain.

## PROJECT NW-1047, NW-1048 | baby wipe

**50% TruCotton™ TC-1S, Virgin / 50% HighQ® Bleached**

This balance of 50% TruCotton™ and 50% HighQ® cotton allows for the optimum balance of processing capabilities, product strength, absorbency, liquid holding, and softness. NW-1047 and NW-1048 are the same with exception of their flat and wave patterns.

### features & benefits



#### SOFTNESS

Blended TruCotton™ & HighQ® Cotton provides a soft product surface with a smooth hand.



#### STRENGTH

Products using this blend can be made with excellent strength properties, equivalent to that of the top retail brands.



#### THICKNESS

The use of 100% cotton produces thicker wipes that feel like a bulky washcloth fit for the worst blowout clean-up.



#### ABSORBENCY

Using Hydrophobic TruCotton™ TC-1S, Virgin with 50% HighQ® bleached cotton allows a balance of surface wetness to lotion absorbency – in the 400-700% range.



#### LIQUID MIGRATION

Our formulation allows for excellent stability of the lotion throughout the stack of wipes.



#### EMBOSSING

This cotton fiber blend can be very easily formed into emboss patterns to allow for both functional performance and aesthetic appeal.

### Benchmarking Wipe Breaking Strength & Thickness<sup>6</sup>

SAMPLE	WET STRENGTH MACHINE DIRECTION (N/50mm)	WET STRENGTH CROSS DIRECTION (N/50mm)	THICKNESS (mm)
Industry Average	25	15	0.55
Sustainable Product Average	28	15	0.7
NW-1047, 100% Cotton Product	33	19	0.7

Wet strength results are based on standard 50mm tensile strip testing.

### cotton wipe promotion

100% COTTON<sup>6</sup>

MADE WITH 100% U.S. GROWN COTTON<sup>6</sup>

PLASTIC FREE<sup>7</sup>

NATURAL<sup>7</sup>

LOW CO<sub>2</sub> FOOTPRINT<sup>9</sup>

100% PLANT BASED<sup>8</sup>

100% BIOBASED<sup>8</sup>

Cotton Incorporated's wipes highlight many of the top claims parents look for in their baby wipes

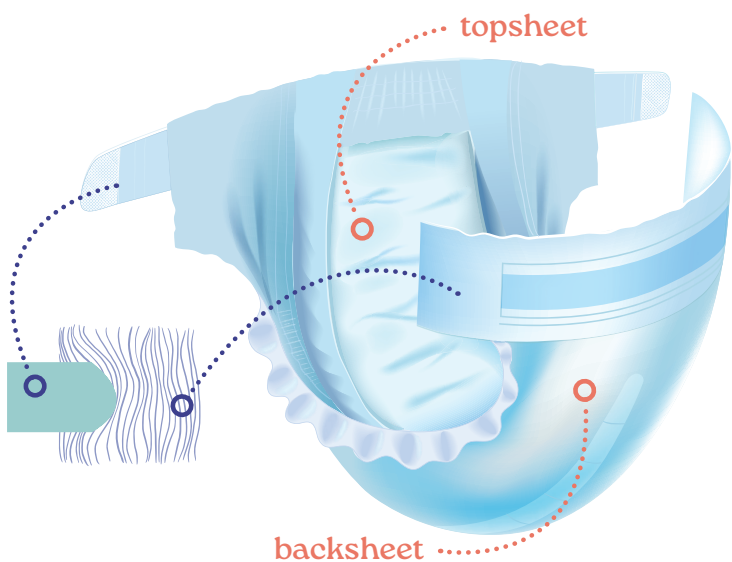


## PROJECT NW-1050A, NW-1050B | baby diaper backsheet

**Formulation: 70% TruCotton™ TC-1S, Virgin /30% HyDri® Bleached**

Baby diaper backsheets are more than just a plastic barrier film for leak protection outside of the diaper- they're the first place parents generally touch a diaper when pulling it from the pack. The use of a cotton backsheet cover is a desirable point of differentiation for softness of touch and aesthetic particularly the flat (A) and wave (B) patterns used in these nonwovens.

### features & benefits



#### SOFTNESS

The tactile properties of this blend are the most important feature: soft and smooth to the touch with a luxurious feel. Using virgin fiber, which maintains the lubricating oils and pectins of the natural cotton fiber, provides both a soft and bulky material.



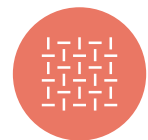
#### STRENGTH

This blend of fibers provides reasonable dry strength, critical in allowing the converting of the nonwoven on fast running machinery, and ideally, to be achieved at the lowest possible basis weight.



#### HYDROPHOBIC

The use of hydrophobic cotton fiber blends assures that leakage, especially overnight, does not occur.



#### TEXTURE

The bulky texture of a flat nonwoven or the embossed structure that can be achieved with a 100% cotton nonwoven allows the backsheet to engage the hooks in elastic closure systems in diapers.

### wave grip design

Introducing a Wave Grip Design, **NW-1050B** is engineered to effortlessly lock in to diapers, ensuring a secure and hassle-free hold. Perfect for busy parents, our **innovative gripping backsheet** gives a reliable bond for baby.

### cotton diaper backsheet promotion

100% COTTON<sup>6</sup>

MADE WITH 100%  
U.S. GROWN COTTON<sup>6</sup>

PLASTIC FREE<sup>7</sup>

NATURAL<sup>7</sup>

LOW CO<sub>2</sub> FOOTPRINT<sup>9</sup>

100% PLANT BASED<sup>8</sup>

100% BIOBASED<sup>8</sup>

# PROJECT NW-1051A, NW-1051B | baby diaper topsheet

**Formulation: 70% TruCotton™ TC-1S, Virgin/ 30% HighQ® Bleached**

A blend of hydrophobic virgin TruCotton™ fiber and hydrophilic bleached HighQ® fiber was used to provide enough wetting characteristics to let fluid quickly flow through the coverstock, without absorbing or letting fluid rewet back against the baby's skin. The product as formulated has excellent softness and comfort with both flat (A) and aperture (B) patterns.

## features & benefits



### APERTURING

A range of different geometric holes can be spunlaced into the product to affect both appearance and fluid functionality.



### STRENGTH

This blend of fibers achieves a reasonable dry strength that allows the converting of the nonwoven on fast running machinery at the lowest possible basis weight.



### FLUID MANAGEMENT

A 70/30 blend of fibers achieves excellent fluid management properties – the diaper topsheet is hydrophilic enough to quickly let fluid through to the core beneath, without absorbing fluid or letting it leak back through.



### SOFTNESS

The tactility of this grade stands out as its most crucial attribute, interfacing with the delicate skin of a baby's bottom. Crafted from virgin cotton, this material ensures a gentle touch, while the blend enhances its plushness.



## cotton diaper topsheet promotion

100% COTTON<sup>6</sup>

MADE WITH 100%  
U.S. GROWN COTTON<sup>6</sup>

PLASTIC FREE<sup>7</sup>

NATURAL<sup>7</sup>

LOW CO<sub>2</sub> FOOTPRINT<sup>9</sup>

100% PLANT BASED<sup>8</sup>

100% BIOBASED<sup>8</sup>

## go to market with cotton



Cotton perfectly aligns with the market's growing demand for **natural, sustainable, soft, and hypoallergenic<sup>2</sup>** products,

boasting proven performance and benefits. Retailers have a golden opportunity to leverage this collection by seamlessly integrating these nonwoven cotton substrates into their private label diapers or expanding their assortment

with a premium cotton wipe grade. Commercial ready, these materials embrace cotton's inherent qualities and retailers can cater to conscientious consumers seeking quality in their baby care. Leveraging cotton as an ingredient and the Seal of Cotton trademark, private brands can amplify their market presence to meet the demands of modern parenthood with a fiber consumers trust.



Fiber producers and manufacturers are listed for illustrative purposes only and do not imply endorsement. To view samples from this product development, visit [CottonWorks.com/Samples](https://CottonWorks.com/Samples) and submit your sample requests to [Nonwovens@CottonInc.com](mailto:Nonwovens@CottonInc.com).



## what will you create?

To feature the Seal of Cotton trademark on your products, contact your Cotton Incorporated account representative.

Find out more at [CottonWorks.com/BabyCare](https://CottonWorks.com/BabyCare),  
Or reach out to [Nonwovens@CottonInc.com](mailto:Nonwovens@CottonInc.com)

Cary

New York

Hong Kong

Shanghai

Mexico City



Cotton  
Incorporated

AMERICA'S COTTON PRODUCERS AND IMPORTERS Service Marks/Trademarks of Cotton Incorporated.  
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<sup>1</sup> Cotton Incorporated's 2024 Baby Care Survey, N=499 U.S. parents/guardians

<sup>2</sup> Cotton Incorporated 2019 Clinical Trials

<sup>3</sup> Barnhardt Manufacturing Company. "Spec\_productSheet\_rev4\_HighQ." Barnhardt Cotton Corporation, 2018, [https://barnhardtcotton.net/wp-content/uploads/2018/08/Spec\\_productSheet\\_rev4\\_HighQ.pdf](https://barnhardtcotton.net/wp-content/uploads/2018/08/Spec_productSheet_rev4_HighQ.pdf).

<sup>4</sup> Barnhardt Manufacturing Company. "HyDri\_productSheet\_rev5." Barnhardt Cotton Corporation, 2020, [https://barnhardtcotton.net/wp-content/uploads/2020/03/HyDri\\_productSheet\\_rev5.pdf](https://barnhardtcotton.net/wp-content/uploads/2020/03/HyDri_productSheet_rev5.pdf)

<sup>5</sup> "Product Detail." TruCotton™ Fibers, n.d., <https://trucottonfibers.com/product-detail/>.

<sup>6</sup> Cotton Incorporated 2024 100% Cotton Nonwoven Baby Care Trials

<sup>7</sup> TruCotton™ TUV Biodegradability Certification

<sup>8</sup> TruCotton™ USDA Biopreferred Ingredient

<sup>9</sup> TruCotton™ Verified Carbon Footprint Certification