Teardown: How Zhejiang Uniquality Uses Spunlace Fiber Grading&Double-Carding Semi-Cross Web Tech to Push Dry Wipe Limits

A technical breakdown of fiber grading and double-carding semi-cross web formation in spunlace dry wipes



Zhejiang Uniquality Nursing Products Technology Co., Ltd.

CALIFORNIA, CA, UNITED STATES, September 23, 2026 / EINPresswire.com/ -- Zhejiang Uniquality Nursing Products Technology Co., Ltd. (Uniquality), a Chinese manufacturer of wet wipes, dry wipes, baby diapers and training pants, specifies its dry wipes at the fiber-blending and web-formation stage rather than at the finished-goods stage, according to technical documentation published by the company. The company, whose corporate site is www.kingsafe.com, operates a 1 million sqm manufacturing footprint and reports annual output of 60 billion sheets. Roughly 70% of production is exported, with the United States, the European Union, South America, Russia and the CIS region listed among its principal markets.

Dry wipes are one of four product lines the company lists, alongside wet wipes, baby diapers and training pants. Standard specifications for the dry wipe line are a 15 x 20 cm sheet on nonwoven material of 35 to 70 gsm, supplied at 10 or 80 sheets per pack in soft pack or disposable formats, with sheet size, material, pack count and packaging all customizable.

Industry context: why dry wipes are a substrate problem

Dry wipes are routinely described as wet wipes without the liquid. That description obscures what the product actually is: a nonwoven structure that has to deliver absorbency, tensile strength, low linting and skin compatibility without a liquid carrier to cushion the fiber network during use.

The category is large enough to justify that engineering attention. Data from ResearchAndMarkets, published through GlobeNewswire, put the global dry wipes segment at USD 13.6 billion in revenue in 2024, driven by use in medical and household applications. Cognitive Market Research projects the narrower disposable facial towel market to grow from USD 0.45 billion in 2025 to USD 1.18 billion by 2034, an 11.2% compound annual growth rate.

Regulation adds a second set of constraints. The U.S. Food and Drug Administration classifies dry wipes intended for skin cleansing as cosmetics, and therapeutic claims such as acne treatment would require drug approval. In the European Union, Regulation (EC) No 1223/2009 requires a Product Information File and a CPNP notification for market access. Both frameworks place the burden of proof on the manufacturer's material specification and production controls.

In practice, the failure modes are material-level. If fiber grading is wrong, the sheet either tears during wiping or releases fiber debris in dry condition. Low linting, therefore, is not a finishing detail; it is an outcome of fiber length selection, entanglement density and post-treatment.

Fiber grading: a blended, customizable fiber platform

The substrate platform Uniquality uses for dry wipes begins with fiber selection rather than with a single fixed raw material. Documented fiber options for the dry wipe substrate include polyester, viscose, bamboo, Tencel (lyocell), cotton and low-melt polyester fibers, with blend ratios open to customization.

The design logic is functional division of labor. Viscose contributes absorbency and a soft hand. Polyester contributes tensile strength and dimensional stability. Bamboo fiber differentiates the product at the raw-material level for markets that favor plant-based positioning. Cotton improves skin-contact properties. Low-melt polyester is used where a firmer, more structured fabric hand is required. Because blend ratios are customizable, one production platform can serve end products positioned from facial cleansing sheets and infant care wipes to adult care, clinical wiping and household or industrial cleaning cloths.

The cotton spunlace variant illustrates the parameter envelope. That substrate is documented as a cotton and viscose blend with a basis weight range of 35 g to 100 g and roll widths from 10 cm to 320 cm, produced with double-carding and semi-cross web formation, and finished with optional hydrophilic treatment, coating or anti-static treatment. The same substrate platform feeds dry wipes, wet wipes and composite products.

Web formation: double-carding with semi-cross laying

Physical structure decides how a dry wipe behaves under dry wiping. Uniquality's dry wipe substrate is made by spunlace (hydroentanglement), in which high-pressure water jets mechanically entangle the fiber web instead of bonding it with a chemical adhesive. The engineering consequence is that no adhesive residue is introduced into a material intended for repeated skin contact.

Before entanglement, the web is formed on a double-carding line with semi-cross laying. Two carding stages open and orient the fiber more thoroughly, reducing neps and unopened fiber bundles that would otherwise become weak points or lint sources. Semi-cross laying then balances fiber orientation between the machine direction and the cross direction, producing a more even relationship between longitudinal and transverse tensile strength, the practical difference between a sheet that wipes and a sheet that tears along one axis.

Entanglement itself is controlled through water jet pressure, the number of injector rows and total entanglement energy. Those variables determine bonding density and thickness uniformity across the roll, which is why they are treated as process parameters rather than fixed settings.

Post-treatment, linting control and dry/wet dual use

After entanglement, the substrate passes through finishing, where hydrophilic treatment, coating or anti-static treatment can be applied depending on the target application. For dry-and-wet dual-use products, the company positions its dry wipes as usable dry for gentle cleaning and wet as an alternative to wet wipes, and the substrate therefore has to hold two performance profiles: enough stiffness and low linting in dry use, fast absorption and tear resistance once wetted.

Linting control is the property most closely tied to dry use. Uniquality lists low linting alongside softness, absorbency and skin compatibility as core features of its dry wipe products. The control measures sit upstream and downstream at once: fiber length selection to limit short-fiber content, higher entanglement density to bind fibers into the network, and finishing steps that close fiber ends.

Reference performance data

Finished performance depends on basis weight and blend, but published industry reference values for one common construction illustrate what the parameters translate into at the top of the range. A viscose and polyester spunlace at 80 g/m2 is documented at roughly 1.05 mm thickness, with machine-direction tensile strength of about 95 N/5 cm and cross-direction tensile

strength of about 70 N/5 cm in dry condition, and an absorption capacity of about 700% of its own weight.

Those figures are benchmark references for that basis-weight class rather than a specification for every dry wipe SKU. They are useful as an anchor when buyers compare quotations, because they convert broad claims about softness or strength into values that can be checked against ISO 9073-series methods for tensile strength and absorbency.

Verification: certification scope and clean-room production

For a product that touches skin and mucosa, the verification layer matters as much as the material layer. Uniquality's dry wipes are covered by management-system certifications whose scope explicitly names dry wipes: ISO 9001 (certificate 01326Q0078R102), ISO 14001 (01326E0075R101) and ISO 45001 (01326S0066R101), all issued by GAC with validity to April 2029, plus ISO 50001 (01326En0008R201) valid to March 2029 and a SEDEX audit (ZAA600079586) covering labour standards, health and safety, environment and business ethics. The company also states that production runs in 100,000-class clean-room conditions and that its quality system is GMPC-certified.

Batch-level control is documented as COA issuance with AQL sampling inspection. In-house laboratories handle performance testing, R&D and quality verification, the functions that determine whether a change in fiber blend or basis weight still meets specification before it reaches a customer order.

From substrate specification to order execution

Buyers in the evaluation and execution stage typically need to know how a material platform converts into a repeatable order. Uniquality operates on OEM and ODM terms, with customization available across material, size, logo, packaging, fragrance and formula. Quoted lead time is 35 to 45 days after artwork confirmation and deposit. Minimum order quantity is one 40-foot high-cube container for wet wipes and dry wipes, and 150,000 pieces for baby diapers and pull-ups. Monthly capacity is documented at 7 billion units for wet wipes, with capacity varying by product line. Purchase terms are FOB or CIF, with a 30% deposit and the balance against a copy of the bill of lading; acceptance is based on factory pre-shipment testing or a customer-specified protocol.

A documented UK case shows how that structure performs at volume. Over a three-year cooperation period, the project shipped 20 forty-foot containers per month, recording a 99.5% on-time delivery rate and zero major quality complaints. Applications under the same account covered household cleaning, baby care, personal hygiene and beauty care. The features the case records, including GMP production, ISO certifications, eco-friendly materials, strict quality

control, competitive pricing and reliable lead times, map directly onto the substrate and verification layers described above.

Automated production at Uniquality covers raw material processing through finished-product packaging, run to international hygiene standards. Image: Uniquality

Market impact and competitive context

The dry wipe and facial towel segments sit inside a wipes industry that Nonwovens Industry's 2025 manufacturer review characterizes through a small group of large suppliers, including Kimberly-Clark, Procter & Gamble, Nice-Pak and Winner Medical (PurCotton), alongside a long tail of regional converters. Growth in disposable facial towels, projected at an 11.2% CAGR to 2034 by Cognitive Market Research, is concentrated in categories where substrate feel and lint performance are the visible quality difference to end users.

That shifts competitive weight toward material capability. A converter that buys substrate on the open market can adjust pack formats and price, but it cannot change fiber grading or the web-formation route without changing suppliers. Where the substrate is specified in-house, those levers are available at the formulation stage, which is where the parameters in this teardown, from blend ratio and basis weight to entanglement density and finishing, become commercially relevant rather than technical detail.

Closing outlook

For procurement teams evaluating dry wipe supply, the material questions are specific and answerable: which fiber blend is used and can it be documented; what basis weight range the platform covers; whether the web is formed by carding, spunlace or another route; what tensile and absorbency values apply at a given basis weight; and how linting is controlled and measured. Certifications add the compliance layer, and order terms such as lead time, container-level minimums and acceptance criteria determine whether that specification can actually be delivered at scale.

Uniquality's disclosed parameter set provides a worked example of that evaluation framework and a reference point against which competing quotations can be compared.

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