

Asia's Only Regional Bilingual Magazine for the Nonwovens Industry

# NonwovensAsia

亚洲非织造材料工业

ノンウオーブンス・アジア

부직포 아시아

## 节能、高效水刺非织造布生产线

Energy Saving and High Efficient  
Spunlaced Nonwovens Production Line

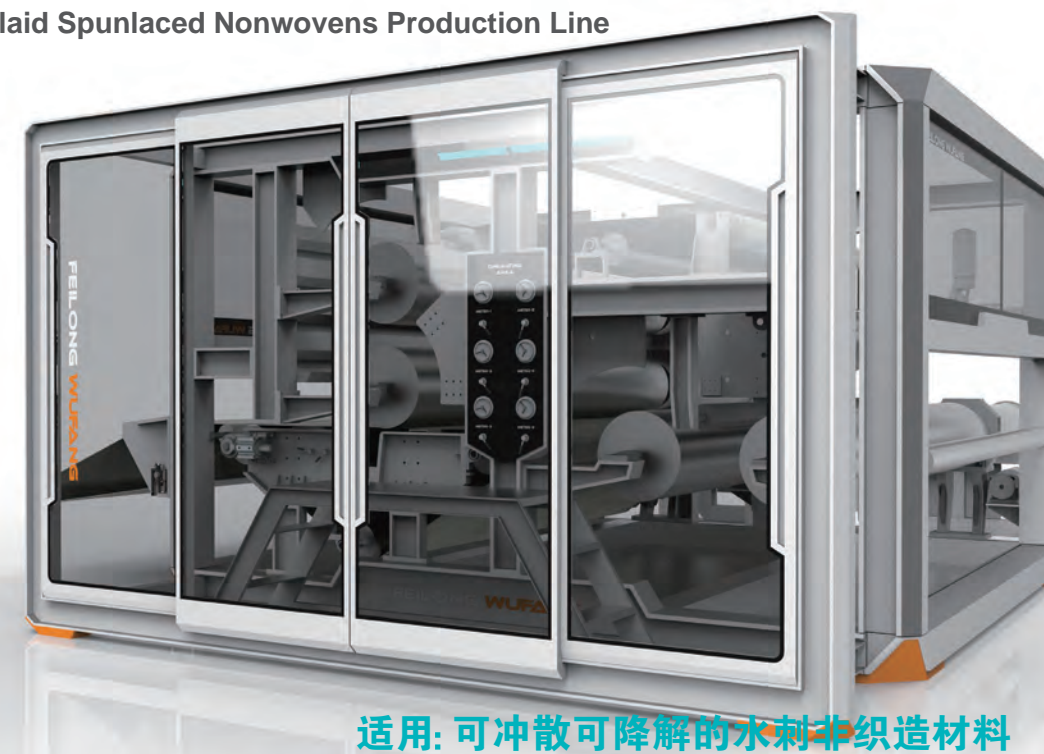
## 适用: 医用卫生材料, 清洁、护肤、即弃材料, 合成皮革基布材料

Applications: Production of Medical and Hygiene Material, Cleaning Material,  
Skincare Material, Disposable Material and Substrate for Synthetic Leather

**FEILONG** 飛龍

## 新型湿法成网水刺非织造布生产线

New Type Wetlaid Spunlaced Nonwovens Production Line



## 适用: 可冲散可降解的水刺非织造材料

Applications: Production of Flushable and Degradable Spunlaced  
Nonwovens

### 常熟市飞龙无纺机械有限公司

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ASBG215 Carding machine

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ASBG939大仓混棉箱  
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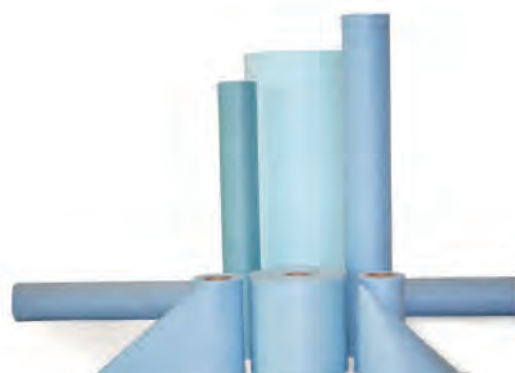
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高质量。体验我们的创新方法和数字化服务怎样给您带来比以往任何时候都更多的控制管理。所有这些都为您的产品开发和业务成功打开了新的机遇。

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## LYG Boulder Industrial Co.,Ltd

连云港柏德实业有限公司位于中国江苏省连云港市东海经济开发区，创建于2007年11月，主要从事医用防护材料生产和销售。2013年4月投产的SMMS纺熔复合无纺布生产线，汇集国内外高新技术，并延揽行业内精英人才，根据医用无纺布的需求特点进行专门设计，拥有多项独特技术。可以生产SS，SMS，SMMS等各种规格，各种颜色无纺布产品。并可以进行亲水、抗静电、抗酒精、抗油、抗血等处理。产品纤维细度好，手感柔软，熔喷层具有良好的阻隔性能，适用于医疗及卫生等领域，如：隔离衣、手术衣、手术铺单、纸尿裤、成人失禁品等。



LYG Boulder Industrial Co. Ltd is located in DongHai Economic Development Zone, LianYungang, JiangSu Province, established on Nov.2007, mainly engaged in producing and selling medical protective and hygiene materials. We designed SMMS line for medical use, having unique technology. Our line can produce SS, SMS, SMMS, etc. with hydrophilic, antistatic, alcohol repellent and other treatment. We have owned fine fiber technology with excellent barrier property and better hand feel, mainly used for protective apparels such as isolation gowns, surgical gowns, surgical drapes, also can be used for hygiene field as well.



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Tel: 0518-87162577-6801 Fax: 0518-87798953  
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**FEILONG**  
WUFANG



**高速梳理机**  
High-speed carding machine

机器宽幅: 2.5M、3.0M、3.8M  
Machine width: 2.5M, 3.0M, 3.8M  
出网速度: 可达150M/min  
Output speed: up to 150M/min

适用范围: 针刺、水刺、热风无纺布  
Application: Needle Punching, spunlace,  
air through fabric



**热风定型机**  
Hot air setting machine

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Machine width: 2.5M, 3.2M  
有效烘区:  $3M \times n$  单元  
Drying zone:  $3M \times n$  unit  
生产速度: 可达150M/min  
Production speed: up to 150M/min

适用范围: 热风无纺布、无胶棉、过滤棉、热熔毡  
Application: Air through fabric, non adhesive mattress,  
filter media, thermal bonding fabric

**120M新型热风无纺布生产线**





**高效水刺机组**  
High-efficient spunlace units

机器宽幅: 2.5M、3.5M  
Machine width: 2.5M, 3.5M  
生产速度: 可达180M/min  
Production speed: up to 180M/min

适用范围: 各种水刺无纺布  
Application: all kinds of spunlace nonwoven fabric



**高速针刺机**  
High-speed needle loom

机器宽幅: 2.5-9M  
Machine width: 2.5-9M  
针刺结构: 单针区、双针区、四针区  
Needle structure: single board, double boards, four boards

针刺频率: 1200n/min、1600n/min  
Needling frequency: 1200n/min, 1600n/min

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NTH1600热熔胶喷胶复合设备

NTH1600 Hot Melt Spray Lamination Machine

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医用隔离服、一次性医用床垫、建筑用隔水透气膜、婴儿尿裤、成人尿裤、床垫底膜等材料复合

**Application:**

Medical Isolation Gown, Disposable Underpad, Building Water-proof Breathable Film, Backsheet Lamination for Baby Diaper, Adult Diaper, Underpad, etc.



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TB2400透气涂布复合设备  
TB2400 Breathable Coating Lamination Machine

TB2100透气涂布复合设备  
TB2100 Breathable Coating Lamination Machine

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**Application:**

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汕头三辉无纺机械厂有限公司成立于2001年8月，总部位于广东省汕头市，在揭阳高新区建有占地10万m<sup>2</sup>的广东三辉无纺机械有限公司新厂区，为国家高新技术企业、广东省民营科技企业、广东省守合同重信用企业、汕头市战略性新兴产业重点培育骨干企业、汕头市装备制造业重点企业，拥有广东省无纺机械（三辉）工程技术研究中心、汕头市企业技术中心等科研机构，是《针刺机》、《针刺法非织造布生产联合机》等行业国家标准起草单位，为科技创新型企业。

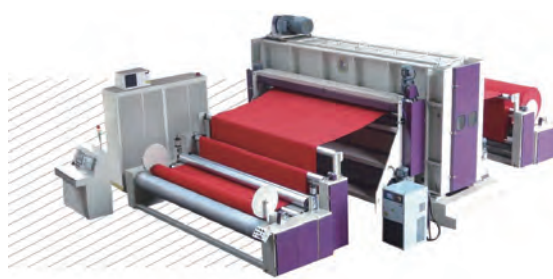
公司坚持“工艺主导、联通产研，科技创新、引领行业”的研发方针，承担多项国家、省、市科研项目，获得国家、省、市科技进步一、二、三等奖，拥有如“宽幅高频起绒针刺机”等一批具有自主知识产权的高新技术产品，多项技术填补国内行业空白，处于国内领先国际先进水平。自主研制的针刺法非织造机械有八大类50多个品种，主销国内高端市场，并已出口欧亚等地，可提供产品定位、工艺制定、设备选型、安装调试、人员培训、设备保养等交钥匙工程。

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工作幅宽 (Working Width): max10500mm  
针刺频率 (Stroke Frequency): 1200 ~ 1600rpm/min  
生产速度 (Production Speed): 2.5 ~ 15m/min  
植针密度 (Needle Population): 2000 ~ 8000ns/m



(双针板) 高频起绒针刺机组  
(Double Boards) High Frequency Velour Needle Punching Units

工作幅宽 (Working Width): 2500mm ~ 4500mm  
针刺频率 (Stroke Frequency): 1200 ~ 1800rpm/min  
生产速度 (Production Speed): 2 ~ 10m/min  
植针密度 (Needle Population): 2 × (5000 ~ 8000)ns/m

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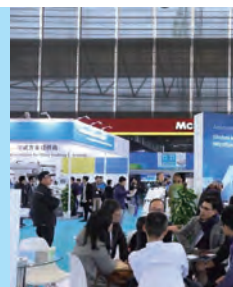
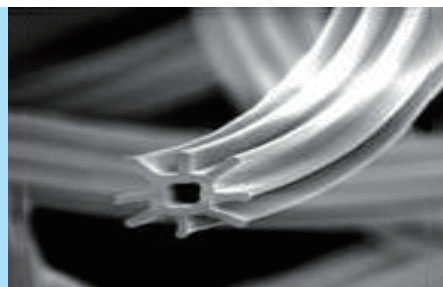
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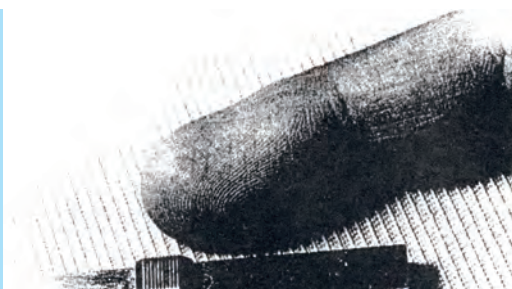
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# 中国医卫用非织造产品 示范基地

医卫用为核心

生活用为重点

工业用为辅

倩而宝卫生用品

欧品佳纸尿裤

裕丰无纺布

中国医卫用非织造产品  
示范基地 (B区)

中国医卫用非织造产品  
示范基地 (A区)

- ◆ 龙头企业引领，共筑医卫用魔幻版图、无纺布全产业链闭环
- ◆ 功能分区明确，基础配套成熟，形成原材料、配材、成品加工、物流仓配的完整链条
- ◆ 立体跨越式深度发展，横态完善医卫用非织造产品成品下游生态链，纵态融合商贸+教育+旅游等关联产业
- ◆ 重点面向国内外医卫用非织造及纸品优质企业，同时向机械装备制造、高端工业环保滤材、汽车内饰配件等领域拓展

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## Business News



ANDRITZ neXline spunlace line with the new aXcess Varioweb card manufactured in China



Mr. ZHOU, President of Zhejiang Saihong, in front of the neXdry Advantage through-air dryer

### ANDRITZ successfully starts-up a complete new spunlace line supplied to Zhejiang Saihong Textile, China

GRAZ, JANUARY 31, 2019. ANDRITZ has successfully started up a new neXline aXcess spunlace line at Zhejiang Saihong Textile Science & Technology Co., Ltd. based in Xiaoshan, Zhejiang Province, China. The line is dedicated to the production of a wide range of spunlace products from 20 to 80 gsm for the hygiene and medical markets, which open new markets thanks to the ultralight spunlace fabrics. The production speed at the winder is up to 150 m/min with only one carding machine.

This full aXcess spunlace line delivered by ANDRITZ is part of a new generation of lines that integrate the latest developments and offer a compact design with high capacity. ANDRITZ supplied the APC opening and blending system, the new aXcess Varioweb carding with three doffers, the hydroentanglement JetlaceAvantage and the neXdry air-through dryer. This new web forming system is perfectly suited to spunlace lines with only one carding machine and is able to deliver high-level spunlace fabrics with perfect web quality. The JetlaceAvantage unit includes state-of-the-art water jets with very low energy consumption.

This spunlace line signifies Zhejiang Saihong's entry into the nonwoven sector. The expertise of ANDRITZ in the nonwoven sector as well as the full support provided by the local ANDRITZ process team in Wuxi were decisive in the order being placed with ANDRITZ.

Zhejiang Saihong Textile Technology Co., Ltd. has been producing various functional composite materials for about 10 years now. The company is one of the main players in China and exports its products to Europe, the United States and other international markets.

#### FOR FURTHER INFORMATION, PLEASE CONTACT

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### Toray to launch sustainable suede nonwoven

Ultrasuede BX features 30% plant-based raw material

Toray Industries would introduce Ultrasuede BX, a nonwoven material with a suede texture which comprises approximately 30% plant-based raw materials in January 2019. The material realizes the highest proportion of plant-based raw materials –polyester and polyurethane in this case - in the world.

"Ultrasuede BX is the world's first nonwoven material with a suede texture that uses plant-based polyurethane as a raw material, and Toray plans to market it as an environmentally friendly material that offers both high sensitivity and functionality in wide-ranging applications such as automotive interiors, fashion and upholstery. It aims for sales of ¥500 million (\$4.5 million) from the product in fiscal year 2019 and ¥3 billion (\$26 million) by 2024. A nonwoven material with a suede texture is manufactured by impregnating the three-dimensionally entangled structure of polyester ultra-fine fibers with polyurethane, coagulating it and buffing to form suede-like surface structure. Ultrasuede BX uses Polyester polymerized with Ethylene glycol made from waste molasses of sugarcane and polyurethane composed of Polyol made of castor oil from inedible castor-oil plant.

Before this technology was developed, polyurethane made of plant-based raw materials faced the technical issues on physical properties such as low durability and hand and could not be used for a nonwoven material with a suede texture. To solve these issues, Toray used its unique design technology from polymer to product structure and polyurethane coagulation technology and succeeded in development of the Ultrasuede BX" which has high levels of plant-based raw materials, superior feeling and functionality such as high durability, air-permeability and easy maintenance.

Since 1970, through continuous technological advancements, Ultrasuede has evolved as a highly functional material not only for fashion and interior designs, but also for automotive and aircraft interiors, sports gear and accessories for smartphones and mobile devices. Toray also has been focusing on development of environmentally friendly sustainable products and has been marketing



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Ultrasuede® PX, which uses partial plant-based polyester since 2016. The addition of Ultrasuede® BX to the brand's product lineup further expands the company's deployment of a non-woven material with a suede texture that realizes both sustainability and creation. (Source from: "www.technicaltextile.net")

### Mölnlycke acquires danish airlaid producer

**M&J Airlaid Products will strengthen Mölnlycke's wound care capabilities**

Mölnlycke, a medical products and solutions company, announced its acquisition of M&J Airlaid Products A/S ("M&J"). M&J is a Danish private company and manufacturer of specialized and high-quality absorbent airlaid nonwoven materials.

M&J's airlaid technology is critical along with foams and soft silicone in Mölnlycke's wound care products. M&J has an annual revenue of €10 million. The acquisition supports Mölnlycke's growth ambitions and adds critical R&D capabilities to an already strong product pipeline and increasingly differentiated portfolio.

In conjunction with the acquisition, M&J and its employees will be an integral part of Mölnlycke. The acquisition will improve Mölnlycke's security of supply of the airlaid material that is essential in the production of advanced wound care dressings and will help grow the wound care business by accelerating innovation and product development in existing and future products. The parties have agreed to keep the purchase price confidential.

Richard Twomey, CEO of Mölnlycke, comments: "We are very happy to welcome M&J into the Mölnlycke family. Our relationship dates back several decades, and thus is a natural unification of forces. This is fully in line with where we want to be as a company, and M&J's strong R&D capabilities combined with Mölnlycke's end-product knowledge will help us further improve our competitive position within the advanced wound care industry."

Jens Ole Brøchner, CEO of M&J, comments: "I welcome Mölnlycke, a long-time customer and partner of M&J, to care for our heritage. The operational and strategic synergies will

allow for high-quality products brought to market even faster, and I look forward to continued success under the new ownership structure."

(Source from: "www.technical-textile.net")

### Hero Wipes releases lab results

**Wipes can remove up to 99.7% of lead contaminants**

Hero Wipes, the innovator of proven, protective wipes for first responders, announced the results from additional lab testing of the Hero Wipes product that confirm its capability to remove up to 99.7% of lead contaminants. That is in addition to the previously proven removal of up to 90% of known carcinogens found in soot for the fire decontamination wipe. Public safety professionals, including firefighters and law enforcement personnel, are put at great risk daily from exposure to cancer-causing carcinogens. Post-incident decontamination with proper wipes is critical to reducing the risk of toxic handoff.

Recent studies show that firefighters responding to structure fires are exposed not only to potentially carcinogenic soot but also lead contaminants coming from household furnishings, carpets and appliances. Studies also show an increased risk of lead poisoning for Law Enforcement members due to the exposure of gunshot residue and lack of proper decontamination. Assembled in the USA and EWG verified, Hero Wipes has been formulated, tested and proven to remove carcinogenic soot and lead contaminants in the same wipe.

"We are very proud of the work we do to support and protect first responders and public safety personnel," says Eve Yen, founder and CEO of Diamond Wipes International, Inc., which owns Hero Wipes. "The additional protection offered by the Hero Wipes Fire product shows our continued commitment to protecting the people who protect us."

"All of us at the Los Angeles Fire Department are excited to hear the news about the new tests," says LAFD assistant chief Wade White. "We selected Hero Wipes because it was proven effective at removing soot. Now to learn that it is also effective at removing the heavy metal toxins that we are exposed to is an added value."



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Introduced in 2017, Hero Wipes is the first on-scene decontamination wipe to have its unique formulation, a patent-pending blend of ingredients that works to isolate harmful toxins and carcinogens, scientifically tested for effectiveness in their removal. Hero Wipes is proven effective to remove up to 90% of benzopyrene, commonly found in soot, and up to 69% of TCEP, the most common toxic flame retardant, in just a single swipe. With the new testing showing removal of up to 99.7% of lead contaminants, Hero Wipes Fire provides top-of-the-line protection from fire contamination.

(Source from: "www.nonwovens-industry.com")

### Teijin develops heat resistant nonwoven

#### Technology aimed at bag filters

Teijin has developed a neat-resistant nonwoven fabric using meta-aramid fibers for the bag filter market. The fibers used to make the nonwoven fabrics feature an extra-fine fiber of 0.5dtex. Although there is a method used to laminate a PTFE film to the nonwoven fabric, the company is trying to increase the efficiency of this process. Improving this efficiency because of challenges associated with laminating aramid fiber to the PTFE film. This material is being marketed in China where the environmental regulations are severe and demand for bag filters is growing.

(Source from: "www.nonwovens-industry.com")

### Unicharm launches products in Vietnam

#### Diana division adds to baby and adult diaper line-ups

Unicharm's Vietnamese subsidiary, Diana, has introduced new and improved products within its baby and adult care businesses recently.

The company has added the new and improved pants fit diaper with the aroma of Japanese green tea under its leading Bobby brand. The diaper is designed to be worn when the baby first becomes mobile. They fit well and are comfortable while avoiding leakage. Bobby used Unicharm technology to create Bobby's Tailored Pants, which are available in sizes medium-extra, extra large.

Meanwhile in the adult incontinence business, Unicharm's Caryn brand is the number one diaper brand in Vietnam. Here the company's

new Caryn Diaper Enhancer with "natural herb aromatherapy" brings comfort, keeps the self-respect to the future no longer elderly bedridden."

Dual antibacterial technology combines nanoparticle technology with Benzalkonium solution to inhibit the growth of bacteria, reduce the incidence of ulcerative colitis and the risk of skin diseases for bedridden patients. In addition, understanding how odor issues can affect not only the patient but also the caregiver when dealing with incontinence, the company added aromatic benefits, extracted from 11 natural herbs, to the diapers.

(Source from: "http://m.grandiico.com")

### Lenzing rebrands its fibers for the nonwovens industry

#### Company plans transformation from a B2B fiber producer to a B2B2C brand with the launch of VEOCEL

During the World of Wipes International Conference in Chicago, fiber producer Lenzing announced VEOCEL as its new nonwoven specialty brand of fibers. The rebranding is intended to position VEOCEL as a premium brand of nonwoven fibers for daily care rituals, covering a range of applications from baby care, beauty and body care to intimate care and surface cleaning. VEOCEL fibers are certified clean and safe, biodegradable, from botanic origin and produced in an environmentally responsible production process.

The launch of VEOCEL is part of Lenzing's strategy to transform from a business-to-business (B2B) fiber producer to a business-to-business-to-consumer (B2B2C) brand.

Around four years ago, Lenzing executives wanted to develop a new branding strategy due to difficult market situations, according to Marco Schlimpert, Lenzing's senior vice president Europe & Americas. "There are a lot of fibers we sell in the nonwovens and textile industries, but on a daily basis people don't recognize it, and they don't see the features we are offering. That's the reason why we said we needed to go from B2B marketing to a 'B2Me' approach. To elevate the fiber from the technical specification to the purpose and the value the end consumer would perceive," he explains.



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Therefore, Lenzing decided to position its fibers in a different way and distinguish between the textile industry and the nonwovens industry. Now, Lenzing's textile fibers will fall under the TENCEL brand, while the nonwovens fibers will be part of the VEOCEL portfolio.

"These are all the specialty fibers that we are producing in our production footprint, which we have produced also in the past, but in the past we marketed in a different way, such as a substitute of cotton, but that's not true because the properties we're offering with our fibers are much more enhanced than just any other fiber," Schlimpert says.

The VEOCEL fiber portfolio includes VEOCEL Lyocell and VEOCEL Specialty Viscose fibers, which are derived from renewable or sustainable wood sources from certified and controlled forests and plantations. The botanic origin of the fibers offers functional benefits such as improved moisture absorbency and management, contribution to breathability, good hand feel, blending versatility, and all VEOCEL fibers are certified biodegradable in soil, landfill, compost and seawater.

As an example, VEOCEL's unique properties can be demonstrated in the flushable wipes market. "If you take flushability and strength, usually these are two properties that are completely opposite, but we can combine them like nobody else can do with other fibers. This offers features that are unique," he notes.

Coupled with ongoing co-branding, joint marketing and brand education initiatives conducted with customers and brands globally, VEOCEL will enable Lenzing to shift its focus beyond fiber types to product application and build a relatable and emotional connection with consumers.

"What we are now doing in the nonwovens industry, as we have done for the textile industry for the past 15 years, is to position these highly valued technical properties with traceability, with sustainable ecological production, and to create emotions for the end consumer. So when the end consumer goes to Walmart, Costco, or wherever, and they see a range of different offerings, they think, 'okay, here's a brand I trust,'"

Schlimpert says.

Lenzing hopes consumers will soon associate VEOCEL with the company's stringently monitored production process in accordance with its high quality, environmental and safety standards. According to Schlimpert, Lenzing's site in Austria is the biggest integrated pulp and fiber manufacturing plant in the world, which also happens to be surrounded by pristine lakes and mountains and is one of the most well known regions for taking vacations in Austria, with clear water, a clear sky and a clear environment. Lenzing also operates the biggest single installed wastewater treatment plant in Austria. "We clean the water that way so that afterwards [the nearby lake] is a fisherman's paradise," he adds.

This is why VEOCEL's tagline "purely for you" has a double meaning, Schlimpert says. It's not only pure because it is good quality, but when a consumer buys it, they make a conscious decision to buy something that's been produced by a company that cares about its environmental footprint.

Alongside the launch of the VEOCEL brand, Lenzing announced an addition to its Surface portfolio—the VEOCEL Lyocell Fiber with "Quat" Release technology. The new fiber is a premium and specialty wood-based cellulose fiber that is used in hard surface cleaning and disinfectant wet wipes. VEOCEL Lyocell fibers with Lenzing's Quat Release technology allow quaternary ammonium compounds, also known as "Quat", to be released from wet wipes onto the surface for effective cleaning and disinfecting in household and industrial environments.

According to Lenzing, the majority of single-use cleaning and disinfectant wet wipes mainly consist of synthetic fibers such as polyester and polypropylene. This binding interaction substantially decreases the release of "Quat" and can negatively impact the efficacy of the disinfectant product. However, with Lenzing's "Quat" Release technology, the binding of "Quat" to the surface of VEOCEL Lyocell Fibers is significantly reduced, resulting in improved effectiveness of surface cleaning and the disinfection process.

Wet wipes containing VEOCEL Lyocell Fiber with "Quat" Release technology demonstrate

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### Scavone adds needlepunch operation in Brazil

State-of-the-art equipment will meet demand in automotive, filtration, synthetic laminates, geotextiles, furniture

Fabril Scavone, a leader in the Brazilian nonwovens industry, will invest in the construction of a new industrial plant featuring European machinery with state-of-the-art technology. The new site will make needlepunched nonwovens for the automotive, filtration, synthetic laminates and footwear industries as well as the geotextile, acoustics and furniture sector.

With the capacity to produce 500 tons per month, the investment will be made in the town of Itatiba in São Paulo. According to Laerte Guião Maroni, commercial director of the company, the investment is being carried out in order to maintain its position among the leaders in the Brazilian market, better attend the demands of clients and expand business abroad. "We are optimistic about the arrival of the new government and we believe that the needed reforms to resume economic growth will be approved soon," he says.

Scheduled to start operating in 2020, Scavone's new industrial plant would begin construction in 2019. The project will have an area of 20,000 square meters on a 100,000-square-meter plot along the Dom Pedro I Highway. In addition to its strategic location, the project will have ample room for future investment. After the start of operations, the new factory will generate more than 50 direct jobs as well as hundreds of indirect jobs.

The new production line will use the most advanced technologies available in the market to produce carded needlepunched and thermo calendered nonwovens. With the new production, Fabril Scavone will have a total production capacity of 1250 tons per month, which consolidates its position among the largest Brazilian producers and exporters of nonwovens.

(Source from: "www.converternews.com")

### IFP-R3: Optimized production process for inner dashes and floor insulators

With "IFP-R3", Autoneum has further improved its renowned manufacturing process for multifunctional, felt-based inner dashes and floor insulators and modernized the corresponding production line. The new line is characterized by a higher production output, lower maintenance intensity and less material usage. At the same time, "IFP-R3" is predestined for the manufacture of large components with high acoustic performance which makes the parts particularly suitable for use in sport utility vehicles (SUVs).

To support automobile manufacturers in the production of lighter, quieter and more fuel-efficient vehicles, Autoneum has optimized its process for the fabrication of lightweight inner dashes and floor insulators. The fully automated "IFP-R3" production system is based on the Rotating Injection Fiber process developed by Autoneum. The basic material, a felt-fiber blend, is continuously injected into a component mold located in a rotating drum to create stable in-intermediate products which are subsequently converted into acoustic components.

Compared to the previous model, the "IFP-R3" line has two additional feeding systems for the felt-fiber blend that allow a significantly higher production output while simultaneously reducing manufacturing time by 50%. Thanks to the line expansion, large felt mats can be processed into inner dashes and floor insulators that are particularly suitable for all-terrain vehicles and SUVs. With this system, Autoneum is making a decisive contribution to the weight and noise reduction of these globally sought-after vehicle models. As a result of the system adjustment, Autoneum also achieves a better environmental performance of the production process, as fewer fiber scrap is generated and can additionally be reused in the component production.

"IFP-R3" is already operational in various plants of Autoneum and the joint venture company UGN in North America and will in future be implemented at other Autoneum sites in Europe and China.

(Source from: "www.autoneum.com")

### Valmet supplies Papel Aralar

Nonwovens rewinder to be installed in existing plant in Spain

The Spanish company Papel Aralar S.A. has



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selected Valmet as the supplier for a new nonwovens rewinder to be installed in the existing PM 4 line at its plant in Amézqueta, Guipúzcoa, Spain.

The order was included in Valmet's third quarter of 2018 orders received. The new nonwovens rewinder is planned to be in operation during the second quarter of 2019.

"Our target is to always invest in cutting-edge technology to be able to fulfill our customers' requirements. Papel Aralar has served this business for 55 years and, thanks to the support from Valmet, we immediately recognized the ability of their F(O)CUS electromechanical rewinder to preserve outstanding product properties," says Senén Amunarriz Cortina, general manager of Papel Aralar.

"Valmet rewinders have a long record of successful installations, and they are well known in the market. We are proud and excited to launch the F(O)CUS machine concept in the nonwovens market and to support Papel Aralar's plans to expand to produce excellent nonwovens products," says Marco Capitani, product sales manager for Nonwovens at Valmet.

The new installation includes a Valmet F(O)CUS Reelite T15 E rewinder - the last stage of the innovative scalability concept of the Reelite T15 rewinder.

The machine is designed to have a maximum operating speed of 1.8 m/min and a maximum final reel diameter of 2,200 mm. It is equipped with a F(O)CUS electromechanical relieving system with Active Caliper Control (ACC) for perfect control of the winding parameters at high speed. The shaft handler system, defect management system and connection with the existing packaging system complete the scope of supply. (Source from: "www.pulpapernews.com")

### The acceptance for a new winder was signed by the Chinese customer Zhejiang Kingsafe Nonwovens Fabric Co. Ltd

On October 30th, a STREAM® WINDER was successfully started-up and accepted at the plant of the customer Zhejiang Kingsafe

Nonwovens Fabric Co. Ltd, Huzhou, Zhejiang, China.

The winder, which handles Spunlaced Fabric, PET and Viscose products of 30 to 50 gsm, with a width of 3200 mm, has proven to be perfectly compatible with the nonwovens production lines, thanks to A.Celli's technology, which makes it versatile and efficient at the same time.

The customer, confirming his trust in the A.Celli Group, subsequently purchased a complete line comprising a STREAM® winder, a RAPID® rewinder, a Slittomatic, an extractor, and an automated roll handling and packaging system. This line, currently in shipment, has the start-up scheduled for the first half of 2019.

The STREAM® & RAPID® solution by A.Celli Nonwovens has once again proven to be a guarantee for our customers. (Source from: "www.acelli.it")

### Diamond Wipes® announces acquisition of Ode to Clean®

- Diamond Wipes® and Ode to Clean® proudly introduce safer and simpler cleaning wipes
- Ode to Clean® is powered by Bioperoxide™, made with 100% plant-based ingredients
- A greener process makes a cleaner home

Chino, CA – Diamond Wipes International®, the largest American wet wipe manufacturer west of the Rockies, recently announced its acquisition of Ode to Clean®, the world's first cleaning wipes made with 100% plant-based ingredients.

"We saw a need for natural cleaning wipes without toxic chemicals," said Eve Yen, Founder and CEO of Diamond Wipes International, Inc. "More and more customers are becoming environmentally conscious of the products they use in their daily lives. Ode to Clean is the perfect solution that customers can feel safe using in their homes."

The Ode to Clean® brand was founded in 2016 by Solugen, a biotechnology company that specializes in Green Chemistry, a process to create greener and safer chemicals. Solugen's Gaurab Chakrabarti, M.D.,

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Ph.D., a doctor researching cancer, and Sean Hunt, Ph.D., a scientist, discovered a unique enzyme that produces a pure form of hydrogen peroxide which they have called Bioperoxide™. With their combined expertise, Dr. Chakrabarti and Dr. Hunt saw an opportunity to integrate Bioperoxide™ into an everyday cleaning product that does not compromise performance for safety.

Ode to Clean® is made with 100% plant-based materials and uses solar-powered and wind-powered manufacturing. "Many so called "Natural" household cleaning wipes use toxic chemicals, and rely on petroleum-based manufacturing," said Dr. Chakrabarti. "Sean and I developed a technology that reduces the waste and pollution in the production process but also created a purer product that would be clean and safe for our families."

Combining Diamond Wipes' innovation and capability with Ode to Clean's cutting-edge micro-manufacturing technology will create a product that is unmatched in today's market. Diamond Wipes® is launching an upgraded version of Ode to Clean® wipes in November 2018 with a biodegradable substrate and an improved formulation of Bioperoxide™ for more effective cleaning performance. (Source from: "www.diamondwipes.com")

### Sunda opens diaper factory in Ghana

**Chinese producer takes advantage of government policies**

President Nana Addo Danquah Akufo – Addo has formally opened a new baby diapers manufacturing factory near Weijia in the greater Accra region.

Sunda international, a Chinese-based manufacturer, has established a baby diaper factory in Ghana, taking advantage of the government's 1d1f industrialization policy. The company has already operated in Ghana for more than a decade with facilities dedicated to making hygiene products as well as building materials and hardware. These products are in part exported to other countries in West Africa.

"Your company's expansion drive in opening up different manufacturing plants in different parts of Ghana shows your confidence in the

Ghanaian economy and the profitability of your local manufacturing business," Akufo-Addo says. "It also gives a great signal to the reluctant investors who are waiting to see results from your investment as a motivation for their own initiatives. I encourage other investors to take advantage of our business-friendly policy to set up their own manufacturing plants in Ghana."

The President also assured the Ghanaian people that his government's flagship policy of 1D1F (one district, one factory) is permanent.

"It is possible to have a manufacturing base in every district with its accompanying job security and spread of wealth among the people of these communities and today's commissioning of this factory is another testimony," he says.

Sunda chairman Y.C. Chen says his company plans to increase the number of hygiene production lines at the new site from seven to 10 in the next year. These lines produce diapers, sanitary napkins and wipes. It is the company's largest in Ghana and it plans to continue to take advantage of government initiatives in the country.

"Your government's policy of 'one district, one factory' encourages investors to set up a factory in every district of Ghana which is what the Chinese government did about 40 years ago and it has industrialized China into one of the world's biggest economies," he says. "Industrialization' remains the main driving force behind every growing economy all over the world today. As Ghana is trying to industrialize, we at Sunda international are happy to be partners in the rural industrialization development project of the government of Ghana."

The new plant currently employs 500 people but that number will ultimately grow to between 800-1000. (Source from: "www.nonwovens-industry.com")

### Nippon Shokubai invests in Indonesia

**Acrylic acid plant to start up in 2021**  
Nippon Shokubai Indonesia plans to build a 100,000 ton per year acrylic acid plant in



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Indonesia in a bid to meet growing demand. The company plans to complete construction by the end of March 2021, targeting to start commercial operations in November 2021.

Acrylic acid is a feedstock for super absorbent polymer, or SAP, which is used for diapers. acrylic acid supplies are tight in Asia, and demand is expected to grow in the region.

The company operates a 140,000 metric ton per year acrylic acid plant in Indonesia. PT Nippon Shokubai is a subsidiary of Japan's Nippon Shokubai.  
(Source from: "www.nonwovens-industry.com")

### Prime medical turns hospital curtains, lab coats and scrubs into germ-fighting shields

LARGO, Fla. — November 27, 2018 — Soft surfaces have traditionally been one of the bigger challenges to sanitize in the health care environment. One study found that 92 percent of privacy curtains have been found contaminated with infectious bacteria within one week of laundering.[1] Yet another study cites that as much as 60 percent of nursing and physician attire can be a source of nosocomial infections.

Now, Prime Medical, in partnership with Clorox Professional Products Co., is introducing hospital privacy curtains, scrubs and lab coats that harness the sanitizing effects of sodium hypochlorite-based bleach to help make these soft surfaces part of the solution in reducing health care-associated infections (HAIs).

"The fabric of our privacy curtains, scrubs and lab coats will provide another tool for those in the health care environment to fight HAIs, making soft surfaces an asset rather than a liability," said Jim Sampey, CEO of Prime Medical. "Together, Prime Medical and Clorox Professional Products Company will fight HAIs and change the fabric of healthcare."

The new Prime Medical privacy curtains, scrubs and lab coats will feature the Clorox Healthcare and CloroxPro™ brand equities and provide unprecedented bactericidal protection, leading to safer patient environments. The fabric works by enabling

bacteria-fighting molecules to bind to the fabric's surface for up to 12 weeks after washing with bleach, inhibiting the growth and spread of viruses. The fabric recharges during each washing, and the antimicrobial capability is durable for a minimum of 75 industrial washes.

When laundered per the label instructions with the EPA-registered bleach, lab tests have shown the activated fabric can kill bacteria and viruses with 99.9 percent effectiveness, according to a study by the fabric's manufacturer. This means that as health care providers move between patient rooms, they can reduce the risk of spreading unseen pathogens via their scrubs and lab coats. And, for privacy curtains that are often touched and rarely changed, the fabric's antimicrobial capability provides an additional layer of protection to prevent the spread of bacteria and viruses.

"When we first saw the technology that Prime Medical was bringing to market, we knew it was one more example of a bundled approach to infection prevention and reducing pathogens in patient environments," said Amy Harmon, associate director – marketing, Clorox Healthcare. "That's what we look for in partners — like-minded companies that are as focused as we are on creating innovative solutions for cleaner, safer health care settings."

The privacy curtains are a two-part system consisting of a six-foot modular privacy panel that easily snaps onto a mesh top. Each privacy panel weighs just 1.4 pounds, making it easy for one person to change a curtain in as little as 40 seconds without a ladder. The fabric on all three products is fade-resistant to bleach so they will retain their original color wash after wash.

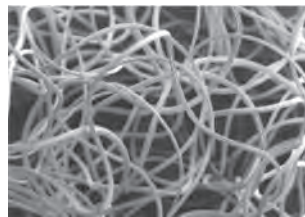
The Clorox Healthcare privacy curtains will be available December 2018 and the CloroxPro scrubs and lab coats February 2019.  
(Source from: "https://primemedical.com")

### Teijin develops highly modified cross-section crimped yarn: SOLOTEX® Octa®

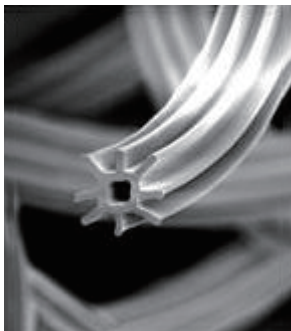
Tokyo, Japan, November 13, 2018 — Teijin Frontier Co., Ltd., the Teijin Group's fiber and

## Market News

products converting company, announced today that it has developed SOLOTEX Octa, a highly modified cross-section crimped yarn that is extra bulky, lightweight, stretchable and shape-recovering. Samples will be provided in the fiscal year 2018. Teijin Frontier expects annual sales of staple-fiber SOLOTEX Octa to reach 400 tons and sales of filament SOLOTEX Octa to reach one million meters as textiles by the fiscal year ending in March 2023.



SOLOTEX® Octa® Staple fiber



SOLOTEX® Octa® Filament

Synthetic staple fiber insulation that is extra shape-recovering after compression, bulky and lightweight is in demand as a substitute for natural feathers. There also is demand for extra bulky, lightweight and stretchable synthetic filament, but until now, manufacturers have found it difficult to produce such fiber that is both bulky and stretchable.

Teijin Frontier developed SOLOTEX Octa by transforming the cross-sectional shape of SOLOTEX , a stretchable, shape-recovering and high-cushioning material, into a highly modified cross section comprising eight projections aligned in a radial pattern around a hollow fiber.

**SOLOTEX Octa offers the following features in addition to those of SOLOTEX:**

- Shape-recovering after compression, highly bulky, lightweight and stretchable owing to the clearance between fibers.
- When used for staple fibers, maintains its coiled crimp structure with rigidity due to its cross-section shape, resulting in shape-recovering after compression, high stretchability and cushioning.
- Textiles are absorbent, quick drying, anti-transparent, and provide thermal barriers and insulation due to SOLOTEX Octa's large surface area.

Teijin Frontier envisions a wide range of promising applications for SOLOTEX Octa,

including fashionwear, industrial materials and more. The staple-fiber version will be used in place of feathers mainly for bedding. The filament version of SOLOTEX Octa will be used in textiles for sportswear and fashionwear.

(Source from: "www.teijin.com")

## Mogul South Carolina Nonwovens achieves ISO 9001:2015 certification

Mogul South Carolina Nonwovens — a fast-growing U.S. manufacturer of spunlace nonwovens for the hygiene, medical, automotive, and wipes industries — announces that they have been certified under ISO 9001:2015 as of April 19, 2018. ISO certification demonstrates Mogul's commitment to serving markets which require the highest levels of quality assurance.

International Organization for Standardization (ISO) 9001:2015 is the most updated standard of its kind and focuses on quality management systems and performance. It provides guidelines for developing a management system that aligns quality with the company's wider business strategy.

"The ISO certification is the result of our focus on risk-based thinking and accountability in all of Mogul's organizational processes. This is part of how Mogul ensures we're meeting our customer's expectations for service, quality, and communication in a manner that promotes long-term competitiveness," said Mogul SC president Darryl Fournier.

To support ongoing certification, Mogul invested in key staff members with external training to become certified internal auditors. This allows the company to simultaneously complete internal audits in each department throughout the year and prior to the annual recertification audit.

The company selected BSI Group as the registrar, and through extensive preparation was certified with no major findings.

Mogul South Carolina Nonwovens is a wholly owned subsidiary of Mogul Nonwovens. (Source from: "Mogul South Carolina Nonwovens")



## Market Trends

### McAirlaids announces VA expansion

**Investment will enable expansion into protein and fruit packaging markets**

German airlaid manufacturer McAirlaids will reportedly invest \$7.8 million to increase capacity at its U.S. operation in Rocky Mount, VA. The site, which was established in 2006, currently employs more than 125 workers and is McAirlaids' only U.S. operation. It makes absorbent airlaid material for food packaging, retail, medical, personal hygiene and filtration applications. The expansion will allow the company to expand into the protein and fruit packaging markets.

As an incentive, Virginia Economic Development Partnership worked with Franklin County to secure the project for Virginia. Governor Ralph Northam approved a \$75,000 grant from the Commonwealth's Opportunity Fund to assist Franklin County with the project. The Virginia Tobacco Region Revitalization Commission approved a \$60,000 Tobacco Region Opportunity Fund grant as well as a \$60,000 loan for the project. Funding and services to support the company's employee training activities will be provided through the Virginia Jobs Investment Program. McAirlaid's is also eligible to receive Sales and Use tax exemptions on equipment associated with the project.

The expansion will add 25 jobs to the site.  
(Source from: "www.convertingguide.com")

### EDANA pledges to increase use of recycled PET

**Organization aims to boost use of recycled material in nonwovens by 50% by 2025**

EDANA, on behalf of the nonwoven producers amongst its membership, recently issued a pledge to significantly increase the use of recycled PET in nonwoven fabrics. Recycled PET is used in various nonwoven applications—roofing products, the automotive sector and nonwoven geotextiles are large users of R-PET fibres and resins. R-Pet can also be found in some hygiene products, such as diapers. Currently over 200,000 metric tons of recycled PET is used in the production of nonwovens. By 2025, this will grow to more than 300,000 tons, providing that the post-consumer waste volumes necessary are available.

EDANA made the announcement in Brussels recently at the event "The EU Plastics Industries – Towards Circularity," joining 13 other organizations from across the plastics value chain in presenting the interim reports on voluntary commitments and pledges to adopt more circular business models.

The European plastics industry and value chain has developed an extensive and ambitious set of voluntary measures to close the loop for plastics. All commitments will be monitored with the industry ready to work closely with authorities and other stakeholders to ensure the goals are reached. The accomplishment of the ambitious sustainability targets depends not only on the industry but requires the support of national authorities, European legislators and consumers. More collection and better sorting are needed to increase recycling and incorporate more recycle into new products. The event "The EU Plastics Industries – Towards Circularity" will be organized on an annual basis to guarantee an open and public reporting and transparent dialogue with stakeholders on the industry's progress.

(Source from: "www.nonwovens-industry.com")

### Techtex makes dual acquisitions

**U.K.-based company expands healthcare and industrial wipes business**

Technical Textile Services, commonly known as Techtex, a supplier of healthcare and industrial fabrics has bought two counterparts in a move which makes it one of the largest companies of its kind in the U.K. The Manchester, U.K.-based company sources nonwoven fabrics and manufactures a range of dry and wet wipes including branded, private label and generic products.

The company has acquired Whitminster International and Klenzeen, both headquartered in Stafford, U.K., for an undisclosed sum. The acquisition creates a group with revenues of more than £20 million and a workforce above 90.

David Beardsworth, one of Techtex's founding partners, will serve as sales director. He will be joined by Steve Oldfield and operations director Brian Whitney as well as Whitminster and Klenzeen directors Julian Ashworth, who becomes general manager, and David Thompson, who becomes sales manager.

## Market Trends

The buyout is the fourth by Techtex in the past decade.

"These acquisitions will further strengthen our offer to customers in healthcare and industry, and will enhance our offer to new markets, including significant overseas opportunities," says Beardsworth. "Current customers of all the companies now under Techtex should know that it is business as usual, and thanks to our combined resources, we are focused on an even keener approach to customer service, technical expertise and product quality."

(Source from: "www.nonwovens-industry.com")

### India diaper report released

**Market has grown more than 20% in last five years**

HTF Market Intelligence has released a new research report of 83 pages on title 'India Diaper (Baby & Adult) Market Overview, 2018-2023' with detailed analysis, forecast and strategies.

The report titled "India Diaper (Baby & Adult) Market Overview, 2018-2023" provides a comprehensive analysis of the diaper market in India. The report offers a complete guide to the size and share of the market at a national level. Along with historic data, it also provides the latest sales data - thus identifying the market segments driving growth. The report also identifies leading companies and brands, along with examining competition among them. Forecasts through four years demonstrate how the market is set to change in coming years. employs comprehensive and iterative research methodology focused on minimizing errors in order to provide the most accurate estimates and forecast possible.

The diaper industry in India has grown with a CAGR of more than 20% from last five years from 2011-12 to 2016-17. Diaper market largely consists of baby diapers in India with more than 95% volume share whereas adult diapers have just started to foray into the mainstream market. In India, baby diapers are divided into five type's viz. disposable diapers, modern cloth diapers, training pants, swim pants and biodegradable diapers which have very less presence in the Indian market. Household hygiene products will soon transform from being luxury items into 'necessities' which will provide vast

space for development. Regarded as a kind of luxury without reuse value in India, diapers are unaffordable for many people in India. In addition, different from consumers in other diaper markets, Indian mothers believed that the use of diapers for a long time may damage their babies' skin. However, with the changing socio-economic climate and shifting cultural patterns, more and more Indian mothers are beginning to accept baby diapers now. Soft and breathable baby diapers fit the Indian market demands well.

Major companies that operate into Indian Diaper market are Johnson & Johnson Private Limited, Procter & Gamble Hygiene and Health Care Limited, Kimberly-Clark Lever Pvt. Ltd., Unicharm India Private Limited, Nobel Hygiene Pvt. Ltd., Bella Premier Happy Hygiene Care Pvt. Ltd., Wipro Enterprises (P) Limited, Patanjali Ayurved Limited, The Himalaya Drug Company.

(Source from: "http://m.grandtiico.com")

### SABIC launches high melt flow PP

**Resin creates substrates ideal for lightweight, breathable hygiene products**

SABIC is set to unveil an innovative new polypropylene (PP) resin product engineered to deliver enhanced properties in melt-blown fibers for nonwoven fabrics. The new product, designated SABIC® PP 514M12, can serve a wide range of potential end-uses in personal hygiene applications and other market segments. It is the first grade of a new family of high-flow resin compounds which SABIC started to develop only two years ago, and is expected to be commercially available by end of 2018.

Challenges in the hygiene market and strong consumer demands have influenced partners along the entire value chain to accelerate their development program and deploy highly innovative solutions. SABIC PP 514M12 is based on phthalate-free and odor-free technology that offers good processability for meltblown fibers with high levels of drawability, spinability and uniformity. The resulting nonwovens are developed to combine high barrier properties and absorption with breathability in thin and lightweight high performance webs of enhanced conformability and reduced material consumption.



## Market Trends

The resin can easily be tailored to specific customer and application needs. Trials performed in collaboration with a dedicated machine manufacturer's latest high-speed machine using production quantities of the new meltblown PP confirmed its good processing and performance properties on par with or better than reference market grades. Subsequent sampling by selected nonwoven manufacturers successfully underscored the innovative new materials as a great candidate for a wide range of potential end use products including diapers, sanitary napkins and other hygiene applications.

(Source from: "www.convertingguide.com")

### P&G Reports growth in India

**Baby care up 34% last year**

Procter & Gamble CEO David Taylor expressed optimism about the Indian market in the company's latest earnings call last week. The sub-continent is one of two markets, along with Turkey, that grew in double-digits for the year ended June 30 and growth is coming through all sub categories.

Some of P&G's key market categories in India include detergents, shampoos, feminine and baby care, male grooming, over-the-counter products, and oral care. In April, Madhusudan Gopalan took over as the India managing director-cum-chief executive officer from Al Rajwani with a clear mandate of pushing up sales growth.

According to Taylor, India baby care sales grew 34% in 2018 fiscal year, coming at a time when it faced stiff challenges in the segment in markets such as the U.S.

(Source from: "www.nonwovens-industry.com")

### H&H Medical introduces Tacgauze wound wrapping gauze: Innovative product brings wound gauze manufacturing back to US

For over fifty years, woven cotton gauze was standard protocol in controlling severe bleeding from wounds and for wound management. Packing wounds and wrapping injuries with cotton gauze is traditionally taught at all levels of military and civilian emergency medicine, however, domestic manufacturing of woven cotton gauze is proven to be expensive and most production

has moved overseas.

Now, H&H Medical brings the production of cotton gauze for wound management back to the US. Based on a joint research program with the U.S. Department of Agriculture, TACgauze Wound Wrapping Gauze was developed to use existing manufacturing processes in the US to create an affordable, effective, Berry Amendment compliant gauze for military and civilian use. With these measurable benefits, TACgauze marks the next generation of trauma gauze.

This non-woven product incorporates a proprietary blend of bleached cotton, synthetic fibers, and TRUE COTTON™; a sustainable, chemical free, cotton product from T.J. Beall Company, into a non-woven gauze product that is significantly more absorbent by weight than standard cotton gauze. Additionally, TACgauze sheds fewer fibers than standard woven cotton gauze, is less adherent to damaged tissues, and can be torn into smaller units for easier application.

"TACgauze represents the culmination of close to a decade of USDA research and commitment from partners like T.J. Beall," said Paul Harder, president of H&H Medical. "We believed we could create a new gauze product that is better than current technology, at a competitive price, and made in the US. TACgauze meets all of those requirements."

The TACgauze will be available by December 2018 in lengths of 4.5" wide by 120" long. The first edition will be a rolled version, vacuum packed and sterilized. A version of TACgauze that is z-folded will be available by March 2019.

(Source from: "https://www.ems1.com")

### Ahlstrom-Munksjö launches next gen surgical fabric

**Courtesy: Ahlstrom-Munksjö**

Ahlstrom-Munksjö, a global leader in fibre-based materials, has launched ViroSæl, a next generation Breathable Viral Barrier (BVB) surgical fabric designed to keep medical professionals protected and comfortable. The fabric's specially formulated design provides the opportunity to create robust seam seals for highly critical areas of a surgical gown.

## Market Trends

ViroSēl is a tri-laminate fabric constructed to be impervious, breathable and comfortable. Its outer layer is fluid repellent and durable. The barrier layer has a monolithic film membrane making it impervious to liquids, viruses and bacteria. The chemical composition of the film itself allows moisture vapour to pass through it, keeping the surgical staff cool and dry. The darker inner layer is designed to reduce shadowing, and is soft to the touch which makes it comfortable to wear for long periods of time.

Surgeries like cesarean sections, gastric and cardiac often have a substantial amount of fluids involved and are lengthy to complete. This means protection and comfort are essential for the medical professionals wearing the surgical gown. Infection control is imperative as there is risk to the patient and staff to potentially come into contact with these fluids. International industry standards are used to test and measure the barrier performance for liquids and blood-borne pathogens for materials used in protective clothing like surgical gowns. ViroSēl passes these stringent standards providing the impervious protection needed in the surgical environment, said a press release from Ahlstrom-Munksjö.

"We leveraged our BVB product development and manufacturing experience to create a fabric that can be reliably used in the most protective and comfortable surgical gowns on the market," said Jason Beard, product platform leader, medical, Ahlstrom-Munksjö.

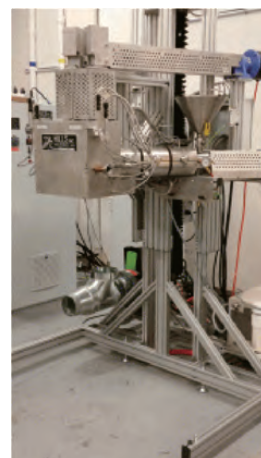
"Our initial trial customers love the comfort, colour and feel of ViroSēl. Feedback has been very positive overall and we are excited to share this innovative fabric with the market. ViroSēl reinforces our drive to maintain differentiation in the breathable viral barrier market," said Lionel Bonte, vice president, medical, Ahlstrom-Munksjö.

(Source from: "www.technicaltextile.net")

### Hills delivers LBS-300 to The Nonwovens Institute at North Carolina State University (NWI)

RALEIGH, N.C. — December 14, 2018 — The Nonwovens Institute at North Carolina State University (NWI) and Hills Inc., West Melbourne, Fla., are pleased to announce the delivery of a Hills LBS-300 to NWI. The LBS-

300 is an exceptionally versatile and compact machine — with a footprint of approximately 5 feet by 5 feet, and an elevation of approximately 8 feet — that is designed for research and development of raw materials and extrusion processes related to filament, fiber, and nonwoven products. The design allows the LBS-300 to be quickly and easily adapted to practically any fiber extrusion process. A base LBS-300 unit simply extrudes, quenches, and winds undrawn fibers, utilizing as few as 8 grams of polymer chips. However the LBS-300 at NWI is supplied with many optional LBS attachments for conversion to numerous additional extrusion processes. Such options delivered with the machine include:



1) Multifilament spinnerets with orifices to produce the following external fiber cross sections:

- a) Solid round;
- b) Hollow round; and
- c) Trilobal.

Spinnerets for extruding virtually any other external fiber cross section can be added later.

2) Multifilament bicomponent fiber spinning with metering/distribution plates to produce the following internal fiber cross sections:

- a) Sheath/Core;
- b) Side x Side;
- c) Tipped Trilobal;
- d) 16 Segment Pie;
- e) 36 Islands-In-the-Sea; and
- f) Blocking plate assemblies for reducing spin holes from a quantity of 72 to various lower spin hole counts.

Multicomponent Metering/Distribution plates for extruding virtually any other internal cross



## Market Trends



sections can be added later.

3) Monofilament extrusion capabilities for extruding, water quenching, and winding homopolymer and bicomponent monofilament with the following included:

- a) Spinnerets for extruding solid round, hollow round, and trilobal cross sections.
- b) Bicomponent Metering/Distribution plates for extruding sheath/core, side by side, and tipped trilobal cross sections.

Additional spinnerets and metering/distribution plates can be added later to extrude practically any other cross sections.

4) Meltblown dies for extruding homopolymer and bicomponent meltblown fibers along with meltblown fabric forming, bonding, and winding equipment. Fabrics with fibers to <250 nanometers diameter can also be produced.

5) Spunbond open systems aspirator for high speed stretching of spun fibers along with spunbond fabric forming, calender bonding, and winding equipment.

6) Adjustable spinning height to accommodate spinning a broad range of fiber sizes and polymers.

7) High temperature extrusion to 450°C.

8) Special materials to accommodate extrusion of corrosive polymers.

9) An adapter for use in coating of previously manufactured thread lines of practically any type.

10) Special design to accommodate use of existing NWI equipment for making fully oriented yarns.

11) HillsWare HMI for storing and analyzing data from spinning trials.

The LBS-300 is an exceptional tool for research and development as will often be the use at NWI, but in the hands of NWI it will also be a fantastic educational tool for training NWI students and industry personnel in fiber extrusion and melt spun nonwovens

fabric production.

Hills and NWI intend to expand their cooperation by adding even more features to the LBS as future needs arise.

(Source from: "www.convertingguide.com")

## Freudenberg makes filtration acquisition

**China-based Apollo offers ultra-fine filtration products**

Freudenberg Filtration Technologies has signed a contract to purchase majority shareholdings of Apollo Air-cleaner Co., Ltd. in China. Apollo is a leading supplier of air and water filtration solutions in China. In 2017, Apollo had around 1000 employees and generated 750 million RMB in sales (approximately €96 million). The transaction still requires approval from competition authorities.

By purchasing the majority stake in Apollo, we are strengthening our position in China's rapidly growing market for filtration solutions," says Mohsen Sohi, Freudenberg Group CEO.

Air and water filtration solutions are enjoying strong year-on-year growth rates, especially in China, thanks to legislation demanding stricter regulations and increased environmental awareness. Experts estimate that the global market for products of Apollo – filters for room air purifiers, decentralized ventilation systems and water treatment – will have a total value of some \$5 billion by the 2022.

"Apollo is a great fit for Freudenberg," says Andreas Kreuter, CEO of Freudenberg Filtration Technologies. "It is an innovative technology company that complements our own portfolio of filtration solutions for indoor air and water purification. The company also has first class production expertise and excellent networks in the industry."

The product solutions of Apollo keep air or drinking water free of (ultra) fine particles, dangerous gases, odors and microorganisms and protect health. At its production site in Shunde, China, the company has established high standards for product quality, process efficiency and workplace safety, and is

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## The statistical data analysis of nonwovens production in 2016-2018

### Production of 2016-2018 Nonwovens by Technology

## 2018 Report about the development of nonwoven industry in China mainland

Processing Technology	2016		2016/2015	2017		2017/2016	2018		2018/2017
	Production (10,000)	Pct. (%)	Growth (%)	Production (10,000)	Pct. (%)	Growth (%)	Production (10,000)	Pct. (%)	Production (10,000)
Spun-melt	150	46.01	+9.49	169.53	45.76	+13.02	177.93	44.93	+4.96
Spunbonded (incl. S and M composite)	145	44.48	+9.43	163.8	44.21	+13.00	171.9	43.41	+4.95
Melt-blown	5.0	1.53	+11.11	5.73	1.54	+14.6	6.03	1.52	+5.24
Dry laid	163.85	50.26	+12.46	188.17	50.78	+14.84	204.97	51.76	+8.93
Needle-punched	74.7	22.92	+9.53	80	21.59	+7.09	84.79	21.41	+5.98
Chemical-bonded	12.5	3.83	+4.17	13	3.51	+4	13.50	3.41	+3.85
Thermal-bonded	15.1	4.63	+11.85	18.5	4.99	+22.51	20	5.05	+8.11
Spunlaced	59.9	18.37	+18.85	75	20.24	+25.21	85	21.46	+13.33
Stitch-bonded	1.65	0.51	+3.13	1.67	0.45	+1.21	1.68	0.42	+0.6
Air-laid	8.6	2.64	+2.38	8.8	2.38	+2.33	9	2.27	+2.27
Wet-laid	3.55	1.09	+18.33	4	1.08	+12.68	4.1	1.04	+2.5
Total	326		+10.85	370.5		+13.65	396		+6.88

## 2018 Main end-uses of China mainland nonwovens

Usage	2016		2016/2015	2017		2017/2016	2018		2018/2017
	Production (10,000)	Pct. (%)	Growth (%)	Production (10,000)	Pct. (%)	Growth (%)	Production (10,000)	Pct. (%)	Production (10,000)
Medical, Health care and hygiene, etc.	1378	42.27	+15.22	1635	44.13	+18.65	1769	44.67	+8.20
Wadding	232	7.12	+6.91	250	6.75	+7.76	260	6.57	+4
Packing materials	298	9.14	+8.76	325	8.78	+9.06	350	8.84	+7.69
Household wipes and Cleaning Materials	360	11.04	+13.21	411	11.09	+14.17	451	11.39	+9.73
Geosynthetics	156	4.79	+3.31	171	4.62	+9.62	181	4.57	+5.85
Substrate for Coating & Lamination	87	2.67	+3.57	90	2.43	+3.45	92	2.32	+2.22
Roofing felt	99	3.03	+3.13	108	2.91	+9.09	113	2.85	+4.63
Furniture interiors	76	2.33	+2.70	79	2.13	+3.95	81	2.05	+2.53
Interlining	49	1.50	+2.08	50	1.35	+2.04	51	1.29	+2
Shoe materials	47	1.44	+2.17	48	1.29	+2.13	49	1.24	+2.08
Automobile interiors	147	4.51	+6.52	163	4.40	+10.88	171	4.32	+4.91
Filter media	237	7.27	+15.05	276	7.45	+16.46	290	7.32	+5.07
Agriculture use	17.6	0.54	+2.92	18	0.49	+2.27	18.5	0.47	+2.78
Paper-making felt	10	0.31	+1.01	10.1	0.27	+1.0	10.2	0.26	+0.99
The others	66.4	2.04	+0.61	70.9	1.91	+6.78	73.3	1.85	+3.39
Total	3260		+10.85	3705		+13.65	3960		+6.88



## Area Report

In general speaking, the situation of 2018 China mainland nonwovens production was totally smooth and stable and growth rate slow down, the output grew up to 6.88% compared with 2017, some enterprises' profit was continuing less than before as production cost increasing, overplus capacity and excessive competition for low-middle grade products.

### As Per Processing Technology

Dry-laid

- spunlaced production still grew up to 13.33% compared with 2017 (hygienic, health care and medical products increase esp. exported products) and thermal-bonded(esp. air-through bonded) grew up to 8.11% composed with 2017.

### As Per Products Usage

- Household wipes and Cleaning Materials grew up to 9.7%
- Medical, Health care and hygiene products grew up to 8.20%
- Packing materials grew up to 7.69%
- filter media grew up to 5.07%
- Automobile interiors grew up to 4.91% because China Automobile production still reached more 27 million in 2018.

### As Per the Situation about Export & Import Nonwovens in China mainland

- The 2018 export nonwovens volume(tons) reached 881,537 tons, less than 894,231 tons of 2017 but the 2018 export nonwovens

amount reached 2.7 billion US\$, more than 2.6 billion US\$ of 2017.

- The 2018 import nonwovens volume reached 126,489 tons, less than 147,274 tons of 2017, the 2018 import nonwovens amount reached 827 million US\$, less than 896 million US\$ of 2017.

### As Per Top 5 Counties in Export & Import Nonwovens (Tons/y)

- The export nonwovens ranking is the same with 2017.
- The import nonwovens ranking compared with 2017, America and Japan ranking was reversal, Japan was No. 2 and America was No.3.
- Saudi Arabia was No.5, replaced Korea.

### Challenge and Opportunity

\*\*\* China mainland nonwoven industry may be facing uncertainties and destabilizing factors of trade protectionism and Unilateralism.

- industry, product and technology structure for China mainland nonwoven industry will be continually adjusted
- continuing strengthening innovation (including technical, market and sales model innovation.)
- increasing high added value's products production

\*\*\* huge developing potentiality of nonwovens as China's industrialized, civilized in large scale, sustainable & harmonized development strategies.

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certified to ISO 9001, ISO 14001 and TS 16949.

Apollo will continue as a joint venture between Freudenberg (major shareholder) and the current sole proprietor Apollo Trading Group, Japan, under the name Freudenberg Apollo Filtration Technologies. Freudenberg Filtration Technologies intends to bring its current consumer filtration business into the joint venture.

Manufacturing, research and development and customer services at both Freudenberg Filtration Technologies and Apollo will benefit

from the transaction. Main examples are the complementary competencies in filter media and gas filtration, which is growing ever more important.

"For nearly 20 years, Apollo has been offering innovative filtration solutions, improving the quality of life in China," says Akihisa Yamamoto, CEO of Apollo Trading Group, and then adds: "The global development and production network and the more extensive portfolio of technological product solutions stemming from this joint venture will primarily benefit our customers."

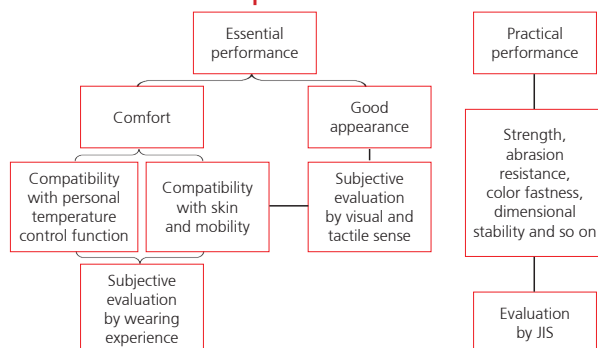
(Source from: "www.freudenberg-filter.com")

Mari Inoue  
Kobe University

## Contents

- 1) Evaluation of comfort
- 2) Properties of nonwovens and test method
- 3) Evaluation of nonwovens products used in daily life

## Fabric performance



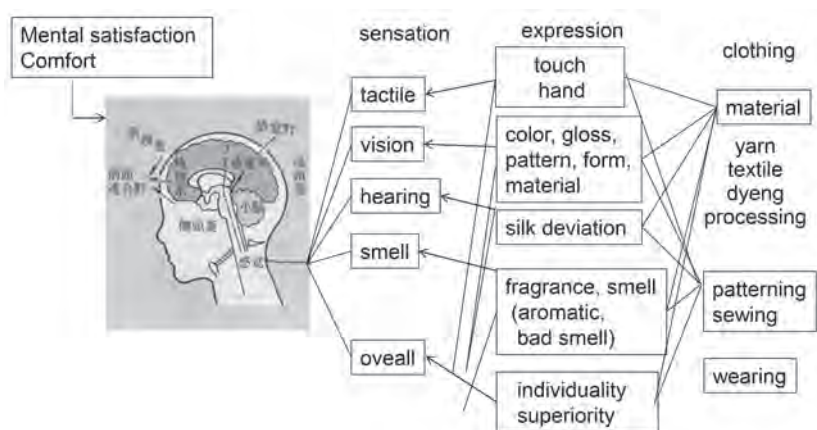
## Evaluation of comfort

Sleeping, wearing, sitting, and living comfort

Comfort...Skin sensation

sense		[Wearing comfort] Clothing	[Sleeping comfort] Bedding	[sitting comfort] Automobile	[Living comfort] House
stimulation	skin sensation				
temperature humidity	warmth,cold sensation	clothing climate	climate in bed	climate in car	[air condition] interior) temp. & hum.
compression force	(tactile)~ pressure sense	wearing pressure	body pressure lying posture	body pressure seat position	
contact	tactile~ (pressure) sense	touch (hand, contact warm/cold sensation)	touch (hand, contact warm/cold sensation)	touch (surface, contact warm/cold sensation)	[material, interior] touch
other		deodorize, antistatic	anti-tick	anti-vibration	air polluting, chemical substances, sound insulation

## Mechanism that feels good



## The study of wearing comfort



- Microclimate within clothing thermal comfort  
(Thermal/water/air transfer properties of fabrics)
- Clothing pressure → easy to move  
(Tensile property of fabrics)
- Texture → good touch feeling  
(Hand of fabrics, contact thermal sensation)

## Properties of nonwovens and test method

## Morphological property

- Thickness and weight (Fiber shape, processing agent, fabric manufacturing method, environmental condition affected)
- Bulkiness (Depending on the specific gravity of the fiber, even though the thickness and weight are the same, we consider the fiber volume in the web.)
- Porosity (Considering the void volume against bulkiness, pore size is not uniform, there is a thick thin along the depth, it varies with wet and dry.)
- Surface properties (very different depending on the method of production, especially adhesion method).

## Physical property

- Tensile property strength, elongation
- Tear strength
- Bending property rigidity
- Shear property
- Compression property
- Drape property
- Stretch
- Surface tension
- Wetness
- Electrical property
- Transparency
- Uniformity
- Combustibility

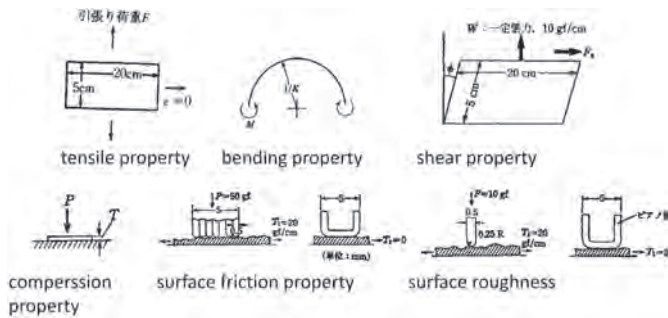


## Technology News

- Abrasion
- Peel force
- Filtration characteristic
- Water absorption

### Evaluation of nonwovens products used in daily life

Objective evaluation of hand (touch feeling) from the basic mechanical properties and surface property of fabrics



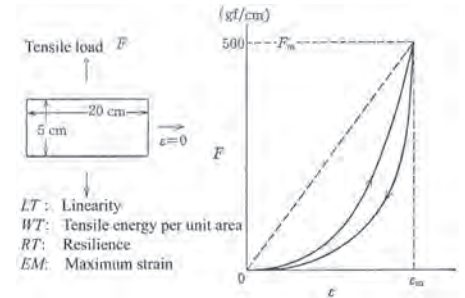
### Measurement parameters and conditions for the calculation of the nonwovens

	Parameter	Condition for nonwovens	For woven fabrics
tensile	EMT (%) LT (-) WT (gf/cm <sup>2</sup> ) RT (%)	maximum load: 20N/m strain speed: 0.4%/sec length: 50mm width: 100mm	500N/m 0.4%/sec 50mm 200mm
bending	B (gf·cm <sup>2</sup> /cm) 2HB (gf·cm/cm)	maximum curvature: ±8cm <sup>-1</sup> width: 2cm	±80mm <sup>-1</sup> 200mm
shear	G (gf/cm·deg) 2HG (gf/cm) 2HG5 (gf/cm)	maximum shear angle: 2° 0.2°, 0.5° tension: 10g/cm	8° 0.5°, 5.0° 10N/m
Compression	LC (-) WC (gf·cm/cm <sup>2</sup> ) RC (%)	maximum pressure: 1000N/m <sup>2</sup> speed: 150mm/sec	1000N/m <sup>2</sup> 150mm/sec
surface	MIU (-) MMD (-) SMD (μm)	load: 0.1N(friction) load: 0.1N(roughness)	0.5N 0.1N
thickness weight	T (mm) W (mg/cm <sup>2</sup> )	thickness at 50N/m <sup>2</sup>	

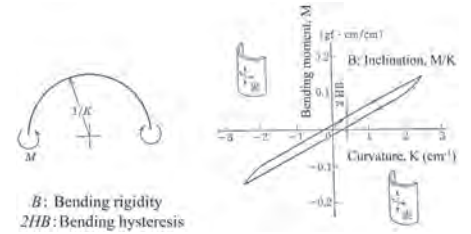
### Measuring apparatus (KES-F: Kawabata Evaluation System)



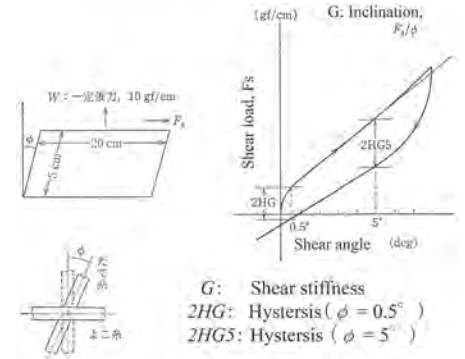
#### Tensile property



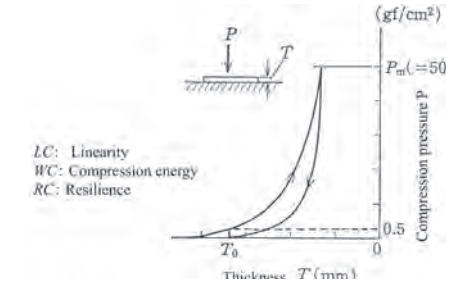
#### Bending property



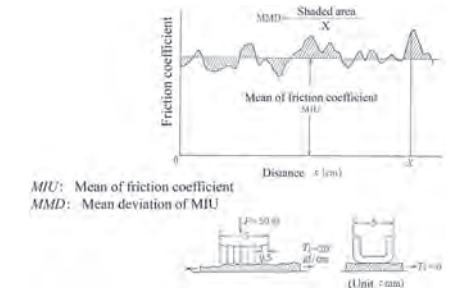
#### Shear property



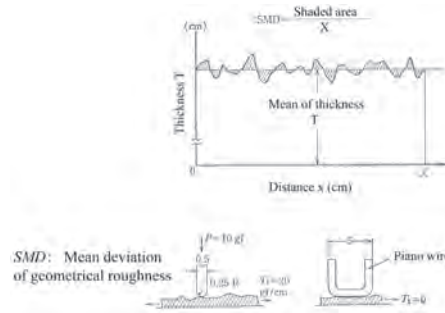
#### Compression property



#### Surface friction property

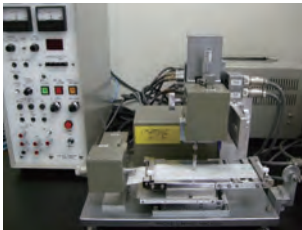


## Surface roughness property



## Surface measurement

(Measure friction and surface roughness simultaneously)



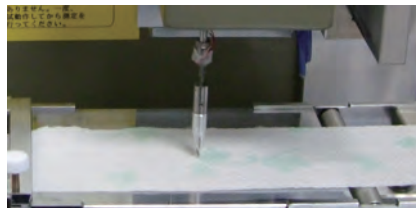
Various friction contactor



## Various compression contactor



Contactor (U shape) used for measurement of nonwovens



## Objective evaluation equations for hand value

$$HV_i = C_{i0} + \sum_{j=1}^{16} C_{ij} \frac{X_j - \bar{X}_j}{\sigma_j}$$

$$THV = C_{00} + \sum_{i=1}^3 C_{i1} \frac{Y_i - M_{i1}}{\sigma_{i1}} + C_{i2} \frac{Y_i^2 - M_{i2}}{\sigma_{i2}}$$

<<< continue 6

significantly improved release of "Quat" from the wet wipe to the surface, resulting in improved product stability and performance, according to Lenzing. In addition, VEOCEL Lyocell fibers also promote good absorbency, homogenous distribution of liquid in wet wipes and good hand feel.

During a presentation on the new fibers, Lenzing's project manager - product R&D

Martina Opietnik described the most notable advantages of VEOCEL Lyocell Fiber with "Quat" Release technology. "Commonly used [in hard surface cleaning and disinfectant wipes] are synthetic fibers, but we now have this innovative fiber which is biodegradable, of botanic origin that comes from cellulose and has an increased 'Quat' release property that is significantly more than most other natural cellulose fibers," she said.

(Source from: "www.nonwovens-industry.com")

<<< continue 26

According to Sandler's Klier, as environmental awareness and sustainability considerations concern all areas of our lives by now, insulation solutions made from natural materials are in high demand and consumers are looking for sustainable building solutions. "Insulation materials made from wood, cellulose or even reed are – figuratively speaking – en vogue," he says. "However, nonwovens demonstrate that synthetic materials can provide just as much sustainability. Being made from 100% polyester, Sandler fibercomfort nonwovens

are fully recyclable even after decades of use. The nonwovens are also partially made from recycled fibers themselves, supporting closed material cycles and contributing to the conservation of resources."

Moreover, particularly in construction, fibercomfort's heat-insulating properties help lower the need for heating in the building. "In this way, the nonwovens contribute to reducing energy consumption," he concludes.

(Source from: "www.nonwovens-industry.com")



## Technology News

### (1) $HV_i$ : Hand value

$C_{i0}, C_{ij}$ : constant coefficients

$X_j$ :  $j$ th parameter or logarithm ( $j=1$  to 16)

$\bar{X}_j$ : Average of the  $j$ th parameter

$\sigma_j$ : Standard deviation of  $X_j$

### (2) $THV$ : Total hand value

$C_{00}, C_{i1}, C_{i2}$ : constant coefficients

$M_{ij}$ : Average of the  $Y_j$

$\sigma_{i1}$ : standard deviation of  $Y_j$

$M_{i2}$ : Average of the square of  $Y_j$

$\sigma_{i2}$ : standard deviation of the square of  $Y_j$

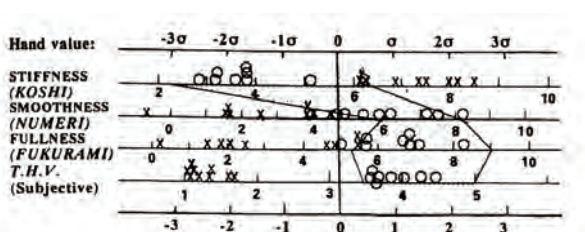
### Constant coefficients of equation for primary hand value

Coefficient	$i$	$X_i$	$M_i$	$\sigma_i$	$C_{i1}$	$C_{i2}$	$C_{i3}$
					KOSHI	NUMERI	FUKURAMI
	0		-	-	5.7093	4.7533	4.9799
Tensile	1	LT	0.9069	0.0494	-0.0317	-0.0686	-0.1558
	2	WT	1.0258	0.1831	-0.1345	0.0735	0.2241
	3	RT	63.4538	4.7278	0.0676	-0.1619	-0.0897
Bending	4	B	0.2734	0.3038	0.8459	-0.1658	-0.0337
	5	2HB	-0.7462	0.4685	-0.2104	0.1083	0.0848
Shear	6	G	1.1896	0.2555	0.4268	-0.0263	0.0960
	7	2HG	1.2426	0.1836	-0.0793	0.0667	-0.0538
	8	2HG5	1.3385	0.2303	0.0625	-0.3702	-0.0657
Compression	9	LC	0.7230	0.1679	0.0073	-0.1703	-0.2042
	10	WC	0.1566	0.1199	-0.0646	0.5278	0.8845
	11	RC	67.8316	7.2175	-0.0041	0.0972	0.1879
Surface	12	MIU	0.2934	0.1136	-0.0254	-0.1539	-0.0569
	13	MMD	-2.1801	0.0915	0.0307	-0.9270	-0.5964
	14	SMD	-0.0640	0.1375	0.0090	-0.3031	-0.1702
Thickness Weight	15	TO	0.6165	0.0489	-0.1714	-0.1358	0.0837
	16	W	2.7553	0.0731	0.2232	-0.0122	-0.1810

### Constant coefficients of equation for total hand value

$HV_i$	$j$	$M_{ij}$	$M_{ij}$	$\sigma_{ij}$	$\sigma_{ij}$	$C_{ij}$	$C_{ij}$
KOSHI	1	5.7023	33.5300	1.0154	9.2717	0.6750	-0.5341
NUMERI	2	4.7533	24.0413	1.2328	11.8612	-0.1887	0.8041
FUKURAMI	3	4.9799	26.0735	1.1561	11.3190	0.9120	-0.7703

### Objective hand evaluation of nonwovens



Plot of the primary hand values of higher THV samples and lower samples of the nonwoven fabrics on the hand chart showing high quality zone of men's suiting. The higher THV samples (shown by o symbols) fall in the high quality zone and the lower samples (shown by x symbols) are out of the zone.

### Example of research

Objective evaluation of nonwoven samples with different materials and embossed patterns

- Relationship between subjective evaluation on primary hand value (Stiffness, smoothness, fullness) and material property
- Calculation of hand using material properties

### Different materials and embossed patterns

#### Nonwoven sample: by material

material	weight, mg/cm <sup>2</sup>		thickness, mm	
	Ave	SD	Ave	SD
PET (N=17)	4.05	2.40	0.20	0.09
PP (N=6)	3.82	1.91	0.29	0.12
nylon (N=17)	5.38	2.89	0.30	0.14
ultrafine PP (N=12)	2.94	2.34	0.27	0.21
total (N=52)	4.20	2.61	0.26	0.15

### Different materials and embossed patterns

#### Nonwoven sample: by embossed pattern

	surface patterns (N数)	weight, mg/cm <sup>2</sup>		thickness, mm	
		Ave	SD	Ave	SD
	minus sign 1 type (N=18)	4.87	3.04	0.27	0.14
	punctiform 3 type (N=11)	4.64	2.50	0.30	0.11
	grain 5 type (N=11)	4.04	1.97	0.18	0.05

### Correlation coefficient between subjective evaluation and physical characteristics

	Tensile				Bending		Shear	
	EMT	LT	WT	RT	B	2HB	G	2HG
KOSHI	-0.50	-0.62	-0.67	-0.33	0.79	0.80	0.88	0.79
NUMERI	0.31	0.59	0.47	0.36	-0.75	-0.77	-0.77	-0.72
FUKURAMI	0.54	0.35	0.58	-0.41	-0.42	-0.26	-0.57	-0.31
THV	0.49	0.61	0.64	0.17	-0.75	-0.73	-0.88	-0.74

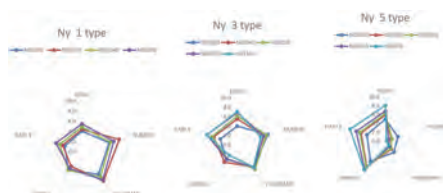
	Compression			Surface			Thick	Weight
	LC	WC	RC	MIU	MMD	SMD	T	W
KOSHI	0.60	-0.08	0.43	-0.23	0.22	0.24	0.52	0.84
NUMERI	-0.60	-0.16	-0.23	-0.04	-0.30	-0.28	-0.64	-0.85
FUKURAMI	-0.37	0.76	-0.71	0.60	-0.55	-0.52	0.35	-0.06
THV	-0.56	0.17	-0.50	0.25	-0.34	-0.35	-0.38	-0.73

### Correlation coefficient between subjective and objective evaluation values

subjective calculation	KOSHI	NUMERI	FUKURAMI	THV
KOSHI	0.95	-0.83	-0.65	-0.94
NUMERI	-0.46	0.48	0.74	0.57
FUKURAMI	-0.31	0.26	0.84	0.46
SHARI	0.27	-0.29	-0.56	-0.36
HARI	0.93	-0.80	-0.63	-0.91
THV-W	-0.32	0.37	0.69	0.45
THV-S	-0.58	0.58	0.52	0.65

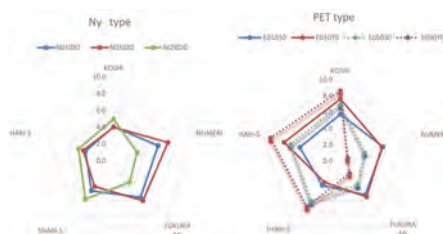
## Technology News

The effect of basis weight on hand value  
Sample: Nylon

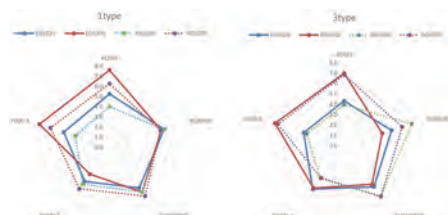


The larger the weight per unit, the larger KOSHI, HARI, the tendency to decrease NUMERI, FUKURAMI.

The effect of emboss type on hand value



Compared with the same basis weight, 5 types of textile pattern, compared to the one type of negative pattern, KOSHI, HARI, SHARI increase and NUMERI, FUKURAMI tend to be smaller.



Comparison of polyester and nylon of the same basis weight, same emboss type

Both embossed type 1 and 3, nylon by dotted line tends to have smaller KOSHI and HARI, and the FUKURAMI tends to be larger than polyester by solid line.

### Example of research

Commercially available baby disposable diapers  
· Physical properties and hand value of nonwovens of cover part

### Physical properties of cover part of diaper

	Surface			Compression	
	MIU	MMD	SMD	Thickness	Weight
S1	0.378	0.0240	1.56	0.548	2.08
S2	0.360	0.0218	1.58	0.344	1.71
S3	0.359	0.0195	1.38	0.481	2.75
S4	0.411	0.0264	1.86	0.521	1.65
S5	0.454	0.0298	2.17	0.864	3.00

	Bending		Compression		
	B	2HB	LC	WC	RC
S1	0.0031	0.0065	0.454	0.387	48.58
S2	0.0028	0.0033	0.311	0.167	42.08
S3	0.0117	0.0128	0.341	0.235	53.18
S4	0.0024	0.0040	0.271	0.253	45.73
S5	0.0095	0.0106	0.311	0.424	46.35

### Hand values of cover part of diaper

	KOSHI	NUMERI	FUKURAMI	SHARI	HARI	THV-W	THV-S
S1	4.78	4.84	5.18	4.14	4.61	3.13	3.50
S2	5.08	5.01	4.15	4.70	4.84	3.07	3.48
S3	6.01	6.31	5.68	3.72	6.75	3.98	3.18
S4	4.60	3.79	4.35	4.92	4.41	2.63	3.49
S5	5.60	2.70	4.45	6.27	6.35	2.55	3.27

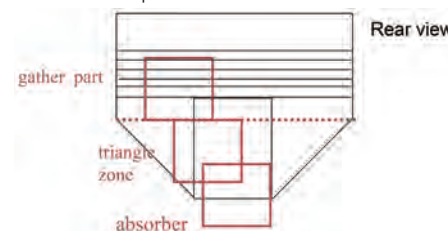
### Example of research

Paper diapers' comfort

- Subjective evaluation on wearing comfort
- Relationship between physical properties and subjective evaluation value of nonwovens

### Samples

- Sample number: 8
- Measurement part: gather, triangle zone, absorber
- Size of sample: 100mm×100mm



8 types with different elongation characteristics Standard Tensile properties measured with KES-F

Parameter	A	B	C	D	E	F	G	H
EMT strain	3.0	3.6	115.9	80.9	91.8	96.9	68.0	92.2
WT tensile energy	0.7	1.1	7.5	21.1	14.5	21.5	29.9	35.5



Sample A

Sample D

### summery

Measurement of physical properties of nonwoven fabric:

- Quality evaluation according to application
- Proper condition setting
- A method for supplying stable quality of products
- Evaluation of added value

(Source from: "ANFA conference paper," this article extract)



## Technical Trends

### Optimism in acoustics

Producers see a bright future for nonwovens designed to absorb and block sound

As steadily increasing noise pollution impacts every day life, efforts to control it have assumed increasing importance. This has allowed nonwovens to grow in the acoustics market, where today's nonwovens producers report success for acoustic nonwovens in automotives, buildings, furniture and other applications. Offering high performing sound absorbing and sound blocking traits, nonwovens offer flexibility, cost-effectiveness and lightweight characteristics.

"Dalco, as do our competitors, sees the market in acoustical nonwovens as growing," says Gale Shipley, Automotive sales manager of needlepunch manufacturer Dalco Nonwovens.

As part of this growth, Shipley's company is seeing machinery upgrades, to maximize efficiencies and enhancements, as well as new machine orders occurring. "In addition, Dalco characterizes the market as evolving with our customers desiring even greater sound absorption properties that most current technologies cannot provide alone. We see that having the ability to marry different technologies is what will be needed for this evolution to continue."

Dalco manufactures specialty needlepunch nonwovens for acoustic enhancement in the automotive, flooring, construction, and office panel industries. In automotive, it customizes underbody shields, wheel well liners, trunk parts and carpet sound absorption layers to mitigate sound propagation from outside the cabin to in and from inside the cabin out. In the flooring sector, the company designs nonwovens to be utilized under carpet/tiles and in construction, Dalco's products enhance sound absorption in the drywall area as well as in ceiling tiles. Its office panel nonwovens not only provide the acoustical properties for office cubicles but also have the ability to be molded into unique shapes.

In the acoustics market, Dalco's needlepunch nonwovens primarily compete with foam products and spunbond/meltblown products. "Unlike foams and SMMS products, however, fibrous nonwoven products can be engineered for not only the acoustical properties but for rigidity, tensile/elongation

needs, moldability and durability by simply changing the blend formula and weight. In some cases, Dalco's needlepunch polyester nonwovens can be recycled back into fiber, which most foam composites cannot," Shipley explains.

Frank Heislitz, CEO of Freudenberg Performance Materials, says his company's acoustic solutions are competing with reinforced plastic, injection molded materials, foam, EVO or foil. "Nonwovens are lighter than other materials and they provide very high acoustic absorption, which gets even more important in e-mobility," he says.

Another important aspect for customers, he adds, is that nonwovens are easy to handle allowing efficient assembly.

There are three main factors driving growth for acoustic nonwovens from Freudenberg's point of view. First is e-mobility. Good sound absorption in vehicles increases the comfort for the driver and has a high priority for electric cars because electrical drive trains cause less noise than combustion engines and because other noise sources in different frequency ranges become more important, according to Heislitz.

Secondly, fuel economy and efficiency requirements are driven by regulations dealing with issues such as CO<sub>2</sub> reduction in the European Union, Corporate Average Fuel Economy standards (CAFE) in the U.S., or various fuel economy regulations in Asia. Nonwovens are helping to achieve these goals.

Finally, nonwovens offer an improved driving experience for the end-customer. "Good sound absorption in vehicles increases the comfort for the driver. Feeling comfortable in a car does not only depend on sophisticated features, but also on the unconscious perception of sensory impressions," Dr. Heislitz explains. "There is a growing demand for creative and individualized car interiors, [and] the car is being used more and more as a mobile office in which good sound absorption is essential."

Main applications for Freudenberg in the acoustic market are acoustic pads, microfilament materials based on Evolon technology and underbody shields.

## Technical Trends

Freudenberg's lightweight acoustic pads provide outstanding sound absorption inside the vehicle and are cost efficient. They can be used for door panels, headliners, trunk areas and wheelhouses, among other areas. Meanwhile, the company's Evolon microfilament technology can provide superior sound absorption inside cars. Since the material is made of microfilaments that are up to 100 times thinner than a human hair, significantly lower weight and therefore reduced fuel consumption can be achieved. Evolon is being used in interior trims, dashboards, hoods and car mats.

In other areas of the car, a nonwoven composite that utilizes Freudenberg technology is incorporated into molded underbody shields and wheel liners. This new multi-layer composite offers improved durability, abrasion, acoustical performance, temperature resistance and tear properties, all while offering a 15-40% weight savings compared to current product offerings, Dr. Heislitz says. "The construction is 100% recyclable and can be utilized in a closed loop system."

For its part, Lydall, a global manufacturer of specialty engineered materials, offers acoustic nonwoven products that are often designed to perform the function of two or three other traditional materials with one engineered solution. According to the company, they can be tailored to provide high quality aesthetics, stiffness, durability, chemical resistance, and even designed to meet the latest fire protection standards. In many cases Lydall's engineered nonwoven products can achieve the system level needs of its customers with simpler, more cost effective designs over traditional acoustic materials that often require structural support, protective layers, and aesthetic coverings, the company says.

Lydall's range of acoustic absorbing and sound blocking constructions are primarily supplied to the automotive, building construction and industrial markets. The fact that its nonwoven acoustic materials offer high absorption properties at a low mass versus traditional materials allows its customers to improve system performance while also reducing weight and managing system cost.

One of the factors helping drive growth for acoustic nonwovens, from Lydall's point of

view, is that consumers value the benefits of well-designed acoustic systems and continue to demand improved levels of noise control in many areas of their lives. Noise levels inside cars, offices, homes and even public buildings become more important as the use of audio systems such as hands free calling and voice control products continues to expand. Because of this trend, Lydall anticipates growing opportunities for engineering acoustic solutions in the automotive and transportation markets as well as the commercial and residential building construction markets.

### New applications

As nonwovens continue to replace other materials in the acoustic market, they're also being used in new applications.

From Sandler's perspective, applications in room design and interior acoustics are a relatively new field of use and new product designs continuously emerge in this market. The company is working with customers in these markets, designing new product solutions together and incorporating its fibercomfort nonwovens into its partner's acoustic products. "Our customers enhance our nonwovens with print motifs; lamination; flocking, for instance to create a roughcast look; or even with coatings made of natural materials such as hay or cornflowers to create individual designs. In this way, the textile materials help create an original look for every room," says Gerhard Klier, Sandler's sales director of Technical Products.

Sandler continues to see room designs become more spacious in private homes and office buildings, where more open-plan floor layouts are being designed. Because of this, acoustic room elements have become vital in ensuring a quiet, pleasant atmosphere despite the hustle and bustle of everyday life, thus partitions, acoustically efficient wall decoration and acoustic furniture are in high demand, according to the company. "The market is growing and nonwovens commend themselves to these applications," Klier says.

As the world population grows, Dalco's Shipley is seeing expanded usage for acoustical nonwovens in construction and flooring for large apartment complexes and theater rooms, as well as in mobile office panels. "At this time, the imagination of



## Technical Trends

the design engineers is the window of the future," she says.

While automotives has continued to be a major market for acoustic nonwovens, companies continue to see more nonwovens being utilized throughout the vehicle. Shipley attributes this to the material's cost-effectiveness while maintaining similar aesthetics and acoustical parameters. "A great example of this is the large growth of dilour nonwoven carpets and floor mats once strictly supplied by tufted carpet," she points out.

Freudenberg's CEO agrees that acoustic nonwovens are being found in other areas of automobiles. In addition to traditional applications in the automotive interior such as the dashboard, door panel, trunk-liners and headliners, Dr. Heislitz sees a trend towards nonwovens solutions in the exterior of a car like underbody shields, wheel-arch liners and in the engine compartment.

For Turkish nonwovens producer Siteks, the oldest company within the Hassan Group, demand for acoustic materials is increasing in many markets in order to gain more comfort. These include sea-air-ground transportation as well as public areas—cinemas, sport halls, offices, hospitals, schools, restaurants and mechanical rooms.

"The possibilities of having various thickness, weight and easy recipe options [allows] nonwovens to gain more and more market share in acoustic markets every passing day," says Ahmet Ilhan, export manager, Siteks.

Siteks' acoustic nonwoven felts are utilized in the automotive, construction and white goods sectors.

In the automotive industry in particular, Ilhan says lightweight and sustainable products are very important nowadays. For this reason, the company has developed natural fiber reinforced thermoplastic felts and glass fiber reinforced thermoplastic felts for door panels, load floors, headliners, and other areas.

Siteks also recently developed a self-exhausting thermal bonded insulation felt. In the production of this new product, cotton fibers from recycled denim and thermoplastic

fibers are used, and there are no chemical binders, resins or any irritant materials in the product. Because of its self-exhausting properties, Ilhan says the product is a safe alternative choice for thermal and acoustic insulation.

### A greener profile

As companies continue to comply with new environmental regulations in specific markets, such as automotives, and also look to reduce their overall environmental footprints, nonwovens are helping them achieve these goals.

"There is a more and more growing awareness of environmental issues that fosters a sustainable use of resources," says Freudenberg's Dr. Heislitz.

Freudenberg's nonwovens are helping address this trend by reducing weight and thus improving fuel economy of cars; fostering environmentally friendly production processes by enabling customers to recycle waste; with the use of latex and binder-free chemical products; and increasing the share of post-consumer recycling.

Many of Lydall's acoustic products utilize post consumer and post industrial waste streams as one of its primary raw materials. This allows the company to minimize the environmental impact of its products and helps to reduce the environmental impact of polymer waste streams from other industries. These strategies allow Lydall to offer competitive costs to its customers while also helping them meet the growing demands for environmental sustainability from their customers and end users, the company says.

Dalco's Shipley says the company will always offer customers products that can be 100% recyclable. For instance, its specialty needlepunch nonwovens in polyester blends can be recycled back into fiber. "This recycling further aides the NA regenerated fiber manufacturers to minimize huge price fluctuations," she notes.

On the other hand, other blends offered by Dalco can be incinerated or manufactured into airlaid shoddy to avoid dumping into landfills.

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## Product News

### Ontex launches online diaper subscription service

Little Big Change diapers are made without harmful substances and offer up to 12 hours of protection

Manufactured by Erembodegem, Belgium-based Ontex, Little Big Change, a new entrant in the market, launches 'healthy' nappies "that have something to say," available through an online subscription delivered to any address and at an affordable price.

Little Big Change diapers are made without toxic or irritating substances, and are certified Dermatest 5 stars, Oeko-tex 100 and FSC. They are hypoallergenic and provide up to 12 hours of protection.

With Little Big Change, nappies are delivered where parents want it, when they want it. This allows parents to focus on what really matters. And because life is unpredictable, its subscriptions can be modified or cancelled very easily. Little Big Change also offers a test kit for those who prefer a smooth approach.

The fluff (in the absorbent pad) is only made with cellulose originating from trees and is bleached with oxygen and guaranteed T.C.F. (totally chlorine free). Its SAP (super absorbent powder) is a synthetic component found in all disposable nappies. It is perfectly safe and ensures effective absorption. The inner layer is made of polypropylene, a very soft material and is danger-free. It is this part that will directly touch the baby's skin, and there are no additives or harmful products in this layer. Its outer layer is made of polyethylene, woven very lightly to allow the skin to breathe to the fullest. Meanwhile, the anti-leak barrier is also very soft, with elastic straps that don't squeeze the baby's bum too much, which is also made without latex.

(Source from: "www.convertingguide.com")

### Advansa develops new microfiber for wetlaid processing

Fiber designed for filtration and other technical applications

Advansa has expanded its ADVA shortcut product portfolio to a new microfiber for wetlaid processing: with 0.2 dtex and a mean diameter of 4.3  $\mu\text{m}$ , the material is designed for filtration and other technical applications.

Available in cut length of 3 mm or longer, the material disperses homogeneously in water. Filtration media with a small and narrow pore size distribution can be obtained, as the fiber has also a very narrow diameter distribution: the variation coefficient is clearly lower than 10%.

The new microfiber is a completion of Advansa's product portfolio in the direction of finer fiber. Further microfiber at 0.3 and 0.5 dtex, as well as regular fiber with 1.7, 3.3, 6.7 and 17.0 dtex, are available and well established options for filtration media developers to control filter key parameters like efficiency, pressure drop, mechanical strength, thermal stability and many others. Most of those fibers meet the requirements for food contact applications according to EU, BfR and FDA regulations. The options are completed by various core-sheath-binder fibers with polyester core and co-polyester or polyolefine sheath with melting ranges around 110, 130, 160 and 180°C. Thus, a wide range of high quality wetlaid filtration media for many purposes and process routes can be engineered using ADVA shortcut as base material.

(Source from: [www.nonwovens-industry.com](http://www.nonwovens-industry.com))

### Ihsan launches 100% cotton line

Pure Cotton Luxury line includes wipes and cosmetic pads

IHSAN Sons, has launched a whole new product range of 100% Pure Cotton Luxury wipes and Soft Pure cotton Cosmetic Pads.

Purified cotton's unmatched ability to absorb combined with its natural softness gives greater comfort and is perfectly hygienic and natural makes it the best choice for feminine and baby care wipes. Cotton is extremely gentle on the skin and has an extensive history of safety. Cotton provides the assurance which is required by every person when using especially on skin.

Ihsan's 100% cotton products are dermatologically tested and Class 1 certified which prevents marks, allergies and other itches caused due to using chemically treated products. Our environment friendly wipes produced from cotton, not trees, are biodegradable.

(Source from: [ihsancotton.com](http://ihsancotton.com))



## 行业信息

### 安德里茨提供给中国赛弘纺织全新完整水刺生产线成功开车生产

2019年1月31日格拉茨讯。位于中国浙江省萧山的浙江赛弘纺织科技有限公司的安德里茨全新neXline aXcess 水刺生产线成功开车生产。这条生产线将用于生产卫生医疗市场克重20~80克/平方米的多种不同水刺产品，由于其产品之超轻型开辟了新市场。单台梳理机卷绕机端生产速度高达150米/分钟。



安德里茨neXline 水刺生产线采用中国生产的新型aXcess Varioweb 梳理机



浙江赛弘董事长周先生站在neXdry Advantage 热风穿透烘干机前

这条完整的aXcess 水刺生产线由安德里茨提供，它是新一代生产线的一部分，结合了最新的发展，提供了高产能的紧凑设计。安德里茨提供的设备有APC开松混和系统、3道夫新型aXcess Varioweb梳理机，Jetlace Avantage水刺机以及neXdry热风穿透烘干机。这一全新纤网形成系统仅采用一台梳理机即完美匹配水刺生产线，生产出高品位水刺产品，纤网质量完美。水刺系统采用众所周知的JetlaceAvantage单元，具有最先进的水刺头能耗非常低。

这条水刺线标志着浙江赛弘已进入非织造行业。凭借安德里茨在非织造布领域的专门知识，以及安德里茨无锡当地工艺团队的大力支持，对此次安德里茨最终拿下订单起到了决定性作用。

浙江赛弘纺织技术有限公司生产多种功能性复合材料至今已近10年历史，它是中国主要的生产厂家之一，产品出口欧美及其他国际市场。

更多详情请联系：

Dr. Michael Buchbauer  
michael.buchbauer@andritz.com

### Toray推出可持续仿麂皮非织造布

Ultrasuede BX含30%植物原料

东丽株式会社于在2019年1月推出“Ultrasuede BX”，是一种具有麂皮绒质地的非织造材料，其中含有约30%的植物基原料，是目前世界上含植物基聚酯和聚氨酯原料比例最高的材料。

“Ultrasuede BX”是世界上第一种采用植物基聚氨酯为原料制成的麂皮绒质地非织造材料，东丽集团计划将其作为环保材料

推向市场，并在汽车内饰、时尚和室内装潢等应用中提供高灵敏度和功能性。该产品目标是至2019年销售额达5亿日元（450万美元），到2024年销售额达30亿日元（2600万美元）。通过将涤纶超细纤维的三维缠结结构与聚氨酯经浸渍、凝固、抛光，制成具有仿麂皮纹理的非织造材料。

“Ultrasuede BX”是利用甘蔗废糖蜜和非食用蓖麻油厂的蓖麻油多元醇组成的聚氨酯，与乙二醇聚合而成的聚酯。

在开发该技术之前，由植物基原料制成的聚氨酯面临诸如低耐久性和手感差等问题，并且不能用于制备具有麂皮绒质地的非织造材料。为了解决这些问题，东丽公司利用其独特的设计技术，从聚合物原料到产品结构，采用聚氨酯凝胶技术，成功开发了具有高水平的植物性原材料、高耐久性、透气性和易维护性等优越的手感和功能的“Ultrasuede BX”材料。

自1970年以来，通过不断的改进技术，Ultrasuede已发展成为一种高功能性材料，不仅被应用于时尚和室内设计，还应用于汽车和飞机内饰，运动装备，智能手机和移动设备配件。东丽也一直专注于环保可持续型产品的开发，并且自2016年以来一直在销售Ultrasuede®PX，该产品含部分植物性聚酯。将Ultrasuede®BX加入该品牌的产品阵容中，进一步扩大了公司对含麂皮绒质地的非织造材料的战略部署，实现了可持续性和创新性。

(资料来源：“www.technicaltextile.net”)

### Mölnlycke收购丹麦气流成网生产商

M & J 气流成网产品将提高Mölnlycke的创伤敷料产品性能

Mölnlycke，一家医疗卫生产品解决方案的公司，宣布收购M & J气流成网产品 A/S（“M & J”）。M & J是一家丹麦私营公司，专业生产高品质吸液性气流成网非织造材料。

在Mölnlycke的创伤敷料产品中，M & J的气流成网技术与泡沫和软硅胶一样至关重要。M & J的年收入为1000万欧元。此次收购为Mölnlycke的增长目标提供了支持，并为其强大的产品线和差异化的产品组合提升了关键的研发能力。

## 行业信息

在此次收购中，M & J及其员工将成为Mölnlycke不可或缺的一部分。此次收购将提高Mölnlycke对气流成网原料供应的安全性，这对于生产先进的创伤敷料而言至关重要，并将通过加速现有和未来产品的创新以及产品开发来帮助扩大创面伤口护理业务。双方均同意对收购价格保密。

Mölnlycke首席执行官Richard Twomey评论说：“我们非常欢迎M & J加入Mölnlycke家族。我们的关系可以追溯到几十年前，因此是力量的自然统一。这完全符合我们作为一家公司的目标，M & J强大的研发能力以及Mölnlycke的最终产品知识将帮助我们进一步提高在先进伤口护理行业的竞争地位。”

M & J首席执行官Jens Ole Brøchner表示：“我十分荣幸加入M & J的长期客户和合作伙伴Mölnlycke公司。运营和战略协同效应将更高质量的产品更快地推向市场，我期待在新的所有制结构下继续取得成功。”  
(资料来源:“www.technical-textiles.net”)

### Hero Wipes发布实验室结果

**湿巾可以去除高达99.7%的铅污染物**

Hero Wipes是一款经过验证的、针对急救人员的保护性湿巾的创新先驱，该公司宣布对Hero Wipes产品进行了额外的实验室测试结果，结果证实，其可以去除高达99.7%铅污染物的能力。在此之前，已经证实其可以去除烟灰中发现的高达90%的已知致癌物质，被用于消毒去污。维护公共安全的专业人员，包括消防员和执法人员，每天都面临着接触致癌物质的巨大风险，使用适当的擦拭物进行事故后去污对于降低毒性风险至关重要。

最近的研究表明，应对结构火灾的消防员不仅暴露在潜在的致癌烟尘中，还暴露在来自家居用品、地毯和电器的铅污染物中。研究还表明，由于接触枪击残留物和缺乏适当的去污措施，执法人员铅中毒的风险增加。Hero Wipes湿巾在美国组装，经美国EWG认证，已经过配制、测试和验证，可以清除同一块擦拭物中的致癌烟尘和铅污染物。

Hero Wipes的上级公司Diamond Wipes International的创始人兼首席执行官Eve

Yen说，“我们为支持和保护急救人员和公共安全人员所做的工作感到非常自豪。”“Hero Wipes 消防产品提供的附加保护表明我们一直致力于关心维护公共安全的人员。”

洛杉矶消防局助理局长Wade White说“听到新测试的消息，我们洛杉矶消防局的所有人都很兴奋。”“我们之所以选择Hero Wipes，是因为它被证明可有效去除烟灰。现在我们了解到，对于去除我们所接触的重金属毒素也是有效的。”

Hero Wipes于2017年被推出，是首款具有独特配方的现场去污擦拭巾，该配方是一种正在申请专利的混合成分，可有效隔离有害毒素和致癌物，并经过了科学测试，证明其可有效去除有害物质。Hero Wipes被证明只需轻轻擦拭即可有效地去除高达90%的苯并芘（通常在烟灰中发现）和高达69%的TCEP（最常见的有毒阻燃剂）。新的测试结果表明，Hero Wipes 防火产品提供了顶级的防火保护，可去除高达99.7%的铅污染物，从而免受火灾污染。

(资料来源:“www.nonwovens-industry.com”)

### 帝人开发耐热非织造布

**技术针对袋式过滤器**

帝人株式会社开发了一种使用间位芳纶纤维制备的防静电非织造布，用于袋式过滤产品市场。用于制造非织造布的纤维细度为0.5dtex。尽管有方法可将PTFE薄膜层压到非织造材料上，但该公司仍在努力提高该工艺的效率。提高这一效率是因为将芳纶纤维层压到聚四氟乙烯薄膜上也将带来挑战。这种材料正在中国市场销售，当地的环境法规非常严格，故对袋式过滤器的需求也在不断增长。

(资料来源:“www.nonwovens-industry.com”)

### 尤妮佳在越南推出新品

**Diana分部增添了婴儿和成人尿片产品线**

近期，尤妮佳在越南的子公司戴安娜（Diana）在其婴儿和成人护理业务中推出了新的改进的产品。

该公司在其领先的博比（Bobby）品牌下，添加了新款改良过的带有日本绿茶香味的裤型尿片。尿片是为婴儿刚开始活动而设计的。它们很合身，舒适，同时可以

# 行业信息

避免泄漏。博比（Bobby）使用尤妮佳技术制造了Bobby的定制裤子，这些裤子有中等尺寸及超大尺寸。

同时在成人失禁行业中，尤妮佳旗下的Caryn品牌也是越南的头号尿片品牌。该公司的新型Caryn尿片增强剂采用“天然草本芳香疗法”带来舒适感，保持自我，使老人不再卧床不起。

“双重抗菌技术将纳米颗粒技术与苯扎氯铵溶液相结合，可抑制细菌的生长，降低溃疡性结肠炎的发病率以及卧床患者皮肤病的风险。此外，了解到气味问题不仅会影响患者，还会影响护理人员在处理尿失禁时的情况后，该公司在尿片中添加了从11种天然草药中提取的芳香剂。”  
(资料来源:“<http://m.grandiico.com>”)

## Lenzing（兰精）为非织造材料行业重塑其纤维品牌

随着VEOCEL品牌的推出，公司计划从B2B纤维生产商转变为B2B2C品牌。在芝加哥Wipes国际会议期间，纤维生产商兰精宣布了其新的非织造特种纤维品牌VEOCEL。品牌重塑旨在将VEOCEL定位为日常护理的优质非织造纤维品牌，应用涵盖从婴儿护理、美容、身体护理到私密护理和表面清洁。VEOCEL纤维来源于植物，以环保的生产工艺生产，经过认证清洁安全，可生物降解。

VEHICLE的推出是兰精公司战略的一部分，该战略旨在从企业对企业（B2B）纤维生产商转变为企业对企业、对消费者（B2B2C）品牌。

据兰精欧洲和美洲高级副总裁Marco Schlimpert所说，大约四年前，兰精的高管们希望根据市场困境制定新的品牌战略。“我们在非织造材料和纺织行业销售的纤维很多，但是每天都有人不认识它们，而且他们看不到我们提供的产品功能。这就是为什么我们需要从‘B2B’营销转向‘B2Me’。为了将纤维从技术规格提升到最终能让消费者所感知的目的和价值。”他解释。

因此，兰精决定以不同的方式定位其纤维，将纺织工业和非织造材料工业区分。现在，兰精的TENCEL品牌纤维将用于纺织

工业，而即将推出的VEOCEL品牌将用于非织造行业。

“这些所有特种纤维原来都在我们生产轨迹中，我们过去也生产过，但过去我们是以不同的方式进行销售，例如棉花的替代品，但这不是我们生产纤维的全部属性，因为我们提供这些纤维的属性比任何其他纤维都要强大得多。”Schlompert说。

VEOCEL纤维产品组合包括VEOCEL Lyocell和VEOCEL特种粘胶纤维，这些纤维来源于经认证和控制的森林与种植园的可再生或可持续木材。纤维的植物来源提供了功能性的好处，例如改善吸湿性和管理性，提高透气性，良好的手感以及混合多种功能；所有VEOCEL纤维经认证，都可在土壤、垃圾填埋场、堆肥和海水生物降解。

Schlompert指出：例如，可冲散的擦拭巾市场中也证明了VEOCEL的独特性能。“如果你考虑到可冲散性和强度，通常这是完全相反的两个属性，但我们可以将它们结合起来，而其他纤维无法做到。这种纤维为我们提供了独特的功能。”

与全球客户和品牌正在进行的联合品牌推广，联合营销和品牌教育活动相结合，VEOCEL使兰精将其重点从纤维类型转向产品应用，并与消费者建立一种相关的情感联系。

“我们现在在非织造材料行业所做的工作，正如我们过去15年为纺织行业所做的那样，是将这些高价值的技术特性定位于可追溯性，可持续的生态生产，并为最终消费者创造情感。因此，当最终消费者去沃尔玛或其他任何地方时，他们会看到一系列不同的产品，他们认为，‘好吧，这是我信任的品牌。’”Schlompert说。

兰精希望消费者能够很快将VEOCEL与公司的生产流程联系起来，并遵循其高品质、环保和安全标准。根据Schlompert的说法，兰精在奥地利的工厂是世界上最大的综合纸浆和纤维制造工厂，也恰好被原始的湖泊和山脉环绕，是奥地利最著名的度假地区之一，有着清澈的水、晴朗的天空和清晰的环境。兰精还经营着奥地利最大污水

（下转第35页）



# 市场动态

## Scavone在巴西投资针刺设备

这些最先进的设备将满足汽车，过滤，合成层压板，土工布，家具的需求

巴西非织造布行业的龙头企业 **Fabril Scavone** 将投资建设一座拥有最先进技术的欧洲机械工厂。新工厂将为汽车、过滤、合成层压板和鞋类行业以及土工布、声学 and 家具行业生产针刺非织造布。

该产品月产量为500吨，将投资在圣保罗的 **Itatiba** 镇。该公司的商务总监 **Laerte Guião Maroni** 表示，该投资正在进行中，以保持其在巴西市场中领导者的地位，更好地满足客户的需求并拓展海外业务。他说：“我们对新政府的上台持乐观态度，认为恢复经济增长所需的改革将很快得到批准。”

**Scavone** 的新工厂计划于2019年开始建设，于2020年开始运营。在位于 **Dom Pedro I** 高速公路沿线占地面积为10万平方米的地基上，该工厂占2万平方米。除了其战略位置，该项目还有充足的空间用于未来的投资。在开始运营后，新工厂将产生50多个直接工作岗位以及数百个间接工作岗位。

新生产线将采用市场上最先进的技术来生产针刺和热轧非织造布。**Fabril Scavone** 的新产品将拥有每月1250吨的总产能，以巩固其作为巴西最大的非织造布生产商和出口商的地位。

(资料来源:“[www.converternews.com](http://www.converternews.com)”)

## IFP-R3: 内部仪表盘和地毯隔音材料优化的生产工艺

**Autoneum** 通过采用“**IFP-R3**”，进一步改进了其多功能、毡基仪表盘和地毯隔音材料先进的制造工艺，并对相应的生产线进行了现代化改造。新生产线的特点是具有更高的产量，更低的维护强度和使用更少的材料。同时，“**IFP-R3**”预计用于制造具有高声学性能的大型部件，使得这些部件特别适用于运动型多功能车（SUV）。

为了支持汽车制造商生产更轻、更安静和更省油的车辆，**Autoneum** 优化了其制造轻质内部仪表盘和地毯隔音材料的工艺。全自动“**IFP-R3**”生产系统基于**Autoneum** 开发的旋转注射纤维工艺。将基础材料（毡/

纤维混合物）连续注入位于旋转鼓中的组件模具中以生产稳定的中间产物，随后将其转化为声学组分。

与之前的型号相比，“**IFP-R3**”系列增加了两个额外的毡/纤维混合进料系统，可以显着提高产量，同时将制造时间缩短50%。由于系统的扩展，大型毛毡垫可以加工成内部仪表盘和地毯隔音材料，特别适用于全地形车辆和SUV。凭借该系统，**Autoneum** 正在为全球广受欢迎的车型的重量和隔音做出重大贡献。由于系统调整，**Autoneum** 还实现了更好的生产环境，因为产生更少的纤维废料并且可以在其他组件生产中重复使用。

“**IFP-R3**”已在**Autoneum**的各个工厂以及北美的合资公司**UGN**中运营，并且未来将在欧洲和中国其他**Autoneum**工厂中使用。  
(资料来源:“[www.autoneum.com](http://www.autoneum.com)”)

## Valmet为Papel Aralar公司供应复卷机 非织造布复卷机将安装在西班牙现有的工厂中

西班牙公司**Papel Aralar S.A.**选择**Valmet**作为新型非织造布复卷机的供应商，该复卷机将安装在位于西班牙**Guipúzcoa Amézqueta**工厂现有的**PM 4**生产线上。该订单包含在**Valmet**2018年第三季度收到的订单中。新的非织造布复卷机计划于2019年第二季度投入运营。

“我们的目标是始终投资于先进技术，以满足客户的要求。**Papel Aralar**已经为这项业务服务了55年，并且得益于**Valmet**的支持，我们意识到提供的**F(O)CUS**机电复卷机可保持产品出色的性能。”**Papel Aralar**总经理**Senén Amunarriz Cortina**说道。

“**Valmet**复卷机在成功安装方面有着悠久的历史，并且在市场上广为人知。我们很自豪并很高兴在非织造布市场推出**F(O)CUS**机器概念，并支持了**Papel Aralar**扩大生产优质非织造布产品的计划。”**Valmet**非织造布产品销售经理**Marco Capitani**说。

新装置包括一台**Valmet F(O)CUS Reelite T15 E**复卷机—**Reelite T15**复卷机创新可扩展性概念最后的一个阶段。

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该机器的最大运行速度为1.8米/分钟，最终卷筒直径为2200毫米。它配备了带有主动卡钳控制(ACC)的F(O)CUS机电缓冲系统，可以在高速运行时，完美控制卷绕参数。轴处理系统、缺陷管理系统与现有包装系统的完美连接完善了供货范围。

(资料来源:“www.pulpapernews.com”)

## 中国客户浙江金三发非织造布有限公司签署了新卷绕机的验收合同

10月30日，STREAM®卷绕机在中国浙江省湖州市金三发非织造布有限公司的工厂成功启动并验收。该卷绕机可处理30~50克/平方米的水刺产品、PET和粘胶产品，幅宽为3200毫米，由于采用了A.Celli公司的技术，因此可以与非织造布生产线完美兼容，使其同时具有多功能性和高效性。

客户出于对A.Celli集团的信任，随后购买了包括STREAM®卷绕机、RAPID®复卷机、Slittomatic自动切刀定位系统、提取器、自动卷筒和包装系统的完整生产线。这条生产线目前正在出货，计划于2019年上半年启动。

A.Celli非织造布公司的STREAM®和RAPID®解决方案再次证明我们是客户产品质量的保证。

(资料来源:“www.acelli.it”)

## Diamond Wipes®宣布收购Ode to Clean®

- Diamond Wipes®和Ode to Clean®自豪地推出更安全、更简易的清洁擦拭巾
- Ode to Clean®由Bioperoxide™提供支持，由100%植物成分制成
- 更环保的工艺使家庭更加清洁

Chino, CA—位于Rockies山脉以西美国最大的湿巾生产商Diamond Wipes International®近期宣布收购世界上第一个采用100%植物成分制成的清洁擦拭巾品牌Ode to Clean®。

Diamond Wipes International公司的创始人兼首席执行官Eve Yen说：“我们看到了对不含有毒化学品的天然清洁擦拭巾的需求。越来越多的顾客对越来越注重日常生活中使用的产品的环保性。Ode to Clean®是客户在家中安全使用的完美解决方案。”

Ode to Clean®品牌由Solugen于2016年创立，Solugen是一家专门从事绿色化学的生物技术公司，致力于创造更环保、更安全的化学品。Solugen研究癌症的医生Gaurab Chakrabarti博士和科学家Sean Hunt博士发现了一种独特的酶，它可以产生纯净形式的过氧化氢，他们称之为Bioperoxide™。凭借他们综合的专业知识，Chakrabarti博士和Hunt博士看到了将Bioperoxide™整合到日常清洁产品中的机会，该产品不会影响安全性能。

Ode to Clean®由100%植物材料制成，采用太阳能和风力制造。“许多所谓的‘天然’家用清洁擦拭巾使用有毒化学品，并依赖石油基制造，”Chakrabarti博士说，“Sean和我开发了一种技术，可以减少生产过程中的浪费和污染，同时创造了一个对我们的家庭来说更纯净、更安全的产品。”

“将Diamond Wipes®的创新和能力与Ode to Clean®的先进微制造技术相结合，将创造出当今市场无与伦比的产品。Diamond Wipes®于2018年11月推出升级版的Ode to Clean®湿巾，采用可生物降解的基材和改进的Bioperoxide™配方，可提供更有效的清洁力。

(资料来源:“www.diamondwipes.com”)

## Sunda在加纳开设尿片工厂

### 中国生产商充分运用政府政策

加纳总统Nana Addo Dankwah Akufo - Addo已在 greater Accra地区Weija附近正式允许开设一家新的婴儿尿片制造工厂。

森大国际(Sunda international)是一家中国制造商，通过结合政府的一个区，一个工厂(1D1F)工业化政策，在加纳建立了一家婴儿尿片工厂。该公司在加纳已经营了十多年，其设施致力于制造卫生产品以及建筑材料和硬件。这些产品部分出口到西非的其他国家。

加纳总统Akufo-Addo说：“贵公司在加纳不同地区开设不同制造工厂的扩张计划表明贵公司对加纳经济和当地制造业务盈利充满信心”，“这也为那些有所顾虑的投资者提供了一个很好的信号，他们等待投资结果作为他们举措的动力。我鼓励其他投资者结合我们商业友好政策，在加纳建

## 市场动态

立自己的制造工厂。”

总统还向加纳人民保证，政府对1D1F（一个区，一个工厂）的核心政策是永久性的。

他说：“每个地区都有一个制造基地，伴随着工作保障和该地区人民财富的增长，为今天这个工厂的运作提供了另一个证据。”

森大董事长Y.C.Chen说他的公司计划明年将新工厂的卫生用品生产线数量从7条增加到10条。这些生产线生产尿片、卫生巾和擦拭巾。它是该公司在加纳最大的工厂，并计划继续响应该国政府的政策。

“加纳政府的‘一个区，一个工厂’的政策鼓励投资者在加纳的每个地区建立一个工厂，这是中国政府40年前所做的工作，并推动工业化，从而使得中国成为世界上最大的经济体之一，”他说，“工业化仍然是当今世界各个地区经济增长背后的主要推动力。随着加纳努力实现工业化，我们森大国际很高兴成为加纳政府农村工业化发展项目的合作伙伴。”

新工厂目前拥有500名员工，最终将增长到800-1000人之间。

(资料来源:“www.nonwovens-industry.com”)

### Nippon Shokubai在印度尼西亚进行投资

丙烯酸工厂将于2021年启动

Nippon Shokubai Indonesia计划在印度尼西亚建设一座年产量为10万吨的丙烯酸工厂，以满足不断增长的需求。该公司计划在2021年3月底完成建设，目标是在2021年11月开始商业运营。

丙烯酸是用做制造尿片的高吸水性聚合物或SAP的原料。由于亚洲的丙烯酸供应紧张，预计该地区的需求将会增长。

该公司在印度尼西亚经营着一家年产量为14万吨的丙烯酸工厂。

PT Nippon Shokubai是日本Nippon Shokubai的子公司。

(资料来源:“www.nonwovens-industry.com”)

### Prime medical 医院的窗帘、抗菌实验室外套和工作服

LARGO, Fla.——2018年11月27日——传统上，柔软的表面是医疗卫生护理中消毒的最大挑战之一。一项研究发现，92%的保护病人隐私的窗帘在洗涤后一周内被发现受到传染性细菌感染。另一项研究表明，多达60%的护士和医生服装可能是医院传染的来源。

现在，Prime Medical与Clorox Professional Products 公司合作，推出医院保护病人隐私的窗帘、工作服和实验室外套，利用次氯酸钠基漂白剂的消毒效果，使这些柔软表面减少相关感染(HAIs)，作为解决医疗卫生护理方案的一部分。

“我们保护病人隐私的窗帘、工作服和实验室外套的面料将为那些身处在医疗卫生环境中的人们提供另一种工具来对抗HAI，使得柔软的表面成为一种保障而非负担，” Prime Medical首席执行官Jim Sampey说。“Prime Medical与Clorox Professional Products公司将共同抵制HAI并改变医疗卫生面料的结构。”

新的Prime Medical保护病人隐私的窗帘、工作服和实验室外套将采用Clorox Healthcare和CloroxPro™品牌，并提供前所未有的杀菌保护，从而带来更安全的患者环境。该产品的工作原理是，在用漂白剂洗涤后，使抗菌分子能够与产品表面长达12周的结合，从而抑制病毒的生长和扩散。每次洗涤时产品都会重新充电，抗菌能力可耐受至少75次工业洗涤。

利用EPA注册的漂白剂按照标签说明洗涤时，实验室测试显示，活性产品可以杀灭细菌和病毒，根据该产品制造商的一项研究表明其杀菌效果达99.9%。这意味着当医生和护士等在病房之间走动时，他们可以通过工作服和实验室外套来降低传播看不见的病原体的风险。而且，对于经常接触且很少更换的保护病人隐私的窗帘、产品的抗菌能力提供了额外的保护层，以防止细菌和病毒的传播。

“当我们首次看到Prime Medical将该技术推广向市场时，我们就意识到它是另一个在

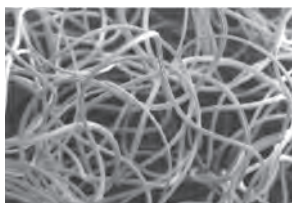


# 市场动态

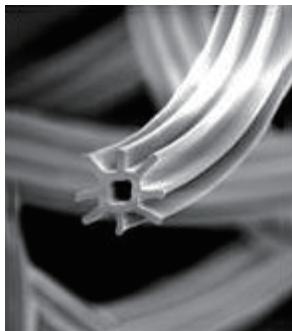
患者环境中预防感染和减少病原体方法的例子，” Clorox Healthcare营销副总监Amy Harmon说。“这就是我们所寻求的合作伙伴——志同道合的公司，我们一直致力于为更清洁、更安全的医疗卫生环境开发创新解决方案。”（下转第49页）

## 帝人成功开发异型超卷曲纤维“SOLOTEX® Octa®”

[2018年11月13日，东京讯]帝人富瑞特株式会社（总公司：大阪市北区、社长：日光信二）此次成功开发出兼具蓬松感、轻量性和优异伸缩性及形态恢复性的异型超卷曲纤维“SOLOTEX Octa”。



“SOLOTEX® Octa®” 短纤维



“SOLOTEX® Octa®” 长纤维

### 开发背景

（1）近年，对作为羽绒的替代品--合成纤维棉（短纤维）的需求不断增加，具有蓬松感、轻量性以及压缩后良好的形态恢复性合成纤维材料获得市场的追捧。

（2）另一方面，对于合成纤维(长纤维)，经过多年努力具备了既蓬松轻量和高伸缩性，但是难以通过中空等异型断面形状同时实现的蓬松感、轻量性和高伸缩性。

（3）针对这一情况，帝人富瑞特将具备伸缩性和形态恢复性、弹性等特点的推荐材料“SOLOTEX”做成中空结构的8翼型断面，并对纤维加入卷曲性，由此成功地开发出兼具蓬松感、轻量性和更高弹性、形态恢复性的异型超卷曲纤维“SOLOTEX Octa”。

### “SOLOTEX Octa” 的特长

此次开发出的“SOLOTEX Octa”在“SOLOTEX”所拥有的伸缩性、形态恢复性、弹性等特性的基础之上，还具备以下特点。

（1）蓬松感与轻量性、伸缩性与形态恢复性

通过将“SOLOTEX”做成中空结构的8翼型超异型断面形状，让纤维间产生空隙，既实现了超出以往的蓬松感和轻量性，同时也兼具更为优异的伸缩性和压缩后的形态恢复性。

（2）作为短纤维的伸缩性、形态恢复性、弹性短纤维通过发挥异型超断面带来的刚直性保持线圈状的卷曲结构，将“SOLOTEX”原有特长的伸缩性和压缩后的形态恢复性、弹性等提升到更高水平。

（3）作为面料的吸汗速干性、防透视性、隔热·绝热性制成面料后，通过异型超断面形状让纤维的表面积变大，还能发挥吸汗速干性和防透视性、隔热·绝热性等功能。

### 今后的展开

（1）帝人富瑞特把“SOLOTEX Octa”定位为新一代高性能面料，短纤维将以替代羽绒的中棉结构体为核心展开，还可以作为面向非织造布及其他纤维组合结构体等的纤维材料加以广泛推介。

（2）另一方面，长纤维则以运动装等服装用面料为主展开，通过假捻加工和混纺加工、精纺交捻等与其他面料的复合加工，力争面向从服装面料到工业材料的多种领域推广。

（3）“SOLOTEX Octa”将从2018年度开始试销，目标是到2022年度实现短纤维400吨/年、长纤维作为面料100万m/年的销量。

### 关于帝人集团

帝人（Teijin）成立于1918年，总部设立在日本东京和大阪。经过100年的发展，公司主要经营领域包括复合成形材料、芳纶纤维、碳纤维、薄膜、树脂、纤维产品等材料业务，以及医药医疗业务和IT业务。集团在全球20多个国家和地区拥有170家子公司，约19000名员工。帝人通过独有的见解和创新的技术针对社会所面临的问题，在“环境价值”“安心、安全、防灾”“少子老龄化、健康意向”这三个重点领域提供崭新的解决方案。在2017财年，公司实现了8350亿日元的销售额，拥

## 市场动态

有9862亿日元的总资产。

### 帝人集团在中国

帝人集团在华业务始于70年代对华出口涤纶生产设备，1994年在江苏省南通市进行了首次商业投资（南通帝人有限公司），从此开始了与中国社会和地区的共同发展。目前，帝人集团大多数业务公司已在中国各地开展了多元化业务，发展成为拥有约24家在华公司和总数约2000名员工的企业集团。帝人集团以技术创新为核心，针对全球性课题提供崭新的解决方案，力求发展成为备受社会期待和信赖的企业集团。

(资料来源:“<https://www.teijin-china.com>”)

### 巨头南卡罗莱纳非织造布获得ISO 9001:2015认证

Mogul South Carolina Nonwovens（Mogul南卡罗莱纳非织造布公司）是一家快速增长

的美国非织造布制造商，为卫生、医疗、汽车和清洁用品行业提供水刺非织造产品。Mogul宣布，截止到2018年4月19日，他们已通过ISO 9001:2015认证。国际标准化组织的认证表明，Mogul致力于服务市场，而这需要最高水平的质量保证。

国际标准化组织(ISO) 9001:2015是同类产品中最新的标准，注重质量管理体系和性能。它提供了制定管理系统的指导方针，使产品的质量与公司更广泛的业务战略相一致。

“ISO认证是我们专注于所有Mogul的组织过程中基于风险的思考和问责制的结果。这是Mogul如何确保我们满足客户对服务、质量和沟通的期望的一部分，以促进我们保持长期的竞争力”。Mogul SC集团总裁Darryl Fournier说道。（下转第50页）

（上接第30页）

处理厂。“我们以这种方式净水，以便附近的湖泊成为渔民的天堂，”他补充道。

“这就是为什么VEOCEL的标语‘纯粹为你’具有双重含义，”Schlimpert说，“它不仅纯粹，因为它质量很好，但当消费者购买它时，他们会有意识地决定购买关注环保的公司生产出的产品。”

随着VEOCEL品牌的推出，兰精宣布其Surface产品组合--VEOCEL Lyocell Fiber采用“Quat”释放技术。这种新型纤维是一种优质的特种木质纤维素纤维，用于硬表面清洁和消毒湿巾。采用兰精Quat Release技术的VEOCEL Lyocell纤维可将季铵化合物（也称为“Quat”）从湿纸巾中释放到表面，以便在家庭和工业环境中进行有效的清洁和消毒。

根据兰精的说法，大多数一次性清洁和消毒湿巾主要由合成纤维，例如聚酯和聚丙烯组成。这种结合相互作用显着降低了

“季铵盐”的释放，并且会对消毒剂产品的功效产生负面影响。然而，利用兰精的“Quat”释放技术，“Quat”与VEOCEL Lyocell纤维表面的结合显着降低，从而提高了表面清洁和消毒过程的有效性。

兰精表示，含有VEOCEL Lyocell纤维和“Quat”释放技术的湿巾可显著改善从湿擦拭物到表面的“Quat”释放，从而提高产品的稳定性等性能。此外，VEOCEL Lyocell纤维还具有良好的吸水性和良好的手感，湿巾中液体的分布均匀。

在关于新纤维的演示中，兰精的项目经理 - 产品研发Martina Opietnik描述了VEOCEL Lyocell Fiber与“Quat”释放技术最显著的优势。“常用的表面清洁湿巾和消毒湿巾主要原料为不可降解的合成纤维，但我们现在有这种可生物降解的创新纤维，来自天然植物纤维素，具有比其他大多数纤维更好的‘Quat’释放性能。”Martina Opietnik说。（资料来源:“[www.nonwovens-industry.com](http://www.nonwovens-industry.com)”）

# 欢迎投稿

# 市场趋势

## McAirlaids宣布在弗吉尼亚州扩张生产线

### 将在肉类和水果包装市场扩大投资

据报道，德国气流成网制造商McAirlaids将投资780万美元，以增加其位于弗吉尼亚州Rocky Mount的美国业务的产能。该基地成立于2006年，目前拥有超过125名员工，是McAirlaids在美投资的唯一业务。它生产用于食品包装、零售、医疗、个人卫生和过滤应用的吸收气流成网材料。此次扩张将使该公司扩展到肉类和水果的包装市场。

作为奖励，弗吉尼亚经济发展组织与富兰克林县合作，确保了该项目在弗吉尼亚州的进行。州长Ralph Northam先生批准了联邦机会基金提供的75,000美元赠款，用于协助该项目在富兰克林县实施。弗吉尼亚州烟草区振兴委员会还会批准60,000美元的基金拨款，以及该项目的60,000美元贷款。将通过弗吉尼亚州就业投资计划提供资金和服务，以支持公司的员工培训活动。McAirlaid也有资格获得与项目相关设备的销售和免税使用的权利。

该投资还会增加25个工作岗位。

(资料来源:“www.convertingguide.com”)

## EDANA承诺增加再生PET的使用

该协会的目标是到2025年将非织造布中再生材料的使用量提高50%

EDANA代表其旗下的所有非织造布生产商成员，近期发布了一项重大承诺，即大幅增加再生PET在非织造布中的使用。再生PET已经用于各种非织造材料，例如屋顶产品、汽车领域和非织造土工织物，这些是再生PET纤维和树脂的大用户。再生PET也可以在一些卫生用品中找到，例如尿布。目前，超过20万吨的再生PET被用于生产非织造材料。到2025年，这将增长到超过30万吨，前提是这些使用后的废弃物是可利用的。

EDANA近期在布鲁塞尔宣布了“欧盟塑料工业——走向循环”的活动，与塑料价值链上的其他13个组织合作，提交了自愿承诺的临时报告，并承诺采用更多的循环商业模式。

欧洲塑料工业和价值链已经制定了一系列

应用广泛且雄心勃勃的自愿措施来实现塑料回收产业链的闭环。所有承诺都将与行业进行监控，随时准备与当局和其他利益相关方密切合作，以确保达到目标。实现雄心勃勃的可持续发展目标不仅取决于行业，还需要国家当局、欧洲立法者和消费者的支持。这需要更多的收集和更好的分类，来增加回收利用并将更多回收物纳入新产品中。将每年组织一次“欧盟塑料工业——走向循环”活动，以保证公开的工作汇报，同时与利益相关者就行业的进展进行透明对话。

(资料来源:“www.nonwovens-industry.com”)

## Techtex公司进行两次收购

这家总部位于英国的公司扩大了医疗保健和工业擦拭巾业务

Technical Textile Services (简称为大家熟知的Techtex) 是一家医疗保健和工业织物供应商，在收购两个同类公司后，正在成为英国该领域最大的公司之一。这家总部位于英国曼彻斯特的公司，它采购非织造材料和加工生产干湿巾，包括代工，自有品牌和通用产品。

该公司已收购总部位于英国Stafford的Whitminster International和Klenzeen，具体收购金额未公开。此次收购创造了一个收入超过2000万英镑，员工人数超过90人的集团。

Techtex的创始合伙人之一David Beardsworth将担任销售总监。他的团队将邀请Steve Oldfield和Brian Whitney担任运营总监；Julian Ashworth担任Whitminster International公司和Klenzeen公司的总经理；David Thompson担任销售经理。

这次并购是公司在过去十年中的第四次并购。

“这些收购将进一步增加对医疗护理行业客户的供给，并将服务于新市场，其中包括一些重要的海外市场，”Beardsworth说，“目前Techtex旗下所有的公司现有的客户都应该知道，这是正常的业务，而且因为我们拥有综合的资源，从而可专注于为客户服务、技术专长和产品质量提供更为敏锐的方法。”

(资料来源:“www.nonwovens-industry.com”)



## 市场趋势

### 印度发布尿片报告

在过去五年中，市场增长了20%以上

HTF Market Intelligence发布了一份83页的新研究报告，标题为“印度尿片（婴儿和成人）市场概述，2018-2023”，这份报告有详细分析，预测和策略。

标题为“印度尿片（婴儿和成人）市场概述，2018-2023”的报告对印度尿片市场进行了全面分析。该报告提供了一份完整的指南，关于在国家层面上市场规模和份额。除历史数据外，它还提供最新的销售数据，从而推动增长的细分市场。该报告还提到了一些行业内的大公司和大品牌，并审查了它们之间的竞争。通过四年的数据预测未来几年市场将如何变化。采用全面和迭代的研究方法，专注于最小化错误，以便提供最准确的估计和预测。

印度的尿片行业在2012—2017年期间（过去五年），增长率超过20%。尿片市场主要由印度的婴儿尿片组成，其中超过95%的份额，而成人尿片刚刚开始涉及主流市场。在印度，婴儿尿片分为五种类型。一次性尿片、现代布尿片、训练裤、游泳裤和可生物降解的尿片，这些尿片在印度市场的占有率很低。家居卫生用品很快将从奢侈品转变为“必需品”，这将为发展提供广阔的空间。在印度，尿片被认为是一种没有再利用价值的奢侈品，对于印度的许多人来说，尿片是无法承受的。此外，与其他尿片市场的消费者不同，印度母亲认为长时间使用尿片可能会损害婴儿的皮肤。然而，随着社会经济环境的变化和不断变化的文化模式，越来越多的印度母亲现在开始接受婴儿尿片。柔软透气的婴儿尿片适合印度市场的需求。

在印度尿片市场经营的主要公司有：强生、宝洁、金佰利、尤妮佳、诺贝尔、贝拉、Wipro、Patanjali Ayurved和喜马拉雅制药。

(资料来源:“<http://m.grandtiico.com>”)

### SABIC推出高熔融指数的PP

树脂为轻质、透气的卫生产品提供理想的基材

SABIC将推出一种创新的新型聚丙烯（PP）树脂产品，旨在为非织造布的熔喷纤维提供更高的性能。该新产品名为

SABIC®PP514M12，可用于个人卫生应用和其他细分市场的各种潜在最终用途。它是SABIC仅在两年前开始开发的新型高流动性树脂化合物系列的第一个等级。

卫生市场的挑战和消费者的需求影响了整个产业链上的合作伙伴，以促进SABIC开发并部署高度创新的解决方案。SABIC PP 514M12基于不含邻苯二甲酸盐和无气味的技术，为熔喷纤维提供良好的可加工性能，具有高水平的可拉性、可纺性和均匀性。得到的非织造材料结合了高阻隔性、高吸收性与透气性，增强了贴合性同时减少了药物消耗。

树脂可根据客户和应用需求进行轻松定制。与专用机器制造商最新的高速机器合作进行的试验，使用新型熔喷PP生产，确认其良好的可被加工性能。选定的非织造材料制造商的取样检测后，特地强调褒奖了创新的新材料，将作为各种潜在最终用途产品（包括尿片，卫生巾和其他卫生用品）的理想选择。

(资料来源:“[www.convertingguide.com](http://www.convertingguide.com)”)

### 宝洁公布了印度的增长情况

婴儿护理去年增长了34%

宝洁公司首席执行官大卫泰勒在该公司最新的财报电话中对印度市场表示非常乐观。截止到6月30日，印度次大陆还有土耳其，这两个市场以两位数的速度增长，并且所有子类别都在增长。

宝洁在印度的一些主要市场类别包括洗涤剂、洗发水、女性用品、婴儿护理、男性美容、非处方产品和口腔护理。4月，Madhusudan Gopalan接任Al Rajwani的印度董事总经理兼首席执行官，明确要求推动销售增长。

据泰勒称，在印度面临美国等市场的严峻挑战之际，印度婴儿护理销售额在2018年增长了34%。

(资料来源:“[www.nonwovens-industry.com](http://www.nonwovens-industry.com)”)

### H & H Medical公司推出TACgauze伤口缠绕纱布：创新产品将伤口纱布制造带回美国

五十多年来，编织棉纱布是控制伤口严重出血和治疗伤口的标准方案。用棉纱包覆

# 市场趋势

伤口和包扎伤口传统上是在各级军事和民用急救医学中学到的，然而，国内制造的编织棉纱布被证明是昂贵的，并且大部分生产已经转移到海外。

现在，H & H Medical将用于伤口管理的棉纱布生产带回美国。根据与美国农业部的联合研究计划，开发了TACgauze Wound Wrapping Gauze，以利用美国现有的制造工艺，为军用和民用用途创造价格合理、有效、符合Berry Amendment标准的纱布。凭借这些可衡量的好处，TACgauze标志着下一代创伤纱布。

该非织造产品将含有漂白棉、合成纤维和真棉（一种T.J.Beall公司生产的可持续、无化学成分的棉制品）的专有混合物并入一种非织造纱布产品中，该产品比标准棉纱布具有更大的吸水性。此外，TACgauze比标准棉纱的纤维少，对受损组织的粘附性也较低，可以撕成更小的单元以便使用。

H&H医疗公司总裁保罗·哈德 (Paul Harder) 表示：“玉米纱布代表了美国农业部近十年的研究成果和T.J.比尔等合作伙伴的承诺。我们相信可以创造一种新的纱布产品，它比目前的技术更好、价格更具竞争力，而且是在美国制造的。新型纱布将符合所有这些要求。”

TacGaze将于2018年12月推出，长度为4.5英寸宽，120英寸长。第一版将是滚压版，真空包装和消毒。到2019年3月，一种Z形折叠的纱布将上市。

(资料来源:“<https://www.ems1.com>”)

## Ahlstrom-Munksjö发布新一代手术服

全球纤维材料领导者Ahlstrom Munksjö公司已经推出了一款全新产品ViroSēl，新一代可透气的病毒屏障 (BVB) 手术产品，旨在保护医疗专业人员并使其舒适。产品的特殊配方设计为外科手术服的关键部位提供了创造坚固接缝密封的机会。

ViroSēl是一种三层层压复合面料，具有不可渗透、透气和舒适的特点。其外层具有防水性和耐用性。阻挡层采用整体覆膜，使其不受液体、病毒和细菌的影响。薄膜本身的化学成分允许水蒸气通过，使手术

人员保持凉爽和干燥。较暗的内层设计用于减少阴影、手感柔软、穿着舒适、可以长时间使用。

诸如剖腹产、胃和心脏等手术通常涉及大量液体，而且需要很长时间才能完成。这意味着保护和舒适对于穿着手术服的医务人员来说是必不可少的。感染控制是必要的，因为患者和工作人员有可能接触到这些液体。国际行业标准用于测试和测量用于防护服（如手术服）材料的液体和血液传播病原体的屏障性能。“ViroSēl通过了这些严格的标准，提供了手术环境所需的不透水保护。” Ahlstrom Munksjö的新闻稿说。

“我们利用我们的英属维尔京群岛产品开发和制造经验，创造出一种产品，能够可靠地用于市场上最具保护性和舒适性的手术服。” Ahlstrom Munksjö医学产品平台负责人Jason Beard说。

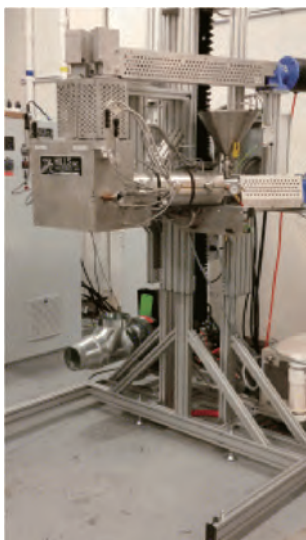
“我们最初的试用客户喜欢ViroSēl的舒适性、颜色和手感。总体来说，市场反馈非常积极，我们很高兴与市场分享这种创新产品。ViroSēl加强了我们在透气性病毒屏障市场保持差异化的动力。” Ahlstrom Munksjö医学部副总裁Lionel Bonte说。

(资料来源:“[www.technicaltextile.net](http://www.technicaltextile.net)”)

## Hills公司向北卡罗来纳州立大学的非织造布研究所 (NWI) 交付设备LBS-300

北卡罗来纳州罗利市—2018年12月14日—北卡罗来纳州立大学非织造布研究所 (NWI) 和佛罗里达州西墨尔本希尔斯公司很高兴宣布向NWI交付希尔斯LBS-300。LBS-300是一种非常通用和紧凑的机器，占地面积约5英尺\*5英尺，高约8英尺，设计用于研究和开发与长丝、纤维和非织造产品有关的原材料和挤压工艺。这种设计使得LBS-300能够快速且容易地适应几乎任何纤维挤压工艺。一个基本的LBS-300单位，利用多达8克的聚合物切片，只是挤出，聚冷退卷纤维。然而，LBS-300配备了许多可选的LBS附件，用于转换为许多额外的挤压工艺。随机器提供的这些选项包括：

1) 带孔的复合喷丝头可产生以下横截面形状的纤维：



- a) 实心圆形;
- b) 空心圆形;
- c) 三叶形。

挤出其他任何形状的横截面的喷丝头将会在后续添加。

2) 复合双组分纤维纺丝与计量/分配板, 以产生如下内部纤维横截面:

- a) 皮芯机构;
- b) X型;
- c) 倾斜的三叶形;
- d) 16段橘瓣结构;
- e) 36个海岛型;
- f) 阻挡板组件, 用于将旋转孔从72的数量减少到各种较低的旋转孔数。

用于挤出几乎任何其他内部不同结构的多组分计量/分配板将会在后续添加。

3) 用于挤出, 聚冷卷绕均聚物和双组分单丝的单丝挤出能力包括:

- a) 用于挤出实心圆形、空心圆形和三叶形横截面的喷丝头。
- b) 双组分计量/分配板, 用于挤出皮芯、并列和倾斜的三叶形横截面。

可以在以后添加额外的喷丝板和计量/分配板以挤出几乎任何其他横截面。

4) 熔喷模头用于挤出均聚物和双组分熔喷纤维以及熔喷产品成型、粘合和卷绕设备。也可以生产纤维直径<250纳米的产品。



5) 纺粘开放式系统吸气器, 用于高速拉伸纺成纤维以及纺粘产品成型, 压延粘合和卷绕设备。

6) 可调节的纺纱高度, 适应各种纤维和聚合物的纺纱。

7) 高温挤出机的温度可以达到450℃。

8) 适用于腐蚀性聚合物挤出的特殊材料。

9) 一种转接头, 几乎适用于为前道工序制造螺纹线的涂层。

10) 特殊设计, 以适应现有非织造布研究所(NWI)的设备用于制造完全取向的纱线。

11) Hillsware HMI, 用于存储和分析纺纱试验数据。

LBS-300是一种特殊的研究和纤维开发机器, 可以在NWI经常被操作使用, 但在NWI手中, 它也将成为一个极好的教育工具、培训NWI学生和行业人员在纤维挤压和熔纺非织造布生产。

Hills和NWI打算随着未来需求的出现, 通过向LBS添加更多功能来扩大他们的合作。  
(资料来源: "www.convertingguide.com")

## 科德宝集团进一步强化其过滤业务

科德宝与阿波罗集团签署协议, 在华成立合资公司

全球科技集团德国科德宝(Freudenberg)与阿波罗展贸科技(香港)有限公司(属日本阿波罗贸易集团旗下子公司)签署协议, 在原阿波罗环保器材有限公司基础上组建合资公司。阿波罗环保器材有限公司(后文称阿波罗)是中国领先的空气和水过滤解决方案供应商之一。2017年, 阿波罗在全球拥有约1000名员工, 年销售额达7.5亿人民币(约9600万欧元)。目前, 此次交易仍待中国相关机构最终审批。

随着国内相关法律法规的不断完善和大众环保意识的日益增强, 中国市场对空气和水过滤解决方案的需求每年都在快速增长。据专家估计, 到2022年, 顺德阿波罗的主要产品 - 室内空气净化过滤、新风系统过滤和家用水过滤在全球市场的销售潜能将达50亿美元。

(下转第41页)



# 2018年中国 大陆非织造 材料产量

全国非织造科技信息中心

## 2018年非织造材料按加工工艺分类的产量比较

加工工艺	2016		2016/2015	2017		2017/2016	2018		2018/2017
	产量 (万吨)	百分率 (%)	增长率 (%)	产量 (万吨)	百分率 (%)	增长率 (%)	产量 (万吨)	百分率 (%)	增长率 (%)
纺熔	150	46.01	+9.49	169.53	45.76	+13.02	177.93	44.93	+4.96
其中：纺粘 (含纺粘与熔 喷复合)	145	44.48	+9.43	163.8	44.21	+13.00	171.9	43.41	+4.95
熔喷	5.0	1.53	+11.11	5.73	1.54	+14.6	6.03	1.52	+5.24
干法成网	163.85	50.26	+12.46	188.17	50.78	+14.84	204.97	51.76	+8.93
针刺	74.7	22.92	+9.53	80	21.59	+7.09	84.79	21.41	+5.98
化学粘合	12.5	3.83	+4.17	13	3.51	+4	13.50	3.41	+3.85
热粘合	15.1	4.63	+11.85	18.5	4.99	+22.51	20	5.05	+8.11
水刺	59.9	18.37	+18.85	75	20.24	+25.21	85	21.46	+13.33
缝编	1.65	0.51	+3.13	1.67	0.45	+1.21	1.68	0.42	+0.6
干法造纸	8.6	2.64	+2.38	8.8	2.38	+2.33	9	2.27	+2.27
湿法成网	3.55	1.09	+18.33	4	1.08	+12.68	4.1	1.04	+2.5
合计	326		+10.85	370.5		+13.65	396		+6.88

## 2018年中国大陆非织造材料主要用途

	2016		2016/2015	2017		2017/2016	2018		2018/2017
	产量 (千吨)	百分比 (%)	增长率 (%)	产量 (千吨)	百分比 (%)	增长率 (%)	产量 (千吨)	百分比 (%)	增长率 (%)
医疗卫生用品	1378	42.27	+15.22	1635	44.13	+18.65	1769	44.67	+8.20
絮片	232	7.12	+6.91	250	6.75	+7.76	260	6.57	+4
包装材料	298	9.14	+8.76	325	8.78	+9.06	350	8.84	+7.69
擦拭清洁材料	360	11.04	+13.21	411	11.09	+14.17	451	11.39	+9.73
土工合成材料	156	4.79	+3.31	171	4.62	+9.62	181	4.57	+5.85
涂层复合基布	87	2.67	+3.57	90	2.43	+3.45	92	2.32	+2.22
防水材料、 油毡基布	99	3.03	+3.13	108	2.91	+9.09	113	2.85	+4.63
家具内饰	76	2.33	+2.70	79	2.13	+3.95	81	2.05	+2.53
衬布	49	1.50	+2.08	50	1.35	+2.04	51	1.29	+2
鞋材	47	1.44	+2.17	48	1.29	+2.13	49	1.24	+2.08
汽车内饰	147	4.51	+6.52	163	4.40	+10.88	171	4.32	+4.91
过滤材料	237	7.27	+15.05	276	7.45	+16.46	290	7.32	+5.07
农业	17.6	0.54	+2.92	18	0.49	+2.27	18.5	0.47	+2.78
造纸毛毯	10	0.31	+1.01	10.1	0.27	+1.0	10.2	0.26	+0.99
其他	66.4	2.04	+0.61	70.9	1.91	+6.78	73.3	1.85	+3.39
总计	3260		+10.85	3705		+13.65	3960		+6.88

# 地区报告

总体来看，2018年中国大陆的非织造布生产情况顺利平稳，稳中有进。总产量年增长率还是达到了+6.88%。由于各种成本上升以及某些中低端产品产能过剩和过渡竞争，企业利润较之前有所下降。

## 按工艺来分：

### 干法

由于产能增长较快，水刺产品数量增加仍很快，达13.33%（如卫生材料、医用材料产量增大）；热粘合（特别是热风粘合），与2017年比热粘合增长8.11%。

## 按产品用途分：

- ※ 擦拭清洁材料产量增长9.7%
- ※ 医疗卫生用产品产量增长较高，达8.20%
- ※ 包装材料产量增长达7.69%
- ※ 过滤产品产量增加达5.07%
- ※ 2018年中国汽车产销仍达2780万辆，由于新型非织造内饰应用增加，汽车内饰用非织造产量增长4.91%

## 中国大陆非织造材料进出口情况

※ 2018年出口非织造材料881537吨少于2017年的894231吨，但出口额达到27亿美元超过2017年的26亿美元。

※ 2018年进口非织造材料126489吨少于2017年147274吨，进口额8.27亿美元低于2017年的8.96亿美元。

## 最大的5个非织造材料进出口国家或地区

※ 出口非织造材料最大的5个国家与地区的排位与2017年相同

※ 进口非织造材料最大的5个国家与地区的排位与2017年相比，美国与日本的排位对换，台澎金马关税区为第一，日本为第二、美国为第三、马来西亚第四、沙特阿拉伯第五。

## 挑战和机遇

\*\*\* 中国大陆的非织造材料工业将面临贸易保护和单边主义严重挑战，而不确定、不稳定。

- 1) 非织造产业结构、产品结构和技术结构将继续调整
- 2) 继续强化创新（包括技术、市场和销售模式的创新）
- 3) 提高高附加值产品所占比例

\*\*\* 鉴于中国的工业化、大规模的城镇化和可持续和谐发展战略的引导，中国非织造材料工业仍具有巨大发展潜力。

（上接第39页）

科德宝集团首席执行官索伊博士(Mohsen Sohi)说：“两家公司的联盟将加强和巩固我们的市场地位，并为中国消费者提供更广泛的空气和水过滤创新解决方案。”面对中国经济的飞速增长，如何进一步改善空气和提高水质已成为中国面临的重大挑战之一，“可持续发展”、“环境保护”和“健康安全”等议题变得越来越重要。阿波罗过滤产品能够有效过滤空气及饮用水中的(超)细颗粒物、有害气体、异味和微生物，保护人体健康。

“阿波罗在各个方面都与科德宝都非常契合，”科德宝过滤技术集团首席执行官安德烈亚斯·克鲁特博士(Dr. Andreas Kreuter)说。

“作为一家创新型科技企业，阿波罗拥有一流的生产和技术能力，以及出色的市场网络。这次合作能够进一步完善我们在室内空气过滤和水过滤领域的整体解决方案。”

阿波罗在中国顺德拥有自己的生产基地，

在质量、工艺或安全生产方面都有很高的标准。2017和2018连续两年，阿波罗均被评为广东省制造业500强企业。公司通过了ISO 9001、ISO 14001、TS 16949认证，并获得中国合格评定国家认可委员会(CNAS)实验室认可证书。

科德宝过滤技术集团和阿波罗都将从此次合作中获益，包括生产、技术和市场在内的各个环节，特别是在将来发展非常重要的两个领域：过滤材料和气体过滤技术领域的优势互补。协议达成后，科德宝集团将占合资公司多数股份。

阿波罗贸易集团执行总裁山本晃久(Akihisa Yamamoto)说：“与科德宝共同成立合资公司将使阿波罗在中国乃至全球市场的未来发展前景得到进一步改善。客户将明显受益于我们更完善的综合开发能力和更强大的生产网络。”

（资料来源：“www.freudenberg-filter.com”）

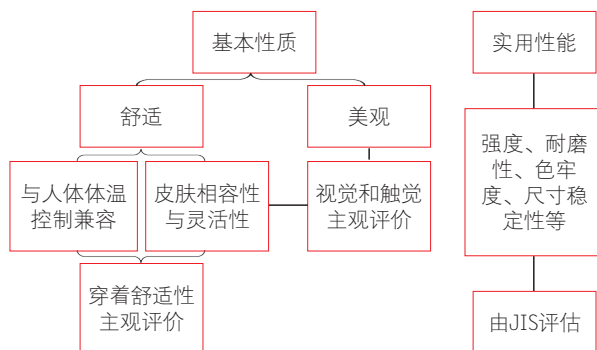
## 非织造材料舒适性评价方法

神戸大学  
Mari Inoue

### 目录

- 1) 舒适性评价
- 2) 非织造材料性能及测试方法
- 3) 日常生活用非织造产品评价

### 产品性能



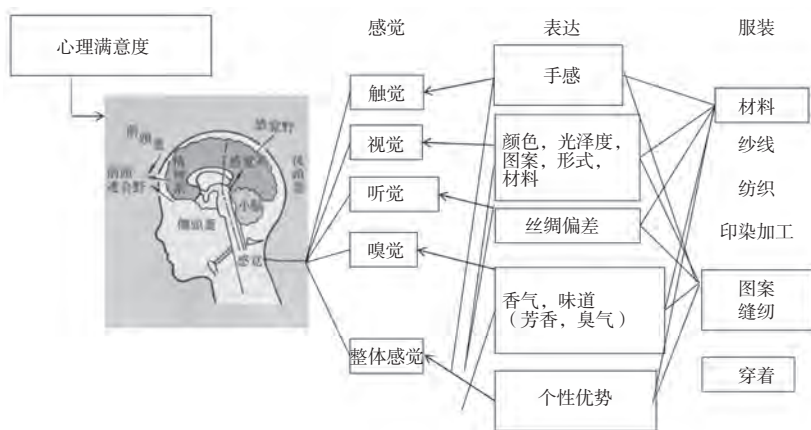
### 舒适性评价

睡眠，穿着，坐椅及生活舒适性

舒适皮肤感觉

感觉		[穿着舒适] 服装	[睡眠舒适] 床上用品	[坐椅舒适] 车	[生活舒适] 房子
刺激	皮肤感觉				
温湿度	温暖，寒冷的感觉	衣着气候	床上气候	车内气候	[空调内部] 温湿度
压力	触觉~压的感觉	穿着压力	身体压力，躺下的姿势	车身压力，座椅位置	
接触	触觉~(压力)	触觉(手、触摸，暖/冷的感觉)	触觉(手、触摸，暖/冷的感觉)	触觉(表面、接触，暖/冷的感觉)	[材料·内饰] 触感
其他		除臭、防静电	抗蟬	防震	空气污染，化学物质，隔音

### 感觉舒适的机制



### 穿着舒适性研究

- 服装微气候⇒热舒适 (织物的热/水/空气传递性能)
- 服装压力⇒容易自移动

(织物的拉伸性能)

- 质地⇒良好的触感 (手感, 热触感)



### 非织造材料的性质和试验方法

#### 形态属性

- 厚度和重量 (纤维形状, 添加剂, 产品制造方法, 受环境条件影响)
- 蓬松性 (根据纤维的比重, 即使厚度和重量相同, 还需考虑纤维网中的纤维体积)
- 孔隙率 (需考虑到孔隙体积对蓬松性的影响, 孔径不均匀分布, 沿着厚度方向密度变化, 在湿态和干态下的变化)
- 表面特征 (根据制备方法, 特别是粘合方法而有很大差异)

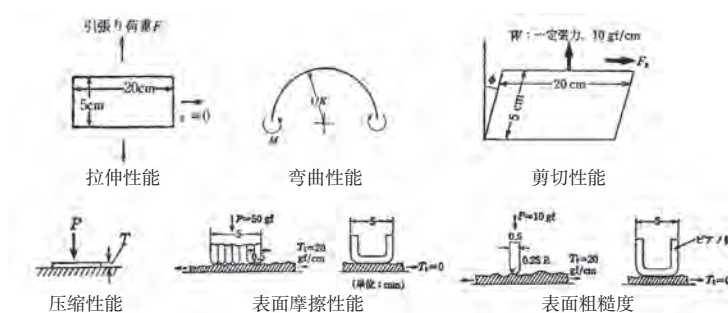
#### 物理性质

- 拉伸性能、强度、延伸率
- 撕裂强度
- 抗弯刚度
- 抗剪切性能
- 压缩性能
- 悬垂性
- 伸展性
- 表面张力
- 湿度
- 电性能
- 透明度
- 均匀性
- 燃烧性
- 耐磨性
- 剥离强度
- 过滤特性
- 吸水性

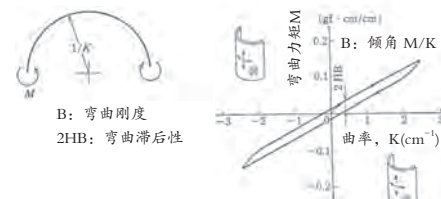
### 日常生活用非织造产品评价

从产品的基本力学性能和表面性能客观评价手感

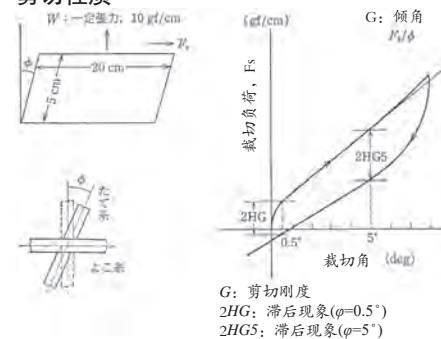




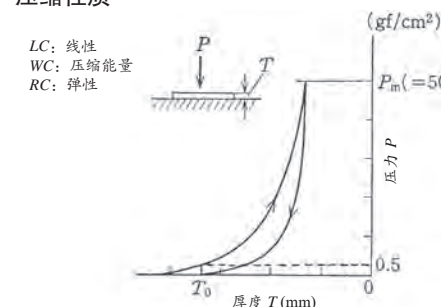
## 弯曲性质



## 剪切性质



## 压缩性质



## 用于计算非织造材料的测量参数和条件

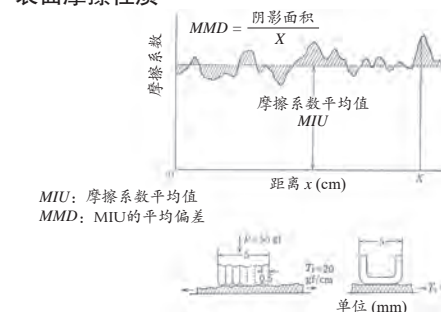
	参数	非织造材料测试条件	机织面料测试条件
拉伸	EMT (%) LT (-) WT (gf/cm <sup>2</sup> ) RT (%)	最大负载: 20N/m 应变速度: 0.4%/sec 长度: 50mm 宽度: 100mm	500N/m 0.4%/sec 50mm 200mm
弯曲	B (gf·cm <sup>2</sup> /cm) 2HB (gf·cm/cm)	最大曲率: $\pm 8\text{cm}^{-1}$ 宽度: 2cm	$\pm 80\text{mm}^{-1}$ 200mm
剪切	G (gf/cm·deg) 2HG (gf/cm) 2HG5 (gf/cm)	最大剪切角: $2^\circ$ , $0.2^\circ$ , $0.5^\circ$ 张力: 10g/cm	$8^\circ$ $0.5^\circ$ , $5.0^\circ$ 10N/m
压缩	LC (-) WC (gf·cm/cm <sup>2</sup> ) RC (%)	最大压力: 1000N/m <sup>2</sup> 速度: 150mm/sec	1000N/m <sup>2</sup> 150mm/sec
表面	MIU (-) MMD (-) SMD ( $\mu\text{m}$ )	负荷: 0.1N(摩擦) 负荷: 0.1N(粗糙度)	0.5N 0.1N
厚度重量	T (mm) W (mg/cm <sup>2</sup> )	在50N/m <sup>2</sup> 下测试厚度	

## 测量装置

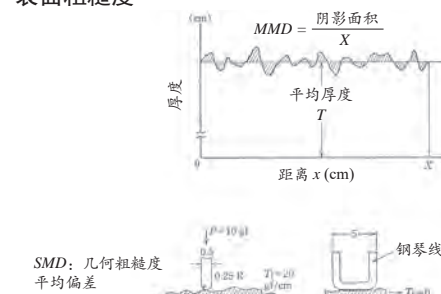
( KES-F: Kawabata 评估系统 )



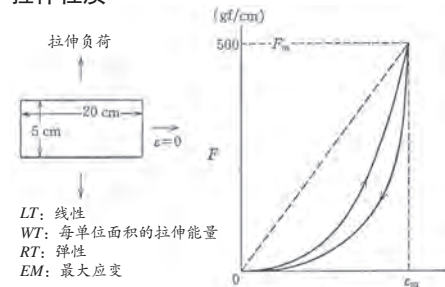
## 表面摩擦性质



## 表面粗糙度



## 拉伸性质



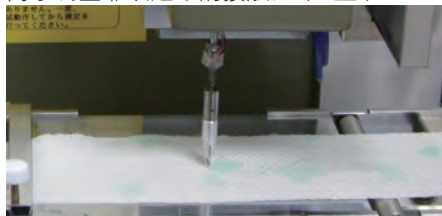
## 技术信息

### 表面性能测试

(同时测试摩擦性能和表面粗糙度)



用于测量非织造布的接触器 (U型)



各种摩擦接触器



各种压缩接触器



### 主要手感值公式的常系数

$$HV_i = C_{i0} + \sum_{j=1}^{16} C_{ij} \frac{X_j - \bar{X}_j}{\sigma_j}$$

$$THV = C_{00} + \sum_{i=1}^3 C_{i1} \frac{Y_i - M_{i1}}{\sigma_{i1}} + C_{i2} \frac{Y_i^2 - M_{i2}}{\sigma_{i2}}$$

(1)  $HV_i$ : 手感值

$C_{i0}, C_{ij}$ : 常系数

$X_j$ : 第j个参数或对数 (j=1到16)

$\bar{X}_j$ : 第j个参数的平均值

$\sigma_j$ :  $X_j$ 的标准偏差



## Asia Nonwoven Fabrics Association



is the only organization which represents the nonwovens industry in Asia



aims to take a more important role toward expanding the growth of the nonwovens business for the benefit of all members

### For further information:

ANFA Head Office

MENGYOKAIKAN HONKAN 4F, 5-8, BINGO-MACHI 2-CHOME, CHUO-KU, OSAKA, 541-0051, JAPAN

Phone: (81)6-6233-0842 Fax: (81)6-6233-0843 E-mail: anfa-hq@juno.ocn.ne.jp www.asianonwovens.org

## 技术信息

### (2) THV: 总手感值

$C_{00}, C_{1i}, C_{2i}$ : 常系数

$M_{ij}$ :  $Y_j$ 的平均值

$\sigma_{ji}$ :  $Y_j$ 的标准偏差

$M_{i2}$ :  $Y_j$ 平方的平均值

$\sigma_{i2}$ :  $Y_j$ 平方的标准偏差

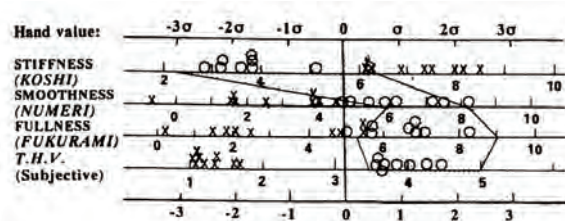
### 主要手感值公式的常系数

系数	i	$X_i$	$M_i$	$\sigma_i$	$C_{1i}$	$C_{2i}$	$C_{3i}$
	0		-	-	KOSHI	NUMERI	FUKURAMI
拉伸	1	LT	0.9069	0.0494	-0.0317	-0.0686	-0.1558
	2	WT	1.0258	0.1831	-0.1345	0.0735	0.2241
	3	RT	63.4538	4.7278	0.0676	-0.1619	-0.0897
弯曲	4	B	0.2734	0.3038	0.8459	-0.1658	-0.0337
	5	2HB	-0.7462	0.4685	-0.2104	0.1083	0.0848
剪切	6	G	1.1896	0.2555	0.4268	-0.0263	0.0960
	7	2HG	1.2426	0.1836	-0.0793	0.0667	-0.0538
	8	2HG5	1.3385	0.2303	0.0625	-0.3702	-0.0657
压缩	9	LC	0.7230	0.1679	0.0073	-0.1703	-0.2042
	10	WC	0.1566	0.1199	-0.0646	0.5278	0.8845
	11	RC	67.8316	7.2175	-0.0041	0.0972	0.1879
表观	12	MIU	0.2934	0.1136	-0.0254	-0.1539	-0.0569
	13	MMD	-2.1801	0.0915	0.0307	-0.9270	-0.5964
	14	SMD	-0.0640	0.1375	0.0090	-0.3031	-0.1702
厚度质量	15	TO	0.6165	0.0489	-0.1714	-0.1358	0.0837
	16	W	2.7553	0.0731	0.2232	-0.0122	-0.1810

### 总手感值公式的常系数

$HV_j$	j	$M_{1j}$	$M_{2j}$	$\sigma_{1j}$	$\sigma_{2j}$	$C_{1j}$	$C_{2j}$
KOSHI	1	5.7023	33.5300	1.0154	9.2717	0.6750	-0.5341
NUMERI	2	4.7533	24.0413	1.2328	11.8612	-0.1887	0.8041
FUKURAMI	3	4.9799	26.0735	1.1561	11.3190	0.9120	-0.7703

### 非织造材料手感主观评价



手绘图表中较高和较低THV样品的非织造材料的主要手感值显示了男士西装的高质量区域。较高的THV样本（由o符号表示）落在高质量区域中，而较低THV的样本（由x符号表示）落在该区域之外。

### 研究实例

① 不同材质、不同花纹的非织造样品的客观评价

- 主观评价的关系：初始值（材料刚度、光滑度、丰满度）和材料性能。
- 使用材料相关性能对手感进行计算。

### 不同材质和压花图案的非织造样品（不同材质）

材料	重量, mg/cm <sup>2</sup>		厚度, mm	
	Ave	SD	Ave	SD
聚酯纤维 (N=17)	4.05	2.40	0.20	0.09
聚丙烯 (N=6)	3.82	1.91	0.29	0.12
尼龙 (N=17)	5.38	2.89	0.30	0.14
超细聚丙烯 (N=12)	2.94	2.34	0.27	0.21
总计 (N=52)	4.20	2.61	0.26	0.15

### 不同材质和压花图案的非织造样品（不同压花图案）

	表面图案 (N数)	重量, mg/cm <sup>2</sup>		厚度, mm	
		Ave	SD	Ave	SD
	减号图案 1种类型 (N=18)	4.87	3.04	0.27	0.14
	点状图案 3种类型 (N=11)	4.64	2.50	0.30	0.11
	有纹理的图案5种类型	4.04	1.97	0.18	0.05

### 主观评价与物理特征的相关系数

	拉伸				弯曲		剪切		
	EMT	LT	WT	RT	B	2HB	G	2HG	2HG5
KOSHI	-0.50	-0.62	-0.67	-0.33	0.79	0.80	0.88	0.79	0.83
NUMERI	0.31	0.59	0.47	0.36	-0.75	-0.77	-0.77	-0.72	-0.76
FUKURAMI	0.54	0.35	0.58	-0.41	-0.42	-0.26	-0.57	-0.31	-0.29
THV	0.49	0.61	0.64	0.17	-0.75	-0.73	-0.88	-0.74	-0.77

	压缩			面积			厚度	质量
	LC	WC	RC	MIU	MMD	SMD	T	W
KOSHI	0.60	-0.08	0.43	-0.23	0.22	0.24	0.52	0.84
NUMERI	-0.60	-0.16	-0.23	-0.04	-0.30	-0.28	-0.64	-0.85
FUKURAMI	-0.37	0.76	-0.71	0.60	-0.55	-0.52	0.35	-0.06
THV	-0.56	0.17	-0.50	0.25	-0.34	-0.35	-0.38	-0.73

### 主客观评价之间的相关系数

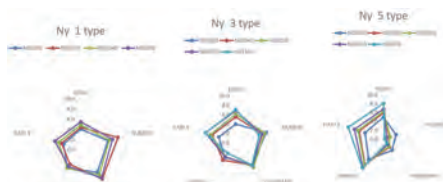
subjective calculation	KOSHI	NUMERI	FUKURAMI	THV
KOSHI	0.95	-0.83	-0.65	-0.94
NUMERI	-0.46	0.48	0.74	0.57
FUKURAMI	-0.31	0.26	0.84	0.46
SHARI	0.27	-0.29	-0.56	-0.36
HARI	0.93	-0.80	-0.63	-0.91
THV-W	-0.32	0.37	0.69	0.45
THV-S	-0.58	0.58	0.52	0.65



## 技术信息

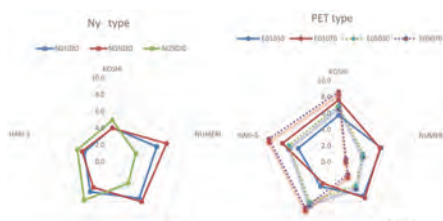
### 克重对手感值的影响

样品：尼龙

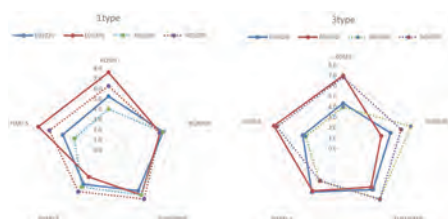


KOSHI, HARI随着克重的增加而增大, 而NUMERI, FUKURAMI随着克重的增加有减小的趋势。

### 图案对手感值的影响



在相同克重下, 5种图案的KOSHI, HARI, SHARI与底片图相比更大, 而NUMERI, FUKURAMI与底片图相比更小。



### 相同克重、相同图案的聚酯与尼龙的比较

对于图案1和3而言, 尼龙(虚线)往往有较小的KOSHI和HARI, 而FUKURAMI一般大于聚酯(实线)。

### 研究实例

商用婴儿一次性尿片

非织造材料面层的物理性能及手感

### 尿片面层手感

	KOSHI	NUMERI	FUKURAMI	SHARI	HARI	THV-W	THV-S
S1	4.78	4.84	5.18	4.14	4.61	3.13	3.50
S2	5.08	5.01	4.15	4.70	4.84	3.07	3.48
S3	6.01	6.31	5.68	3.72	6.75	3.98	3.18
S4	4.60	3.79	4.35	4.92	4.41	2.63	3.49
S5	5.60	2.70	4.45	6.27	6.35	2.55	3.27

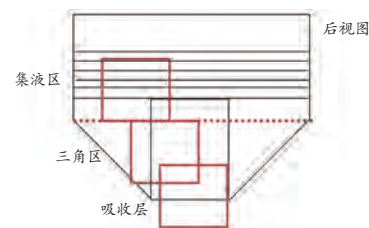
### 研究实例

尿片的舒适度

- 对佩戴舒适度的主观评价
- 非织造材料的物理性质与主观评价值的关系

### 样品

- 样品数量: 8
- 测量部分: 集液区, 三角区, 吸收层
- 样品尺寸: 100mm×100mm



### 样本

8种不同伸长特性的样品

用KES-F测量拉伸性能

参数	A	B	C	D	E	F	G	H
EMT 应变	3.0	3.6	115.9	80.9	91.8	96.9	68.0	92.2
WT 拉伸能	0.7	1.1	7.5	21.1	14.5	21.5	29.9	35.5



样品A(标准)

样品D

### 尿片面层的物理性质

	弯曲		压缩		
	B	2HB	LC	WC	RC
S1	0.0031	0.0065	0.454	0.387	48.58
S2	0.0028	0.0033	0.311	0.167	42.08
S3	0.0117	0.0128	0.341	0.235	53.18
S4	0.0024	0.0040	0.271	0.253	45.73
S5	0.0095	0.0106	0.311	0.424	46.35

	表面			厚度	克重
	MIU	MMD	SMD		
S1	0.378	0.0240	1.56	0.548	2.08
S2	0.360	0.0218	1.58	0.344	1.71
S3	0.359	0.0195	1.38	0.481	2.75
S4	0.411	0.0264	1.86	0.521	1.65
S5	0.454	0.0298	2.17	0.864	3.00

### 总结

非织造材料物理性能测试:

- 根据应用进行质量评估
- 适当的条件设定
- 提供稳定质量产品的方法
- 评估附加值

(资料来源: "ANFA 会议论文集, 本篇已节选")

## 技术发展趋势

### 降噪/吸音优势

制造商们看到了设计用于吸收和阻挡声音的非织造布的光明前景。

随着噪声污染日益严重，对人们日常生活的影响也越来越大，控制噪声污染变得越来越重要。这使得非织造材料在声学市场得到了发展，今天的非织造布生产商报告说，非织造材料在汽车、建筑、家具和其他应用领域取得了成功。非织造材料不仅具有高性能吸声和隔音特性，还具有弹性、低成本和轻质等特性。

“与我们的竞争对手一样，Dalco公司认为隔音非织造布市场正在增长。”针刺制造商Dalco Nonwovens的汽车销售经理Gale Shipley说。

作为这种增长的一部分，Shipley的公司正在进行机械升级，以最大限度地提高产能和产品性能，以及新的机器订单。“此外，Dalco将现在的市场描述为与我们的客户共同发展，这些客户希望材料具有更好的隔音性能，这是大多数现有技术无法单独提供的。我们让大家看到我们有能力结合不同的技术，这种能力将继续发展下去。”

Dalco在汽车、地板、建筑和办公面板行业生产用于降噪/隔音的特种针刺非织造材料。在汽车上，它定制了车身底部护板、轮罩、行李箱部件和地毯吸声层，以减轻从车外到车内和车外的声音传播。在地板领域，公司设计用于地毯/瓷砖和建筑的非织造材料，Dalco的产品可增强内墙和天花板瓷砖的吸声性能。它的办公室面板非织造材料不仅为办公隔间提供了声学性能，而且还能够被塑造成独特的形状。

在降噪/隔音的市场上，Dalco公司的针刺非织造材料主要与泡沫材料和纺粘/熔喷（SMMS）产品进行竞争。“然而，与泡沫材料和SMMS产品不同，纤维非织造产品的设计不仅考虑到隔音性能，而且通过简单地改变混合比和重量，可以满足不同刚度、不同拉伸/伸长性、可塑性和耐久性的需求。甚至在某些情况下，Dalco的针刺涤纶非织造材料可以再被开松成纤维以便再次循环利用，这是大多数泡沫复合材料都不能做到的。”Shipley解释说。

科德宝性能材料公司首席执行官Frank Heislitz说：“我们公司的隔音方案正在与增强塑料、注塑成型材料、泡沫、EVO或箔片之间竞争。非织造材料比其他材料更轻，而且具有很高的吸声性能，这在电子移动领域中变得更加重要。”

他补充，对客户来说，另一个重要方面是非织造材料的易处理性，便于高效安装。

从科德宝公司的观点来看，有三个主要因素推动了隔音非织造材料的发展。首先是电子移动领域的发展。根据Heislitz的说法，车辆的良好吸声性能提高了驾驶员的舒适度，并且对于电动汽车具有更好的优势，因为电动传动系统比内燃机产生的噪音更小，因此驾驶员对不同频率范围的其他噪声源变得更敏感。

其次，燃油经济性和效率要求是由处理欧盟二氧化碳减排、美国企业平均燃油经济性标准（CAFE）或亚洲各种燃油经济性法规等问题的法规驱动的。非织造材料有助于这些目标的实现。

最后，非织造材料为终端客户提供了改进后的驾驶体验。“车辆的良好吸声/隔音性能提高了驾驶员的舒适性。在车里感到舒适不仅取决于复杂的功能，还取决于对感官印象的无意识感知，”Heislitz博士解释说，“对创意和个性化汽车内饰的需求越来越大，同时汽车越来越多地被用作一个移动办公室，良好的隔音/降噪的功能是必不可少的。”

Freudenberg在隔音市场上的主要应用包括隔音垫、基于Evolon技术的微丝材料和车底护板。

Freudenberg的轻质吸声垫在车内提供出色的吸声效果，并且具有低成本优势。它们可用于门板、顶篷、后备箱和驾驶室等区域。同时，该公司的Evolon微丝技术可以在车内提供卓越的吸声性能。由于这种材料是由比头发细100倍的超细纤维制成的，因此可以显著降低重量，从而降低燃料消耗。Evolon被用于内饰、仪表板、发动机罩和汽车垫。

# 技术发展趋势

在汽车的其他应用，采用Freudenberg技术的非织造复合材料还会被整合到成型的车底护板和车轮内衬中。Heislitz博士说：

“这种新型多层复合材料提高了产品的耐用性、耐磨性、吸声性能、耐温性和抗撕裂性能，同时与目前市面上的产品相比，重量减轻了15-40%。这种结构是100%可回收利用的，可以在闭环系统中使用。”

作为一家专业工程材料的全球制造商，兰德公司提供了降噪/吸声非织造产品，这些产品通常被设计成能够在一个工程解决方案中发挥其他两种或三种传统材料的功能。据该公司称，它们可以量身定做，以提供高质量的美学、刚度、耐用性、耐化学性，甚至可以满足最新的防火标准。该公司表示，在许多情况下，兰德的非织造产品可以使用比传统声学材料更简单、更经济的设计来满足客户的系统级需求，而传统声学材料通常需要结构支撑、保护层和美学覆盖层。

兰德公司的吸声/隔音系列的产品主要供应给汽车、建筑和工业市场。与传统材料相比，其非织造声学材料具有低质量的高吸音性能，这一事实使其客户能够提高系统性能，同时降低重量和管理系统成本。

从兰德公司的观点来看，推动降噪/隔音非织造材料发展的一个重要因素是，消费者越来越重视良好的降噪/隔音系统的好处，并继续要求在其生活的许多领域里提高噪声控制水平。随着免提通话和语音控制产品等音频系统的使用不断扩大，汽车、办公室、家庭甚至公共建筑内的噪音水平变得更加重要。由于这种趋势，兰德公司预计在汽车、运输市场以及商业和住宅的建筑市场，使用工程声学解决方案的机会将会越来越多。

### 新应用领域

随着非织造材料不断取代隔音材料市场上的其他材料，它们也被用于新的应用领域。

从Sandler公司的角度来看，房间设计和室内隔音是一个相对较新的应用领域，新产品设计在这个市场中不断涌现。该公司正在与这些市场的客户合作，共同设计新

的产品解决方案，并将纤维舒适的非织造材料纳入其合作伙伴的声学材料中。“我们的客户通过印刷图案、层压、植绒等方式增强我们的非织造布，以创造毛坯外观，甚至用干草或矢车菊等天然材料制成的涂层来创造个性化的设计。通过这种方式，纺织材料有助于为每个房间创造一种新颖的感觉。”Sandler技术产品销售总监Gerhard Klier说。

Sandler认为，在私人住宅和办公楼中，房间设计变得更加宽敞，在这些地方设计了更多的开放式楼层布局。正是因为如此，尽管日常生活拥挤嘈杂，隔音/降噪元素在确保安静、愉快的氛围方面变得至关重要。因此隔墙，高效隔音墙装饰和隔音家具的需求量很大。“市场正在增长，非织造材料在这些需求中会越来越大。”Klier说。

随着世界人口的增长，Dalco公司的Shipley看到吸音非织造材料的应用也在不断扩大，特别是在大型公寓大楼、剧院房间以及移动办公面板的建筑和地板中。“此时，设计工程师的想象力会是未来的窗口。”她说。

虽然汽车将会仍然是隔音非织造材料的主要市场，但各公司都看到在整车中非织造材料的占有率越来越大。Shipley将这归因于非织造材料的成本效益，同时还能保证相似的美观和良好的隔音性能。她指出：

“一个很好的例子就是曾经严格由簇绒地毯供应的人造非织造地毯和地垫的订单正在大量增长。”

Freudenberg的首席执行官赞同隔音非织造材料越来越多地使用在汽车的不同领域里。除了传统的汽车内饰应用，如仪表板、门板、行李箱衬里和顶篷衬里外，Heislitz博士还发现了在汽车外部使用非织造材料的趋势，如车身底部护板、轮毂衬里和发动机舱。

对于土耳其非织造材料生产商Siteks（Hassan集团内最古老的公司）也发现，为了获得更多的舒适感，许多市场上对声学材料的需求正在增加。这些包括海陆空的交通以及公共区域——电影院、体育馆、办公室、医院、学校、餐馆和机械室。



## 技术发展趋势

Siteks出口经理Ahmet Ilhan表示：“具有各种厚度、重量和简单配方选择的可定制性使得非织造布每天在吸音市场中获得越来越多的市场份额。”。

Siteks的吸音非织造毛毡可用于汽车、建筑和白色家电领域。

Ilhan说，特别是在汽车行业，轻型和可持续的产品如今非常重要。为此，该公司开发了天然纤维增强热塑性毛毡和玻璃纤维增强热塑性毛毡，将其用于门板、承重地板、顶棚和其他领域。

Siteks最近还开发了一种自排热保温毡。在这种新产品的生产中，使用来自回收牛仔布的棉纤维和热塑性纤维，并且产品中没有化学粘合剂、树脂或任何刺激性材料。Ilhan说，由于具有自排气性，该产品是一种安全的隔热和隔音的替代产品。

### 更环保的形象

随着各公司继续在汽车等特定市场遵守新的相关环境法规，并寻求减少其整体环境足迹，非织造材料正在帮助它们实现这些目标。

Freudenberg的Heislitz博士说：“人们越来越意识到环境问题，从而促进资源的可持续利用。”

Freudenberg的非织造材料有以下几点特点：通过减轻重量的特点从而提高汽车的燃油利用率来帮助解决这一趋势；通过使客户能够回收废物来促进环境友好的生产过程；使用乳胶和无粘合剂的化工产品；以及增加消费后回收的份额。

兰德公司的许多吸音材料产品利用消费后和工业后的回收物作为其主要原材料之一。这使得该公司能够将其产品对环境的影响降到最低，并有助于减少来自其他行业的聚合物废物对环境的影响。该公司表示，这些策略使兰德能够为其客户提供具有竞争力的成本，同时帮助他们满足客

户和最终用户对环境可持续性日益增长的需求。

Dalco的Shipley表示，他们公司为客户提供的产品是100%可被回收的。例如，一种涤纶混纺的特种针刺非织造布是可以再回收制成纤维。她指出，“这种循环利用进一步帮助NA再生纤维制造商减少巨大的价格波动。”

另一方面，Dalco公司提供的其他混合物可以焚烧或制造用于气流成网的纤维，以避免倾倒入垃圾填埋场。

Sandler's Klier认为，由于环保意识和可持续性考虑因素涉及到我们生活的各个方面，因此天然材料制成的隔热解决方案需求量大，消费者正在寻找可持续的建材解决方案。“用木头、纤维素甚至芦苇制成的绝缘材料——形象地说——很流行，”他说，“然而，非织造材料表明合成材料可以提供同样多的可持续性。

Sandler Fibercomfort非织造布由100%聚酯制成，即使经过数十年的使用，也可完全回收利用。非织造材料也有一部分是由回收纤维本身制成，支持封闭的材料回收循环系统，这有助于节约资源。”

此外，特别是在建筑材料中，Fibercomfort的隔热性能有助于降低建筑中对供暖的需求。“通过这种方式，非织造材料被认为有助于降低能耗。”他总结道。

(资料来源：“[www.nonwovens-industry.com](http://www.nonwovens-industry.com)”)

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保护病人隐私的窗帘是由两部分组成，一个6英尺的模块化面板，可轻松卡入网状顶部。每个面板仅重1.4磅，在没有梯子的情况下，一个人可以在短短40秒内更换窗帘。这三种产品的面料洗后均可保持原有的颜色。”

Clorox Healthcare 保护病人隐私的窗帘于2018年12月上市，CloroxPro工作服和实验室外套将于2019年2月上市。

(资料来源：“<https://primemedical.com>”)

## 产品集锦

### Ontex推出在线订购尿片的服务

Little Big Change尿片不含有害物质，可提供长达12小时的保护

位于比利时Erembodegem的制造商Ontex，Little Big Change是市场上的新进入者，推出了“健康”的“尿片”，可以通过在线提供你的地址进行在线订购，再以合理的价格销售。

Little Big Change尿片不含有毒或刺激性物质，经Dermatest 5星、Oeko-tex 100和FSC认证。它们具有低致敏性，可提供长达12小时的保护。

随着Little Big Change的变化，尿片会在父母需要的时候送往他们需要的地方。这使得父母可以专注于真正重要的事情。并且由于生活无法预测，他们可以非常轻松地修改地址或取消订购。Little Big Change还为那些喜欢平滑的人提供了一个测试工具包。

绒毛（在吸收垫中）仅由来自树木的纤维素制成，采用氧气漂白并保证T.C.F.（完全不含氯）。它的SAP（超吸收性粉末）是所有一次性尿片中的合成成分。它非常安全可确保有效吸收。内层由聚丙烯制成非常柔软，无危险。这部分将直接接触婴儿的皮肤，并且该层中没有添加剂或有害产品。外层由聚乙烯制成非常轻，让皮肤能够充分呼吸。同时，防漏膜也非常柔软，弹性带子不会过度挤压婴儿的屁股，也不含乳胶。

(资料来源: "www.convertguide.com")

### Advansa开发用于湿法成网加工的新型超细纤维

专为过滤和其他技术应用而设计的纤维

Advansa公司已将其ADVA快捷产品组合扩展至使用湿法成网加工的新型超细纤维：0.2 dtex，平均直径为4.3 μm。该材料专为过滤和其他技术应用而设计。切割长度为3毫米或更长，材料均匀分散在水中。可以获得具有小且窄孔径分布的过滤介质，因为纤维还具有非常窄的直径分布：变化系数明显低于10%。

新型超细纤维是Advansa产品组合向更精细纤维方向发展。0.3和0.5 dtex的进一步

微纤维，以及1.7，3.3，6.7和17.0 dtex的常规纤维，可用于过滤材料的制造商以控制过滤器关键参数，如过滤效率、过滤阻力、机械强度、热稳定性等其他性能。根据欧盟BfR和FDA法规，大多数这些纤维符合食品接触应用的要求。这些选择可由各种芯-皮-粘合纤维与涤纶芯和共聚酯或聚烯烃，通过形成各种“皮芯结构”来实现，他们熔融温度约为110℃，130℃，160℃和180℃。因此，可以使用ADVA快捷产品组合作为基材来设计用于多种用途和工艺路线的各种高质量湿法成网过滤材料。

(资料来源: "www.nonwovens-industry.com")

### Ihsan推出100%纯棉生产线

纯棉奢华系列包括湿巾和化妆品垫

IHSAN Sons推出全新产品系列100%纯棉奢华湿巾和柔软纯棉化妆品垫。

纯棉产品具有无与伦比的吸收能力与天生的柔软度，为用户提供更大的舒适度，完全卫生和天然的亲肤感，使其成为女性和婴儿护理湿巾的最佳选择。棉花对皮肤非常温和，并具有广泛的安全历史。棉花为每个人提供了特别是在皮肤上使用时的所需保证。

IHSAN的100%棉产品经过通过皮肤病学检测和1级认证，可防止因使用化学处理产品而引起的痕迹、过敏和瘙痒等症状。纯棉制成的湿巾用后丢弃，可生物降解，非常的环保。

(资料来源: "ih sancotton.com")

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为了支持正在进行的认证，Mogul对企业内的关键员工进行投资，让他们通过外部培训成为合格的内部审计师。这使得公司可以同时在一年的时间内完成内部审计，并在年度整改审计之前完成。

公司选择BSI集团为注册商，通过大量的准备工作，没有证明有重大发现。Mogul南卡罗莱纳非织造布是Mogul非织造布的全资子公司。

(资料来源: "Mogul南卡罗莱纳非织造布")

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