

Special Highlights in 2009 :

Nonwovens / Technical Textiles
Feature in all issues of CTA and ATA

Nonwovens/Technical Textiles

Biodegradable fibers shine in medical realm

Newly developed biodegradable fibers provide solutions to various medical applications as they promise improved performance and functionality at a more competitive price level

By Lin Xiangqiong and Staff Reporters

Medical fibers are currently a growing industry as the world sees its applications mainly in medical implants and sutures to ease patients' pain upon operation to tissue-kills.

The United States annually consumes about eight million operations of tissue and organ resections at a cost of more than US\$40 billion, representing half of the country's aggregate medical expenses and a quarter of it being spent on medical fiber materials and products.

Biodegradable fibers used as medical implant materials must deliver suitable properties such as good levels of biocompatibility, durability and biodegradability. They are among the highest value medical products as they directly contact with human body, posing a vital role in the success and safety of medical operations and procedures.

Thus, biodegradable fiber is a high potential field in the global medical market.

Extensive applications for poly(vinyl alcohol)

Poly(vinyl alcohol) (PVA) — obtained by the hydrolysis of the polymer called poly(vinyl acetate) — is a water-soluble high-molecular polymer which used in diverging fields.

PVA has good film-forming and adhesive properties, is easy to solve and absorb with high flexibility, and is also a high strength fiber. When PVA is soluble in water, and it is more readily soluble in higher water temperature; however, it is hardly soluble by organic solvents.

Technically, PVA is either a fully or a partially hydrolyzed polymer. Fully hydrolyzed PVA is cold water soluble, while partially hydrolyzed PVA is cold water insoluble. Hence, the polymer solution can be done by the means of water, and PVA can be opened in a dry or wet state.

Medical PVA fibers consist of such specifications as PV with PVA128 and PVA124. The degree of alcoholysis for the two specifications is 98.2 and 99.0, and their average degree of polymerization are 500,000 and 1,700,000 respectively. The degree of alcoholysis for PVA124 is 99.99999% and its average degree of polymerization is 2,500,200.

PGLA polymers bring economic benefits

Polylactide (PLA) produces absorbable medical sutures, thereby eliminating the need to remove them after surgery. It is particularly suitable for medical operations inside a human body, such as an amniocentesis operation of liver, spleen, intestines and stomach, as well as for obstetrics and other surgical procedures of plastic surgery, orthopedology and general surgery.

Bringing substantial social benefits in the current medical science, this product has a high economic value.

PGLA, at a cost of no more than 8000 US\$ per kilogram, has a market value of 8000 US\$ after being processed as absorbable sutures.

In developed countries, absorbable sutures are widely adopted for the medical suture market, up to an 80% market share in the US, for example. In such less developed countries as China, Brazil, Mexico are used, although they are increasingly replaced by suture made of Polyglycolic acid (PGA) and PGLA.

Plant-based PLAs are fully commercialized

Poly(lactic acid) (PLA) has become a popular polymer for academic and commercial research in the US and Japan for its numerous applications and potentials. NatureWorks LLC, formerly known as Ingeborg, Inc. in the US and Engle Industries in Japan, are some processors of the PLA field. Long biological waste



Microscopic view of a fiber-based polymer suture showing its structure.

Nonwovens/Technical Textiles

新型纺织织物开辟后现代建筑空间

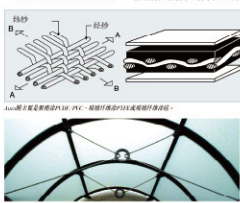
New textiles weaving post-modern architectural space

随着新型特种产品不断涌现，如金属纤维和非织造布，为大型露天场馆、体育馆、游泳池和公共人行道等场所带来新的装饰和结构解决方案。

Newly developed specialty technical textiles, such as metallic and nonwoven fabrics, have led to a new wave of textile structures in stadiums, trade exhibitions, shopping malls and covered public walkways.

纤维材料在建筑领域的应用，以其独特的物理性能，为后现代建筑开辟了新的空间。非织造布和金属纤维的结合，为建筑提供了新的装饰和结构解决方案。非织造布以其柔软、透气、透湿、透气的特性，为建筑提供了新的装饰和结构解决方案。非织造布以其柔软、透气、透湿、透气的特性，为建筑提供了新的装饰和结构解决方案。

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纤维材料在建筑领域的应用，以其独特的物理性能，为后现代建筑开辟了新的空间。

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- Techtextil 2009
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Frankfurt, Germany

Growing Market Trend

The global nonwovens industry is currently valued at more than \$14 billion at the roll goods levels and many times that in terms of end use markets. Disposable baby diapers and other hygiene-related products, like feminine hygiene and adult incontinence items and disposable wipes are still the largest market for nonwovens globally. Industrial applications like automotives, filtration, packaging, and roofing to apparel interlinings, cleaning, home furnishings and construction to protective apparel enjoy moldable, durable and recyclable benefits in these years.

More Applications and Consumptions

Growth of nonwovens is expected to have increased penetration of existing applications in both developed and developing markets in Asia. With manufacturers investing in new capacity around the globe, companies situated throughout the nonwovens supply chain are expected to benefit from this growth.

Thus, content of Nonwovens / Technical Textiles Column in both CTA and ATA will be enriched in 2009, providing the latest development in state of the art technologies, processing, converting and raw materials, with practical solutions for improving productivity, reducing cost, and turning innovations into real competitive advantages.

You are welcome to join us in enlightening this column. Please contact us.

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