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PERP 2017S5: Non-Woven Fibers

“Non-wovens Fiber” is one in a series of reports published as part of the 2017 Process Evaluation/Research Planning (PERP) Program.

Report Overview

Non-woven fabric is a fibrous product whose fibers have been bonded together by mechanical, physical or chemical means, rather than by spinning, weaving and braiding. The global market for non-woven fibers is estimated to be about 15 million tons in 2017. Polypropylene accounts for more than 70 percent of the market, followed by polyamides and polyesters. The combination of mechanical and physical properties, together with good processability, has made polypropylene the material of choice for a large number of non-woven applications in both consumer and durable markets.

This PERP report provides an overview of spunmelt and direct spinning technologies used in the production of non-wovens. The spunmelt process converts the polymer resin into fabric in a single step while in the direct spinning process, the resin is first converted into fiber and then bonded to form the web and eventually fabric. The following issues are addressed in the report:

- What are the major technologies used in production of non-woven fibers and fabrics?
- Who are the major equipment providers and what technologies do they offer?
- How do the process economics compare across different geographic regions and processes?
- What are the market applications for non-wovens? How is the market divided amongst the different applications?

Commercial Technologies

Spunmelt technology is the more dominant technology in non-wovens production. Non-woven fabrics are produced from polymer chips or pellets in a single machine. The web formation process, such as spunmelting, meltblowing or composite, and web bonding processes, such as needling, chemical bonding, or thermos calendaring take place within a single machine. Once the fabric is produced, it is either calendared, coated or laminated in a roll, which is then cut and sewn or welded into the end-use product.

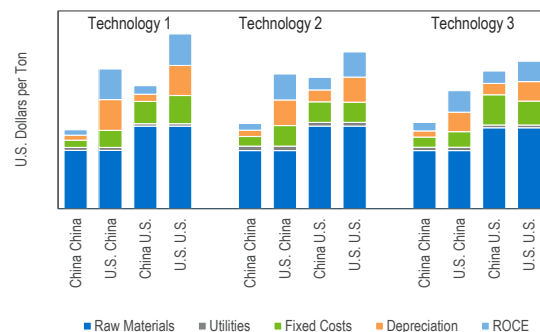
In the melt spinning process, the polymer chips or pellets are first converted into fibers. The fibers are then drylaid or wetlaid into the web. The web is bonded, using either chemical bonding, thermal bonding, needling or spunlacing.

Other processes and their key features are discussed in the report.

Process Economics

Detailed cost of production estimates for three different production routes to non-woven fabrics are provided for the United States and China. Production costs for the fabrics made in the U.S. and China with equipment manufactured in the U.S. are provided, along with the cost of production for fabrics made in the United States and China with the equipment manufactured in China.

ILLUSTRATIVE REGIONAL COST OF PRODUCTION COMPARISONS



Commercial Market Review

Commercial Market Review

The global consumption of polypropylene resin for the production of non-wovens is estimated to be close to 11 million tons in 2017. The growth from 2012 to 2017 has been around six percent annually. In the 2017 to 2025 period, the market is expected to grow at a lower rate of four to five percent per year, due to slower economic growth in Europe and China, as well as maturity in segments such as baby diapers and other hygiene applications.

The PERP report provides an overview of the supply, demand, and trade of non-woven polypropylene resin in the major global regions.

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Corporate Headquarters

Tel: +1 415 369 1000
101 2nd St Suite 1000
San Francisco
CA 94105-3651
USA

Americas

Tel: +1 914 609 0300
44 S Broadway, 4th Floor
White Plains
NY 10601-4425
USA

Europe, Middle East & Africa

Tel: +44 20 7950 1600
1 King's Arms Yard
London EC2R 7AF
United Kingdom

Asia Pacific

Tel: +662 793 4600
22nd Floor, Rasa Tower I
555 Phahonyothin Road
Kwaeng Chatuchak
Khet Chatuchak
Bangkok 10900
Thailand

