

Non Woven



Definition

- Nonwoven fabrics are broadly defined as sheet or web structures bonded together by entangling fibre or filaments (and by perforating films) mechanically, thermally or chemically. They are flat, porous sheets that are made directly from separate fibres or from molten plastic or plastic film. They are not made by weaving or knitting and do not require converting the fibres to yarn. Typically, a certain percentage of recycled fabrics and oil-based materials are used in nonwoven fabrics. The percentage of recycled fabrics vary based upon the strength of material needed for the specific use. Conversely, some nonwoven fabrics can be recycled after use, given the proper treatment and facilities. For this reason, some consider nonwovens a more ecological fabric for certain applications, especially in fields and industries where disposable or single use products are important, such as hospitals, schools, nursing homes and luxury accommodations.
- Nonwoven fabrics are engineered fabrics that may be a limited life, single-use fabric or a very durable fabric. Nonwoven fabrics provide specific functions such as absorbency, liquid repellence, resilience, stretch, softness, strength, flame retardancy, washability, cushioning, filtering, use as a bacterial barrier and sterility. These properties are often combined to create fabrics suited for specific jobs, while achieving a good balance between product use-life and cost. They can mimic the appearance, texture and strength of a woven fabric and can be as bulky as the thickest paddings. In combination with other materials they provide a spectrum of products with diverse properties, and are used alone or as components of apparel, home furnishings, health care, engineering, industrial and consumer goods.

Hygiene

- baby diapers or nappies
- feminine hygiene
- adult incontinence products
- wet wipes
- bandages and wound dressings
- disposable bath and face towels
- disposable slippers and footwear

Medical

- isolation gowns
- surgical gowns
- surgical drapes and covers
- surgical scrub suits
- caps
- medical packaging: porosity allows gas sterilization

Filters

- gasoline, oil and air - including HEPA filtration
- water, coffee, tea bags
- pharmaceutical industry
- mineral processing
- liquid cartridge and bag filters
- vacuum bags
- allergen membranes or laminates with non woven layers

Application



Geotextiles

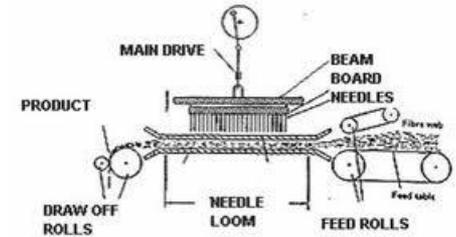
- soil stabilizers and roadway underlayment
- foundation stabilizers
- erosion control
- canals construction
- drainage systems
- geo-membrane protection
- frost protection
- agriculture mulch
- pond and canal water barriers
- sand infiltration barrier for drainage tile
- landfill liners

Other

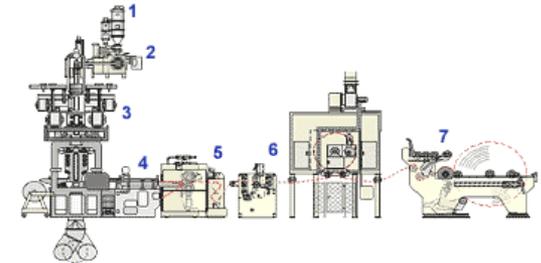
- carpet backing, primary and secondary
- composites marine sail laminates
- tabl-ecover laminates
- chopped strand mat
- backing/stabilizer for machine embroidery
- packaging where porosity is needed
- insulation (fiberglass batting)
- pillows, cushions, and upholstery padding
- batting in quilts or comforters
- consumer and medical face masks
- mailing envelopes
- tarps, tenting and transportation (lumber, steel) wrapping
- disposable clothing (foot coverings, coveralls)
- weather resistant house wrap

Technology

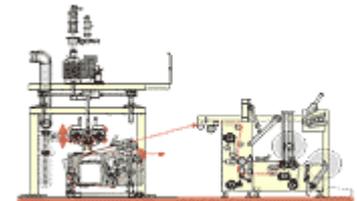
- Needle punch non woven



- Spunbond non woven



- Melt blown non woven



- Others like SMS

Materials

- PP up to about 50 MFI for Spunbond application
- PP up to about 2.500 MFI on Melt blown application
- PET A for all kind of application
- Bi-Component application can be the core PET A and the shell can be G PET
- PP MFI 25 for staple fibers for needle punch material
- PA for needel punch material

References



Staple non woven (Needle punch)

Staple nonwovens are made in 2 steps. Fibres are first spun, cut to a few centimetres length, and put into bales. These bales are then dispersed on a conveyor belt, and the fibres are spread in a uniform web by a wetlaid process or by carding. Wetlaid operations typically use 1/4" to 3/4" long fibres, but sometimes longer if the fibre is stiff or thick. Carding operations typically use ~1.5" long fibres. Rayon used to be a common fibre in nonwovens, now greatly replaced by PET and PP. Staple nonwovens are bonded by using either resin or thermally. Bonding can be throughout the web by resin saturation or overall thermal bonding or in a distinct pattern via resin printing or thermal spot bonding. Other possibilities are used after the cross-laying of the staple fibers to use a needle punch technology with a needle board which is moving fast up and down and with little hooks on the needle the fibers are entangled.

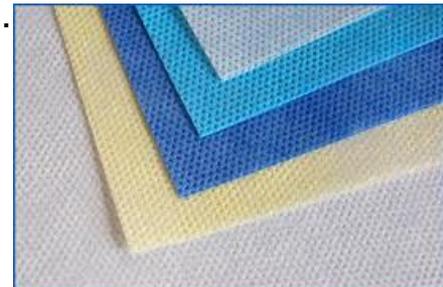
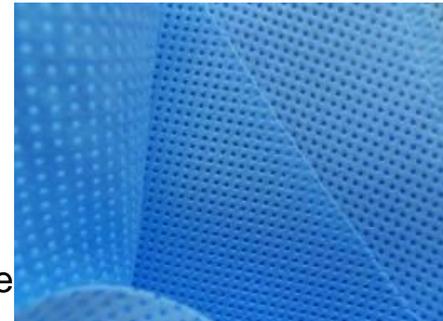


Spun laid non wovens

Spunlaid nonwovens are made in one continuous process. Fibres are spun and then directly dispersed into a web by deflectors or can be directed with air streams (melt blown). This technique leads to faster belt speeds, and cheaper costs. PP spunbonds run faster and at lower temperatures than PET spunbonds, mostly due to the difference in melting points.

Spunbond has been combined with meltblown nonwovens, conforming them into a layered product called SMS (spun-melt-spun). Meltblown nonwovens have extremely fine fibre diameters but are not strong fabrics. SMS fabrics, made completely from PP are water-repellent and fine enough to serve as disposable fabrics. Meltblown is often used as filter media, being able to capture very fine particles. Spunlaid is bonded by either resin or thermally.

Melt Blown non wovens are produced by extruding melted polymer fibres through a spin net or die consisting of up to 40 holes per inch to form long thin fibres which are stretched and cooled by passing hot air over the fibres as they fall from the die. The resultant web is collected into rolls and subsequently converted to finished products. The extremely fine fibres typically polypropylene differ from other extrusions particularly spun bond in that they have low intrinsic strength but much smaller size offering key properties. Often melt blown is added to spun bond to form SM or SMS webs, which are strong and offer the intrinsic benefits of fine fibres such as fine filtration, low pressure drop as used in face masks or filters and physical benefits such as acoustic insulation as used in dishwashers. One of the largest users of SM and SMS materials is the disposable diaper and feminine care industry



WE TAKE CARE OF YOUR PLASTIC WASTE



Next Generation

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