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An Introduction into SMS Material

Nonwoven materials have long been used for numerous applications such as in apparel, health care, engineering, for industrial purposes and for other consumer goods. Spunbond-Meltblown-Spunbond (SMS) is one such material made of Polypropylene, which has been specifically designed with a unique construction to make it ideal for many applications due to its various features.

Here we introduce spunbond and meltblown techniques, as well as highlight the features of SMS.

Spunbond

The spunbond process was first patented in 1940s and with further development has since become more and more popular across the world. The technique itself includes fibers being spun and then directly being dispersed into a web by deflectors or air streams. They use no chemicals, and are thermobonded. This technique is preferred as it is cost effective for manufacturers. Over the past 20 years, it has been used to make several household products such baby diapers, adult diapers, medical products, protective apparel and hygiene products, but is also versatile enough to be used within construction, agriculture, and for coating. Spunbonds are also flame-retardant or have antistatic properties, and can therefore be used for increased ultraviolet and gamma ray protection. It has many features including: low weight, high strength, high air permeability, hydrophilic properties, and excellent wear and tear properties. Furthermore, with the development of the technique, spunbonds are now much more soft and comfortable than previous types, and on average only weigh between 10 to 150 grams per square meter. As well as this, they can be printed, laminated, dyed, or electrostatically charged.

Meltblown

The meltblown process came after spunbond technology and is the process whereby ultrafine filament (micro-fibers) nonwovens can be produced at low costs. The technique includes hot air being blown onto molten thermoplastic resin that is extruded through a linear die containing hundreds of small holes, to form a fine fibered self-bonded nonwoven web. Its key feature is that it is an extremely thin fiber. As a result this material is often used for filters for air, liquids and particles, or as absorbents in products such as wipes, oil absorbents, incontinence products, and female hygiene, but can also be used in the production of certain electronics, adhesives, and other apparel.

SMS

When these are layered to form the SMS material the features can be combined together and the range of applications increases. Additionally, the combination of spunbond and meltblown materials means that the features of each can make up for the weaknesses of the other. For example, meltblowns have limited strength so can be combined with a spunbond to become a strong material, and likewise spunbonds can be elevated with the addition of meltblowns. These can even be combined to make a material which has a textile feeling to it. SMS has excellent physical properties as well as barrier qualities. Features include high tensile strength, softness, comfort, breathability, wearability, and is also lightweight. It also acts as a water-repellent, and a barrier against bacteria, blood and other liquids as well as gas/steam perspiration. Finally, it is also fine enough to serve as a disposable fabric.

Medical SMS Fabric is therefore suitable for medical and hygiene products such as diapers, protective wear, face masks, hospital gowns, wound care, caps, filtration fabrics, and much more.