Student: Yuyang Wang
Passport: E39719970

The application and production of nonwoven materials

Abstract:

Nonwoven materials are produced without any weaving process, which is the main difference between traditional textiles such as woven and knit fabrics and nonwovens. Thanks to their numerous and different qualities, nonwovens have different in many sectors, for instance, in medical field (gowns, masks, and fastening tapes), in personal care and hygiene (baby diapers, wet napkins and cosmetic wipes), in agriculture (protections for seeds and roots), civil engineering (geo-textiles for soil stabilization). To produce nonwovens, two main parts are included: web formation and web bonding process. Web formation is designed to form the fiber web. Generally, we have three ways: a) Dry forming, a process for making nonwoven web from dry fiber. This term applies to the formation of carded webs, as well as to the air laying formation of random webs. b) Wet forming, a process for making nonwoven web by filtering an aqueous suspension of fibers onto a screen belt or on to a perforated drum. c) Spunlaid, a process for making nonwoven web by the spin laying method, in which hot filaments are still hot and molten to adhere to themselves. After web formation, the next step is web bonding process which also includes three different ways: a) Chemical bonding, for example, spray bonding, saturation bonding, foam bonding and print bonding. b) Thermal bonding, in which fibers of the web are fed together into a firm material by passing them through hot rotating cylinders. c) Mechanical bonding, a method of bonding web of fibers by entangling them. This can be achieved by needling, stitching with fibers or by the use of high-pressure air or water jets. So there are many processes for the production of nonwoven materials, but different ways allow them to have many special and practical properties during the application.