

The influence of the fiber orientation on the  
physical properties of the PET spunbonded nonwoven  
fabrics

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Four kinds of spunboded nonwoven fabrics having different fiber orientation were produced by changing the speed of net conveyor in the spunbonding process. Two kinds of degree of fiber orientation were measured by using Image Analyzer, that is, D.F.O.A. was decided by orientation angle, and D.F.O.E. by number of edge counts. The influences of fiber orientation on the physical properties of spunbonded nonwoven fabrics were studied and following results were obtained.

D.F.O.A., degree of fiber orientation, increases from 0.624 to 0.789 and D.F.O.E. from 0.452 to 0.666, as the speed of net conveyor increases from 20m/min to 50m/min.

Tensile properties such as tensile strength, initial modulus and yield stress of spunbonded nonwoven fabrics to the long direction increases with the increase of D.F.O.A., on the contrary, the tearing strength decreases.

Tensile properties decrease with increase of the testing angle of spunbonded nonwoven fabrics from long direction to transverse direction and the higher the degree of fiber orientation is, the higher the ratio of reduction becomes.

The anisotropy of the tensile properties increase with the degree of fiber orientation; the increase of initial modulus and yield stress which is related to the small region deformation, is remarkable.