

# Book of Abstracts



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## MECHANICAL PROPERTIES OF NEEDLE-PUNCHED NONWOVENS FOR GEOTECHNICAL APPLICATIONS

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The use of nonwoven fabrics in civil engineering applications has increased significantly in the last years due to the important characteristics and properties of such type of fibrous structure. The functions provided by nonwovens include drainage, filtration, separation, soil protection, particularly in its stability and erosion control.

The objective of this research work is to study on the influence of the aerial mass of nonwovens on their mechanical properties including tensile, puncture and dynamic perforation (Cone drop). Tests were undertaken according to standards "Edana, nonwovens tensile strength, 20.2-89", ASTM D6241 - 04 (2009) Standard Test Method for the Static Puncture Strength of geotextiles and geotextile-Related Products and EN 918:1995, respectively.

Five types of PES/PP/PAC nonwoven were produced varying the aerial mass at 106, 145, 208, 280 and 377 g/m<sup>2</sup>. Moreover, two other hybrid nonwovens were produced combining nonwoven with PP woven and a PP non-woven in order to assess what influence this type of reinforcement has on the mechanical properties.

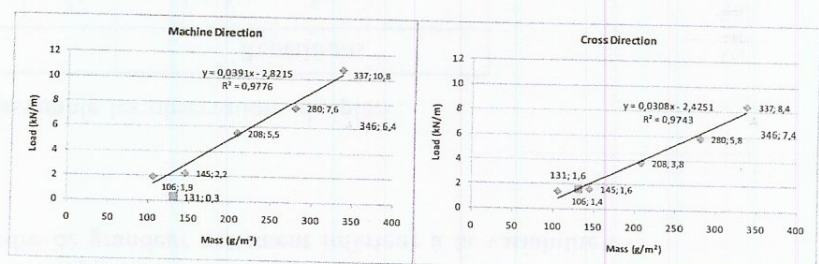


Figure 1 - shows the linear relationship obtained between tensile strength both in the cross and longitudinal directions and the aerial mass of the non-wovens.

The results obtained for the hybrid nonwovens shown that the reinforcing structures used are not playing an important role in the increasing of the mechanical performance of the non-wovens.

**Keywords:** Nonwoven; Geotextile.