OPTIMIZATION OF THE SOLE-UPPER BONDING TECHNOLOGICAL PARAMETERS IN THE FOOTWEAR INDUSTRY

HARNAGEA Florentina
Technical University "Gh.Asachi" of Iassy
harnagea@tex.tuiasi.ro

Keywords: peel strength, open time, sole, upper, bonding, water based adhesives

Abstract: The footwear industry from our country uses for sole-upper bonding organic solvent based adhesives mainly for their special technological characteristics. The mondial regulations regarding the environment protection and the people's health that are employed in the footwear industry have imposed new concerns for modernizing the adhesive systems and the bonding technology. Thus, the specialist's attention has been conveyed to obtaining new bonding adhesives without organic solvents as it follows: water based adhesives, termofusible and reticulated termofusibles.

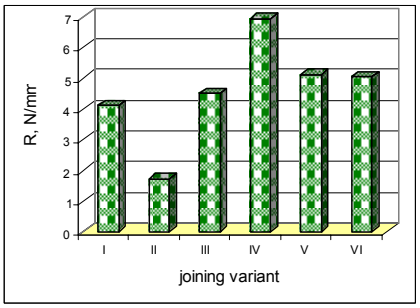

Figure 6. The maximum values of the final peel strength

Water based adhesives are the least harmful ones and represent an optimum alternative to the solvent based adhesives. In comparison to the organic solvent based adhesives, the water based adhesive (adhesives based on polyurethanic dispersions) used for sole-upper bonding, present a series of advantages such as: a lack of solvents, an easy application with the brush, high concentration at low viscosity –normally about 40-45%, but it can reach 60%, a very good penetration into porous substrates etc.

The sole-upper bonding is very good and the peel strength for water based adhesive has high values

The regression curves for the final peel strength allow a calculation of the optimum time (corresponding to the maximum bond's strength) through equalizing with zero the partial derivatives, respectively:

$t_{calc.}$= 36.2 minutes, in comparison to $t_{exp.}$=35 minutes, when using the water based adhesive ET 9628, ET 9627/D. As a result of this study it is has been proved that a mixed treatment of wiping with acetone and halogen the thermoplastic rubber samples leads to an optimum value of the peel strength for water based adhesives.

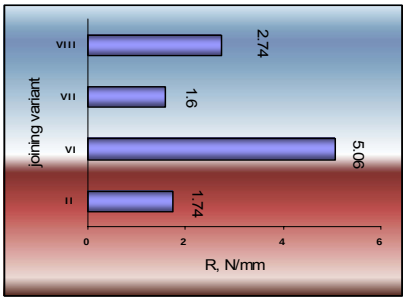

Figure 7 . The peel strength for water based adhesive comparately to the solvent based adehesive

REFERENCES:

[1]. Roşculeț V., Harnagea F., *Aspects regarding the use of Water based adhesives in industry*, vol.Proceedings- Eurofillers 2003, pg.447-449, editor Jose Martin Martinez, 8-11 septembrie 2003, University of Alicante, ISBN 84-600-9922-99-788460-099222.3

[3]. Harnagea F., *The influence of the substrates preparation way on the adhesive joints quality*, Conferinta Internationala,Tehnologii moderne, calitate, restructurare, TMCR, Iasi, 25-27 mai 2006, Buletinul Intitutului Politehnic din Iasi, Tomul LII (LVI), Fasc.5 C, Secția Construcții de maşini, pg.1041 –1046, ISSN:1011-2855