Analysis and modelling

59. Deformation process of the material of mine powered roof supports in low-cycle fatigue conditions

J. Okrajni, M. Plaza, M. Jaszczuk (Poland)

Materials

66. Mössbauer investigations of amorphous Fe_{80-x}B_{20}Nb_x (x=0,4,6,10) alloys

R. Babilas, R. Nowosielski, M. Kądziołka-Gaweł, A. Zajączkowski (Poland)

Properties

74. Mechanical properties of hot deformed Inconel 718 and X750

A. Nowotnik, P. Pędrak, J. Sieniawski, M. Góral (Poland)
Elastomeric matrix composites: effect of processing conditions on the physical, mechanical and viscoelastic properties

D. Zaimova (Bulgaria, France), E. Bayraktar, D. Katundi (France), N. Dishovsky (Bulgaria)

The Properties section represented by D. Zaimova, E. Bayraktar, D. Katundi and N. Dishovsky on "Elastomeric matrix composites: effect of processing conditions on the physical, mechanical and viscoelastic properties" on a page 81 presents the processing, physical, mechanical and viscoelastic properties and chemical structure of the mixture of Natural rubber/Polybutadiene rubber (NR/BR) compounds. NR/BR based composites with different vulcanization temperatures and curing systems were characterized in respect of their curing characteristics (for 140ºC and 160ºC) and mechanical properties. The cure characteristics of the rubber compounds were studied by using the Monsanto MDR 2000 rheometer. The mechanical properties were investigated: tensile strength, elongation at break, tensile modulus at 100% (M100) and at 300% (M300) deformation. The hardness (Shore A) and molecular mass of the samples were also determined. Scanning electron microscopy was used to study the microstructure of the fracture surfaces. It was found out that with changing the vulcanization temperature from 140ºC to 160ºC decreasing in all mechanical properties (modulus M100 and M300, tensile strength and elongation at break) is observed. This is probably due to the partial destruction of the crosslinks under the influence of the high temperature (160ºC). Hardness is increasing with the increasing of the temperature. The temperature of vulcanization does not play a role for the dynamic mechanical properties (storage modulus and Tan Delta). As for the vulcanization system, modulus M100 and M300 increase with the passage from CV (compound D1) to EV (compound D2). Tensile strength and elongation at break also increase. These results are not in accordance with the literature but can be explained by overcure of compound D1.