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The influence of thermal field on the mechanical properties of getinacks in the case of uniaxial static tensile

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1. Introduction

Layered plastics, such as getinacks or textolites, have become more and more applicable in the electrotechnics as technologically convenient materials for the electroisolation (Korickij *et al*., 1987). Depending on a chemical nature of binding solution, filling, and a manufacturing technology, layered plastics are suitable for long-term work at temperatures up to 1800C and short-term - at higher temperatures (Korickij *et al*., 1987). The effective technology of construction assembles' manufacturing from different prepregs as well as from sulfate – cellulose paper based on the self-regulating thermopressing method was investigated at the Institute of Mechanics of the National Academy of Sciences of Republic of Armenia (Simonyan and Valesyan, 1999; Simonyan and Valesyan, 1999).

2. Experimental part

Taking into account the usage conditions and above-mentioned technology, the investigation of mechanical properties of the getinacks under different values of load is appropriate. The results of experimental investigation of the strength and strain changes of getinacks within the uni-axial static tensile test depending on the material's volume temperature are considered in this paper. Experimental samples put into a shape of double-sided spattles (Figure 1), which sizes are satisfying the requirements of CT СЭВ1199-78 (or GOST 11262-80), were cut out from the sheets of getinacks with the thickness 4 mm. Sheets of layered getinacks were manufactured by the self - regulation thermo-pressing technology at three various pressure values (1.9; 2.4; and 5.1 MPa). The cellulose paper prepreg, soaked by the phenol–formaldehyde binding solution and dried up at temperature100-1400C (in accordance with GOST 2550-82(Korickij *et al*., 1987)), was used for the manufacturing of getinacks. After the polymerization the layered getinacks cooled down in the switched off furnace to avoid internal temperature stresses, and then were stored in a laboratory at temperature 20-250C. Experimental tests were carried out 8 years after manufacturing of the experimental samples, in accordance with GOST 2550-82.

The tension tests were performed by the testing

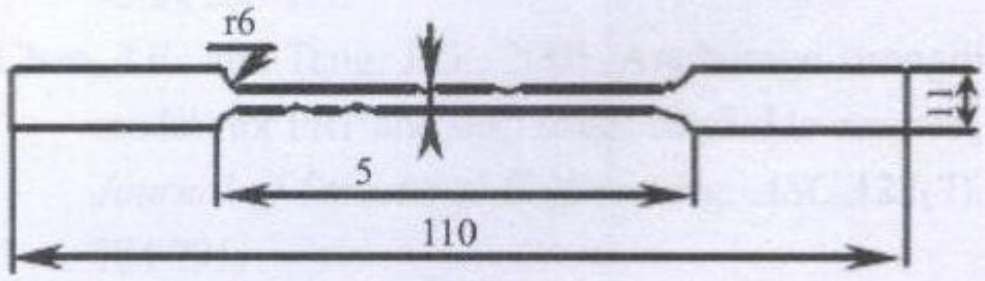

Fig. 1. Experimental double-sided spattleshape sample

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