CHARACTERIZATION OF COMBINED CORE SANDWICH BEAM OF CORK AND POLYURETHANE.

Arbaoui Ahcene*

Laboratoire des matériaux minéraux & composites
Université M’hamed Bougara Boumerdes
Avenue de l’indépendance 35000 Algerie.
e-mail: arbaouiahcene@umbb.dz

Key words: Composite structures, sandwich structures, polyurethane, cork, creep.

The use of sandwich structures has grown considerably in Algeria in the construction field. These lightweight easy-to-install structures are able to reduce the seismic impact in northern Algeria and to deal with the variation of temperature in the south. These structures are usually produced from injected polyurethane and galvanized steel skins (fig.1). The integration of other local products such as cork in the composition of the core structure will reduce the dependence on polyurethane (fig.2).

To avoid delamination and use of external agents to ensure the bonding of various layers, a thin layer (1 cm) of polyurethane foam is injected on both sides of the cork layer and between the outer skins.

A characterization of the different constituents was performed. Bending tests were conducted on a beam (Instantaneous an long term).

For different values of the core’s material density, we deduce a deformation curve, the impact on the creep of the sandwich beam and evolution of the shear modulus versus time and load level.
Figure 1: Sandwich panel with a homogeneous core “1. Sheets, 2. Polyurethane”

Figure 2: Sandwich panel with a combined core “1. Sheets 2. Polyurethane 3. Cork”