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"Determination of mechanical strength of different material double-layer rectangular tablets "

"Haririan I, Tajkey J, Newton JM "

Abstract:


The mechanical strength of different material composite beams were assessed. All tablets were subjected to three-point bending test. For the preparation of tablets, the material of the lower layer was initially put in the die and compacted by a certain pressure. The second material was then put upon the first layer. Modulus of elasticity of the selected materials were used to interpret the behaviour of the top and bottom layers of the different materials composite tablets.

Determination of the strength at the highest and lowest point of different material composite beams, showed that if the material with higher modulus of elasticity was placed at the lower layer, the value of compressive strength (σ_c) obtained from exerting fracture load at the higher point, was more than the value obtained at the lower point (i.e. tensile strength, σ_t). On the other hand, if the material of higher modulus of elasticity E, was located at the top surface, the stress value at the lower layer (σ_t) was more than its value at the higher layer (i.e. σ_c). The range of σ_c/σ_t was 1/3, if number of components (n) was much more than one. Inversely, when 'n' was less than 1, the value for σ_c/σ_t was near 3.

Keywords:

Flexure test (Three-point bending test) . Double-layer rectangular tablets (Composite beams) . Starch 1500/Avicel PH102 . Emcompress/Avicel PH102 . Emcompress/Starch 1500

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