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Edited by
Prof. Dr. A.K.M. Mohiuddin

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Chapter 23

Comparison between composites reinforced with natural fibres and synthetic fibres Part II

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Abstract

In this chapter, a detailed description is given for the tests performed on the two composite types at various temperatures. The results are analyzed and discussed.

Impact Test

Preliminary falling weight impact tests have been undertaken on square plaques of the two materials (70mm × 70 mm). An impact energy was used with a IMATEK Drop Weight Tester type IM10 tower with a maximum height of 1.6 meters. One specimen per material was tested. The specimens are mounted in a clamped circular anvil of 50 mm diameter. Typical force-displacement curves for Jute/Epoxy and the Glass/Epoxy are given in figure. The Glass/Epoxy shows a peak load exceeding that for Jute/Epoxy.

Figures from 1 to 6 show the impact energy for Jute/Epoxy, Glass/Epoxy and Jute/Glass/Epoxy composite samples. The sample condition was in the range of -50 °C to 50 °C. As shown in from this figure, the energy absorbed was higher for Glass/Epoxy than Jute/Epoxy samples for all the tested temperature. The mechanical properties of Glass/Epoxy are much higher than obtained for Jute/Epoxy fiber reinforced laminates. The higher difference is obtained in the case of impact strength, due to the typical mode of failure of Jute/Epoxy reinforced laminates, already observed, involving higher delamination and mainly driven by matrix damage, due to the very limited strength of these laminates.