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Carbon-Epoxy圆管件的静态吸能特征

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Static Energy Absorption Characteristics of Carbon-Epoxy Tubes

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摘要

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摘要 Carbon/Epoxy复合材料可以用作理想的吸能材料。为了考察材料体系对结构吸能性能的影响,对一系列Carbon/Epoxy圆管件进行了静态吸能性能试验。试验结果表明,在基体种类相同的条件下,结构的压溃失效模式有很大的区别。材料的吸能性能不仅同材料性能关系密切,而且也受材料纤维方式影响。

关键词: Carbon/Epoxy复合材料 管形件 吸能 比吸能率

Abstract: Carbon/Epoxy composite materials are ideal energy absorbing materials for their square shape energy absorbing curves. A series of carbon/epoxy tubes are tested under static conditions to examine the influence of material systems. Results show that the energy absorbing capability depends not only on the material system properties but also the fiber architecture. Through the comparison of macro failure modes of different tubes, a conclusion is got that making sufficient failure test is the best way to get an excellent energy absorbing structure.

Keywords: Carbon/Epoxy composite tube energy absorbing specific energy absorption

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