Development of fiber reinforced epoxy composite energy absorber for automotive bumper system

ABSTRACT

The bumper absorber has the main task in energy absorption in automotive bumper system. There are two types of energy absorber in modern cars. The first one is for low impact as a reversible energy absorber and another one for crash worthiness impact as an irreversible energy absorber. In the case of low impact test energy absorption, it normally uses foam as an absorber which in some material cases is harmful and need more equipment for production; also there is incomplete recovery after compression. The fiber reinforced polymer composite material offers essential characteristics such as weight reduction, design and manufacturing flexibility and safety improvement. Elliptical shape absorber is a suitable geometry in energy absorption. Substitution of elliptical polymer composite material for foam material in car bumpers is discussed.

Keyword: Automotive bumper system; Composite materials; Conceptual design; Energy absorber