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# Fatigue and Crashworthiness of Automobile Materials after DBTT and Hygrothermal Conditioning: a REVIEW

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**Abstract :** Automobiles meant for a tropical country might not be found suitable in an arctic environment merely because some materials had already gone through ductile to brittle transition (DBT). The cost of materials and manufacturing will also be high for automobiles meant for use in adverse environments. As the automotive materials reach high temperatures during operation and reach - 30 to - 60 °C during stationary parking, the fatigue response of materials known to exhibit DBT, however low, becomes important in qualifying a material for safe use in an automobile. The correlation between DBT and fatigue is a subject area that is less understood. This paper intends to study the influence of DBT of composite materials in their fatigue response and important from the crash worthiness point of view of automobiles. As newer materials like composites and light alloys are used in the manufacture of automobiles, it becomes necessary not only to understand their mechanical properties like Charpy impact before and after the transition, but also fatigue response in the domain where the transition takes place. Some interesting results are anticipated and the feedback, will lead to the development of composite materials and alloys that are resistant to DBT failures and fatigue failures after DBT, if at all DBT should occur at a noticeable level.

**Keywords :** Automobiles, Composite materials, DBT, Fatigue, Hygrothermal, Steel.

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