

# Study on Bending and Torsional Behaviour of AI Composite Drive Shaft

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**Abstract:** *One of the biggest questions the automotive industry faces today is that what materials are to be used to reduce drastically the weight of the engine to save fuel. In world over 70% of rear-wheel-drive or four-wheel-drive passenger cars are built with multi-section propeller shafts which require one or more support bearings under the floor of the passenger compartment. There are a variety of alternatives being explored by the automobile companies, there is more than one possible answer. At this point the only certainty is that no single material or type of material will dominate. The basic attraction of composite materials for propeller shaft applications is that they make it possible to increase the shaft length, which is otherwise constrained by bending resonance. For many vehicles, a one-piece composite shaft may replace a two-piece steel shaft, which simplifies both the shaft and installation in the vehicle. The potential for carbon fibre composites in automotive propeller shafts as a means of achieving substantial weight reduction has long been recognized, and has been demonstrated in small volume applications. The main barrier to large scale penetration of the market has been product cost, but industrial developments in recent years offer the prospect of substantial reductions hence the automobiles of the future will continue to be a mix of materials. The study shows that Hybrid Aluminum Composite drive shafts have proven that they can solve many automotive and industrial problems that accompany the usage of the conventional metal ones.*

**Keywords:** AI Composite, Drive Shaft, Bending & Torsional Fatigue

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