

## **Advances in Fabric-based Airbag Materials for Emerging Automobile Applications and Their Promising Future**

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### **Abstract**

This paper presents the fabric-based airbag materials' future development and prospects for automotive applications. Safety measures like airbags are vital for both occupants and the vehicle itself. For a long time, airbags in vehicles were made of conventional materials. The airbag is merely a piece of clothing but a functional interface for the latest technological advancements. The integration of more innovative materials is currently limited, despite the rapid progress in this field. Different textile-based airbags are being introduced in multiple arbitrary positions of a vehicle to mitigate injuries in car accidents. Apart from saving lives, the global airbag market is also expanding at a staggering speed, and the forecasted value is worth USD 48.10 Billion by 2030 at a CAGR of 7% during the year (2022~ 2030). Airbag fabric is growing lighter from coated to uncoated fabric to fit with the emergence of lightweight materials. And more preferences are given to the materials to be more durable for years and functionally. This paper signifies the choice of airbag manufacturing materials, types of airbags used in automobiles, forthcoming innovations, problems with airbag misplacement in futuristic vehicles. It is speculated that this review will help understand the current challenges and give insight into future progress in advanced airbag utilization.

*Keywords:* Airbags; Textiles; Nylon 6.6; Lightweight material; Automotive.