

## **The Influence of Fiber Fillers on the Bonding Safety of Structural Adhesives: A Fracture Analytical Evaluation**

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**Abstract :** Adhesives have established themselves as an innovative joining technology in the industry. Their strengths lie in joining different materials, avoiding structural weakening as in welding or screwing, and enabling lightweight construction methods. Now there are a variety of ways to improve the efficiency and effectiveness of bonded joints. One way is to add fiber fillers. This leads to an improvement in adhesion and cohesion (structural integrity). In this study, the effectiveness of fiber-modified adhesives for bonding different construction materials is reviewed. A series of experimental tests were performed using the fracture analytical GF principle to study the adhesive bonding safety and performance of the joint. Three different structural adhesive systems based on epoxy, CA/A hybrid, and PUR were modified with different fiber materials on different substrates. The results show that significant performance improvements can be achieved and that bonding reliability can be sustainably increased.

**Keywords :** fiber-modified adhesives, bonding safety, GF-principle, fracture analysis

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