Prerequisites and Mechanisms for the Release of Alveolar Fibrous Carbon Fibre Fragments

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Objectives

¬ Investigation of the potential for the release of alveolar carbon fibre (CF) fragments
¬ Development of materials science expertise on the fracture behaviour of CF
¬ Clarification of the material requirements of CF for the formation of alveolar fibrous fragments
¬ Improved understanding of the fracture behaviour of CF and the release behaviour of alveolar fragments under mechanical stress

Approach

1 Investigation of the fracture behaviour of selected fibre types (pitch- or polyacrylonitrile (PAN)-based carbon fibres from different strength and elasticity modulus ranges)
2 Production of textile semi-finished products from the selected carbon fibres
3 Mechanical stress of composites and performance of workplace measurements
4 Investigation of the influence of recycling processes on material properties (recovery of carbon fibres and production of composites from rCF semi-finished products)
5 Comparative tests on real samples from different manufacturers
6 Discussion of the project results with industrial partners, derivation of specific protection measures and their testing in practice
7 Elaboration of a protective guideline “Safety by Design and Application Safety”