

Cheap competitors of graphene -the actual use of carbon black and carbon fibres in the automotive and consumer industry

Renato Liardo

Technical Leader Durability and Analysis
Specialist Advanced Materials

Volvo Group Trucks Technology – Advanced Technology & Research
Materials Technology
402 Av Charles de Gaulle
API: VNX AB1 1 02 - Gare 28
69635, Vénissieux - France

E-mail: renato.liardo@volvo.com
www.volvogroup.com

Carbon black is one of the oldest products known. Its manufacturing process has seen improvements over the centuries. For which applications is carbon black used? The main characteristics that CB can provide are: colour, gloss, UV protection, fade resistance, heat protection, reinforcement, rheology control, electrical conductivity, thermal conductivity, reducing agent. Markets for the carbon black are mainly: rubbers, plastics, coatings, adhesives and sealants, printing inks, toners in industries as automotive, aerospace, marine, construction, packaging, electronics, cables for power transport and telecommunication, pipes for transport of water or gas, fibres for clothing and carpets.

Carbon fibres were developed at the end of the 1950's, and today are very popular. Their atomic structure is similar to that of graphite. Why do we add carbon fibres to an application? To provide lightweight, high stiffness, high tensile strength, high fatigue resistance, high temperature resistance, low thermal expansion, high chemical inertness, low abrasion, good vibration damping, electrical conductivity, biological inertness, x-ray permeability, self-lubrication. Markets for the carbon fibres are mainly: aerospace, road and marine transports, sporting goods, missiles, aircraft brakes, loudspeakers for Hi-fi, medical prostheses, surgery and x-ray equipment, implants, tendon/ligament repair, textile machinery, chemical industry, nuclear field.

This talk will give a "broad view" on the actual uses and issues on what can be considered as ready commercial alternative materials to graphene: carbon black and carbon fibres.