Nanomaterials

Birla Carbon's carbon black products include all ASTM, BC, CD, Conductex®, Copeblack®, PM, Raven®, and Ultra® grades.

The ASTM D3053 Standard on Terminology Relating to Carbon Black defines carbon black as follows:

Carbon black exhibits aciniform morphology composed of spheroidal "primary particles" strongly fused together to form discrete entities called aggregates[1]. The primary particles are conceptual in nature, in that once the aggregate is formed the "primary particle" no longer exists, they are no longer discrete and have no physical boundaries amongst them. The aggregates are loosely held together by weaker forces forming larger entities called agglomerates. The agglomerates will break down into aggregates if adequate force is applied (e.g., shear force). Aggregates are the smallest dispersible unit[1]. Carbon black is placed on the market in the form of agglomerates.

[1] The one exception to this general characteristic of manufactured carbon black involves thermal black, where "primary particles" can exist as discrete entities. However, "primary particles" produced via the thermal black process have characteristic diameters in the range of 150-500 nm, meaning that primary thermal black particles are of sizes that fall outside the nanoscale region.

Following the ASTM D3053 definition and applying the terminology of the International Organization for Standardization's (ISO) Technical Specification 80004-1 of 2010, carbon black is considered a nanostructured material (a material having internal or surface structure in the nanoscale).

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