

GRAPHISTRENGTH[®] CE BR-17

CNT MASTERBATCH

TECHNICAL DATA SHEET

Description:

Graphistrength[®] CE-BR 17 master-batch (MB) is a CNT master-batch based on polyButadiene Rubber for elastomeric formulations that contains pre-dispersed MWCNT at a concentration of 16,7% by weight (20 parts)

Key features:

Graphistrength[®] CE-BR 17 MB is provided in sheet form with the following key characteristics.

Property	Method	Unit	Typical value ⁽¹⁾
MWCNT content		wt%	16,7 ⁽²⁾
Mooney viscosity (ML1+4, 100°C)	ASTM D1646		100-130

⁽¹⁾ Data not intended for specification purposes

⁽²⁾ Graphistrength[®] CE-BR 17 MB contains Graphistrength[®] MWNT with purity > 90 %

Benefits and applications:

This Graphistrength[®] master-batch is based on polybutadiene rubber easy compatible with elastomeric formulation based on natural and butadiene-styrene rubbers in any portions.

Typical final MWCNT loadings in the final compounds are in the range 0,5 to 5 wt% depending on the host matrix characteristics other fillers, the targeted performances, processing methods and conditions.

The typical electrical resistivity that can be achieved is in the range $10 - 10^8$ ohm·cm. The electric conductive properties obtained with Graphistrength[®] CE BR-17 MB are outstandingly consistent and uniform.

Thanks to their low loading, and very small size, Graphistrength[®] MWCNT offer several additional advantages: smooth surface aspect, high preservation of the neat matrix's ductility and high improvement of its mechanical properties.

Graphistrength[®] CE BR-17 offers particular advantages for the formulation control due to high concentration of MWCNT in master-batch; and for the process, it offers the possibility to introduce NTC using common mixing equipment without special safety precautions.

Dilution and processing:

The use of Graphistrength® CE-BR 17 MB into final formulation will depend on the process technology.

For molding applications (rings, gloves, flexible parts etc) the master-batch can be introduced in final formulation by cylinder, internal, conical, or other conventional mixing equipment.

- The basic resin used in the master-batch (80% in mass) should be absolutely taken into account for the vulcanization/accelerator part in the final formulation. This resin is of similar reactivity in vulcanization process as a major butadiene base rubber.
- The most efficient way to get the homogeneous rubber formulation is to mix firstly Graphistrength® CE BR-17 MB with approximately half of basic rubber and all vulcanization additive (sulfur reactive composition for example). When the mixture looks homogeneous, the last part of the rubber can be introduced and the formulation finished to be ready for molding. This recommendation is important for efficient vulcanization of the rubber in vicinity to nano-tubes surfaces resulting in enhanced electrical and mechanical properties.
- The molded article becomes conductive after the vulcanization. There is no relation found between the resistance level of the elastomeric formulation and vulcanized article. The use of vulcanized articles is recommended to judge the electrical properties of the material.

Safety and Handling:

Graphistrength® CE-BR 17 master-batch is provided in sheet form where MWCNT are strongly embedded.

Graphistrength® CE-BR 17 master-batch doesn't present any specific health risk when using in rubber processing.

Graphistrength® CE-BR 17 master-batch is provided in 1 or 10 kg boxes as sheets. The product is stable in its unopened original packaging when stored at normal temperatures, dried areas and no direct sunlight.

Consult the product SDS for additional information on properties, hazards and handling.

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