

CNT MASTERBATCH for NITRILE RUBBER FORMULATIONS

TECHNICAL DATA SHEET

Description:

Graphistrength® C E2-40 is a CNT (Carbon Nanotubes) masterbatch for nitrile rubber formulations that contains perfectly dispersed MWNT at a concentration of 40% by weight.

Graphistrength® C E2-40 is suited for the production of conductive or antistatic materials based on carboxylated, hydrogenated plastisized or non-plastisized rubbers.

Key features:

Graphistrength® C E2-40 is provided in pellet form with the following key characteristics.

Property	Method	Unit	Typical value ⁽¹⁾
MWNT content		wt%	40 ⁽²⁾
Moisture content	Karl-Fisher	wt%	0.05 -0.10
Bulk density	ISO 8130-2	g/cm ³	1,231
Apparent density	ASTM D1895	g/cm ³	0,62
Mooney viscosity (ML1+4, 100°C)	ASTM D1646		170

⁽¹⁾ Data not intended for specification purposes

⁽²⁾ Graphistrength® C E2-40 contains Graphistrength® C100 MWNT with purity > 90 %

Benefits and applications:

Graphistrength® C E2-40 is generally formulated with various resins containing nitrile functional groups. Typical final MWNT loadings in the final compounds are in the range 1,5 to 20 wt% depending on the host matrix characteristics, the targeted performances, processing methods and conditions.

The typical electrical resistivity that can be achieved is in the range 10 – 10⁸ ohm·cm. The electric conductive properties obtained with Graphistrength® C E2-40 are outstandingly consistent and uniform.

Thanks to their unique morphology, Graphistrength® MWNT offer several additional advantages like smooth surface aspect and high preservation of the neat matrix's ductility (full performance obtained even at low loadings).

Graphistrength® C E2-40 offers particular advantages for the formulation control due to high concentration of CNT in master-batch; and for the process, it offers the possibility to introduce CNT using common mixing equipment without special safety precautions.

Graphistrength® C E2-40 is particularly useful in combination with convenient carbon black fillers in nitrile rubber formulations to get advantageous and cost effective solutions.

Dilution and processing:

The use of Graphistrength® C E2-40 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 nitrile basic resin used in the master-batch (55% in weight) 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 nitrile contained bases.
- The molded article becomes conductive after the vulcanization. There is no relation found between the resistance level of the elastomer formulation and vulcanized article. The use of vulcanized articles is recommended to judge the electrical properties of the material.

For extrusion application (sheet extrusion, casting on textile and other substrates, etc.)

The presence of CNT may bring an increase in viscosity of the final rubber formulation. This increase should not impact extrusion/casting process conditions or the adhesion of the rubber to the substrate. If the viscosity factor happened to be critical, the use of lower viscosity basic resin is recommended.

Safety and Handling:

Graphistrength® C E2-40 is provided in pellet form where MWNT are strongly embedded.

Graphistrength® C E2-40 doesn't present any specific health risk when using in rubber processing.

Graphistrength® C E2-40 is provided in 5 or 25 kg bags as pellets. The product is stable in its unopened original packaging when stored at normal temperature.

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

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