GRAPHISTRENGTH® C PU2-30

CNT CONCENTRATE IN POLYOL

TECHNICAL DATA SHEET

Description

Graphistrength® C PU2-30 is a Multi Wall carbon Nanotubes (MWCNT) concentrate that is used as an additive for polyurethane-based materials, coatings or adhesives. It contains 30 wt% of MWCNT perfectly dispersed in a polyester polyol.
Graphistrength® C PU2-30 is intended for use in electrostatic discharge (ESD) protection or mechanical reinforcement of composites, coatings and adhesives. Graphistrength® C PU2-30 is provided in pellets form.

Benefits and applications

Graphistrength® C PU2-30 is generally diluted in polyurethane precursors. Typical final MWCNT loadings in the final compounds are in the range 0.1 to 2 wt% depending on the host matrix characteristics, targeted performances, processing methods and conditions.
The typical electrical resistivity that can be achieved is in the range of 10 – 10^8 ohm.cm. The ESD properties obtained with Graphistrength® C PU2-30 are outstandingly consistent and uniform. Graphistrength® C PU2-30 offers particular advantages for the formulation control due to high concentration of MWCNT. It also offers a process advantage, with the possibility to efficiently introduce MWCNT using conventional mixing equipment.

Dilution and processing guide

For optimal dispersion, C PU2-30 granules should be diluted (up to 20 wt%) in the liquid polyurethane precursor and stirred at high temperature (80-120°C) for at least 2 hours (overnight recommended). This procedure yields a homogeneous dispersion containing CNT clusters below 70 microns.

For improved dispersion quality, the resulting dispersion can be post-treated with high shear mixers such as rotor-stator mixers (5,000 rpm for a few minutes), 3-roll mills (at least 4 runs) or ball mills. This procedure, while reducing the number and size of MWCNT clusters, will also modify the rheology of the system, leading to a more pronounced gel behavior (solid behavior at zero shear), at MWCNT loadings higher than ca 2 wt%. This gel behavior indicates that rheological percolation is reached (more MWCNTs are individually dispersed).

- MWCNT even in small quantities lead to increased viscosity of formulations. Viscosity regulating additives may be needed.
- In some formulations, the presence of MWCNTs may lead to variations in curing times. Adjustment of reactive components may be needed.

Safety and Handling

Graphistrength® C PU2-30 is provided in pellet form where MWCNT are strongly embedded.
Graphistrength® C PU2-30 does not present any specific health risk when used in polymer synthesis.
Graphistrength® C PU2-30 is provided in metal vessels of 3 kg and 25 kg net. The preliminary impregnation of the granules with base resin can be done in original packaging.
Graphistrength® C PU2-30 should be stored in dry place, preferably in its sealed original container, at temperatures between 10 and 35°C. In these storage conditions, shelf life is up to 6 months.

Consult the product's MSDS for additional information on properties, hazards and handling.

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