

CCNI Carbon Nanotubes

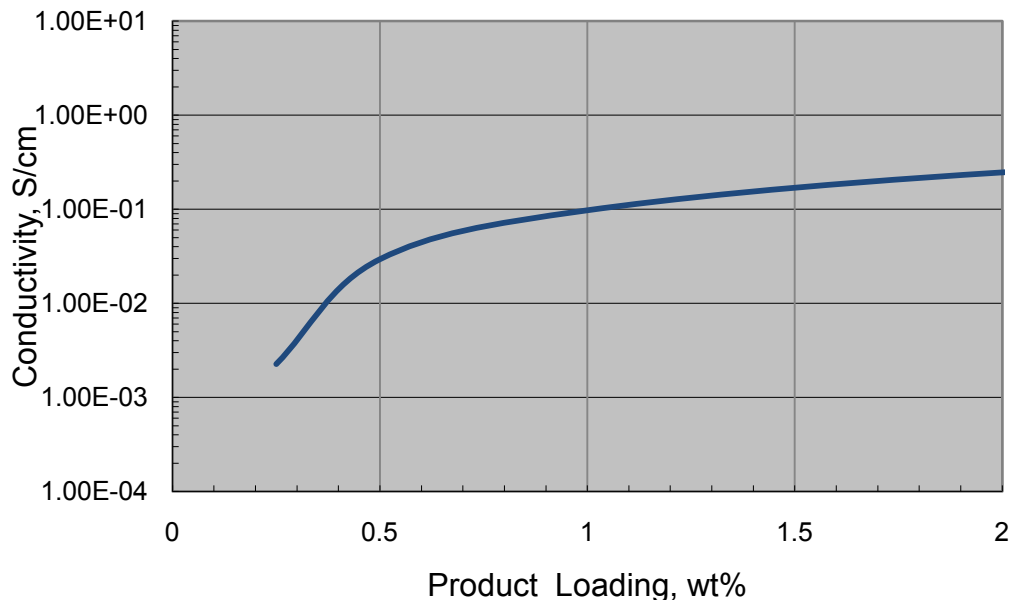
XWS Multi Wall Grade

Product Description

Carbon nanotubesⁱ are high aspect ratio polymers of pure carbon in which the atoms are bonded together in cylindrical form. XWS Grade, multi wall carbon nanotube with less than ten walls in average, is designed to impart electrostatic discharge (ESD) electrical conductivity to polymer compounds, using traditional melt processing equipment.

MSDS: CCNI Carbon Nanotubes

Representative Performanceⁱ



The information provided within is for illustrative purposes only. Neither Continental Carbon Nanotechnologies, Inc. nor any of its affiliates makes any warranty, express or implied, regarding the described products or accepts any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license, either express or implied, under any patent or other proprietary right. The user alone must determine suitability of any information or material for any contemplated use, the manner of use, and whether any patents are infringed. Transfer of these products from Continental Carbon Nanotechnologies, Inc., through purchase or otherwise, are subject to Continental Carbon Nanotechnologies, Inc.'s Standard Terms and Conditions.

Date Created: November 18, 2009. © 2009 Continental Carbon Nanotechnologies, Inc.

Continental Carbon Nanotechnologies, Inc. • 16850 Park Row, Houston, TX 77084
Tel: 281-647-3777 • Fax: 281-647-3758 • Web: www.ccninanutubes.com

Benefits

- ESD levels of conductivity at 1% loading in polar polymers, ESD conductivity at higher loading levels in other systems
- Typically 5-100x lower loadings than other conductive additives (carbon black, carbon fibers including fibrils and vapor grown carbon fibers, metal particles, etc.)
- Can be dispersed using standard melt blending equipment
- More uniform composite than other conductive additives
- Less sloughing than other conductive additives
- Low loading levels have minimal effect on matrix polymer properties or processability

Representative Properties

Color	Black
Morphology	Powder
Bulk Density	< 0.2 g/cm ³
TGA Residual	< 5 wt%
Moisture Content	< 3 wt%

General Processing

The goal of processing is to achieve an optimal dispersion of the carbon nanotube network in the compounded material and in the final part or product. The effective diameter of these ropes should be reduced and they should be exfoliated or extended while maintaining a high degree of interconnectivity. In general, dispersion is facilitated by:

- Interaction with chemically similar materials such as polar systems and systems containing aromatic groups and/or hetero atoms
- High shear and high energy input, including longer processing or residence times - base resin/matrix will likely degrade before carbon nanotubes
- Polymer melt processing - processing techniques such as solvent-based systems or powder blending/sintering may be suitable as well

Please consult CCNI for specific discussions about your system and performance requirements.

Pricing and Availability

XWS grades are available in kg quantities for commercial applications and large scale product development. Please contact us for further information about pricing and availability.

ⁱ Carbon nanotubes were melt-blended into polycarbonate at loading levels as low as 0.3%. Bulk conductivity was measured using a 4-point probe.