

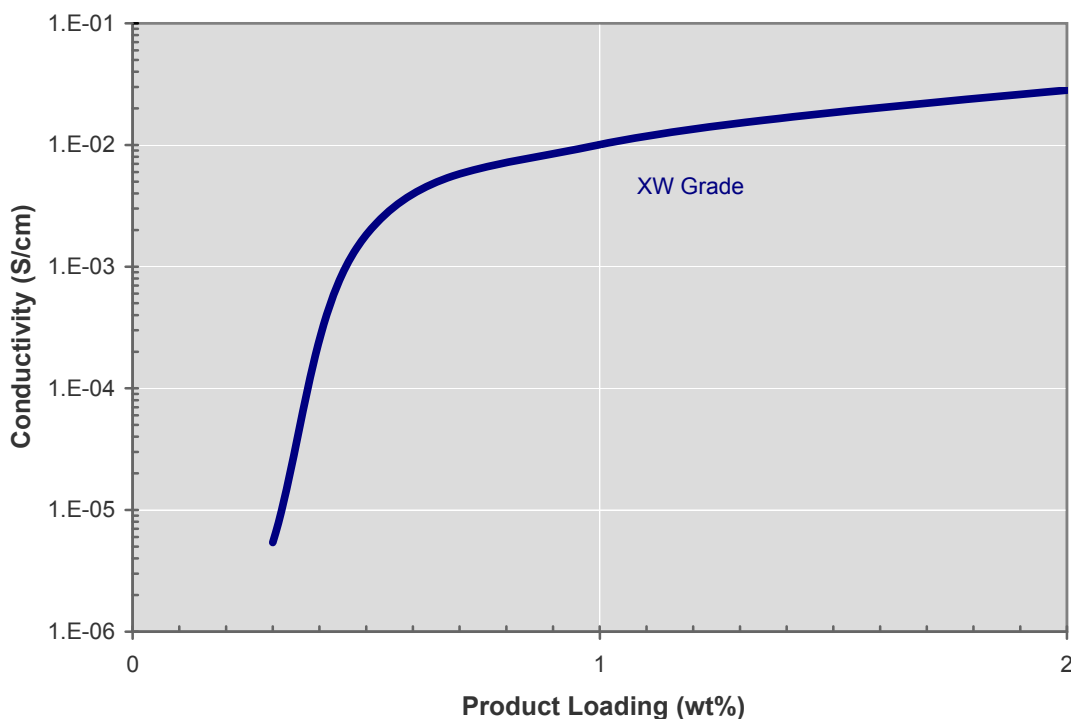
# CCNI Carbon Nanotubes XW Multi Wall Grades

## Product Description

Carbon nanotubes are high aspect ratio polymers of pure carbon in which the atoms are bonded together in cylindrical form. XW grade multi wall carbon nanotubes will impart electrostatic discharge (ESD) electrical conductivity to polymer compounds, using traditional melt processing equipment. XW grades can also be used to reinforce and toughen the matrix of thermoset materials.

MSDS: CCNI Carbon Nanotubes

## Representative Performance<sup>i</sup>



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## 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, metal particles, etc.)
- Can be dispersed using standard melt blending equipment
- More uniform composites 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 <sup>3</sup>
TGA Residual	< 10 wt%
Moisture Content	< 5 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.

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

XW grades are available in kg quantities for research and development. Please contact us for further information about pricing and availability.

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- 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.