

PLASTICYL™

CNT thermoplastic concentrates

PLASTICYL™ PP2001

Polypropylene – carbon nanotubes masterbatches

General Information

Description

PLASTICYL™ is a family of multiwall carbon nanotubes (MWCNTs) thermoplastic concentrates for applications requiring superior electrical conductivity and electrostatic discharge (ESD) properties. PLASTICYL™ PP2001 is a conductive masterbatch based on polypropylene loaded with 20% of Nanocyl's MWCNTs (NC7000™). Because of its low viscosity and high flow, PLASTICYL™ PP2001 is ideal for injection molding and extrusion processes.

Key Applications

- Electrostatic Discharge (ESD) and electrically conductive parts
- Electrical and Electronics (E&E), automotive and industrial
- Injection molding, extrusion, films
- Conductive chemical packaging

Benefits

- Excellent electrical conductivity at low loading
- Retention of key mechanical properties
- Ease of processing
- High cleanliness

Technical Data

Main Characteristics

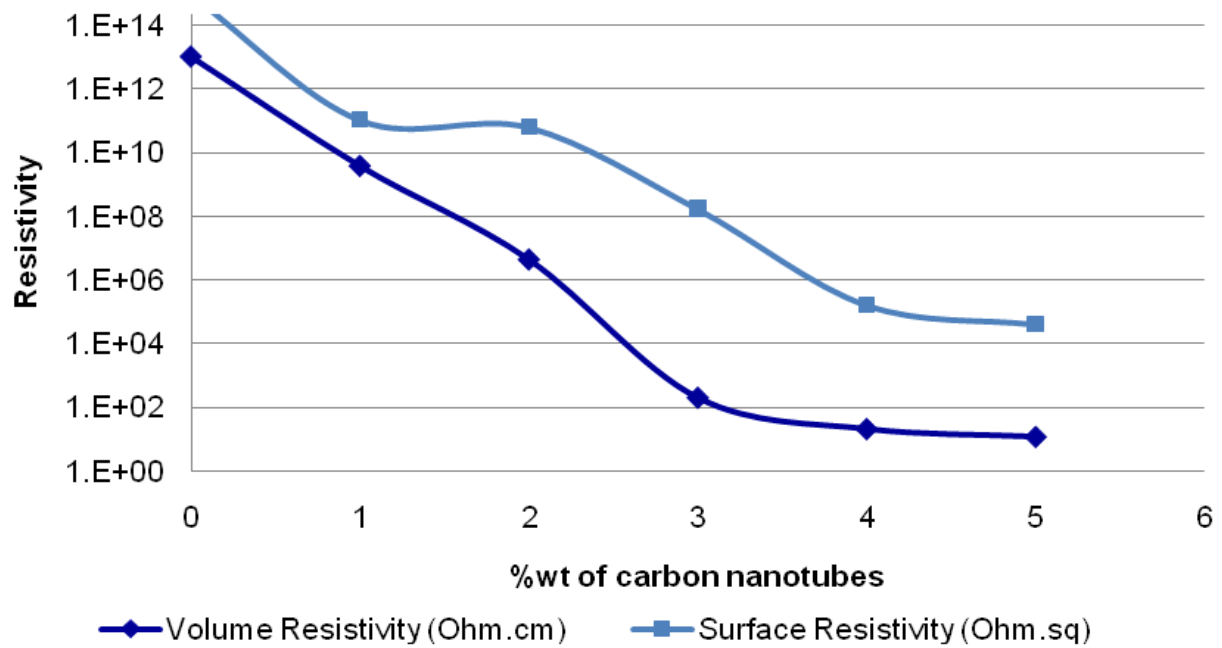
CARBON NANOTUBES LOADING (% _{WT})	REAL DENSITY (G/L) ISO 1183	MELT FLOW INDEX (G/10 MIN)	MELTING POINT (°C) ISO 11357-1,-3
20 ± 1,0	872	Not measurable	165

Typical Performance after Dilution

PROPERTIES	STANDARD	UNITS	NEAT POLY- PROPYLENE	AFTER DILUTION TO:			
				1 % _{WT} of CNTs	2 % _{WT} of CNTs	3,2 % _{WT} of CNTs	5 % _{WT} of CNTs
<i>Volume resistivity</i>	ASTM D4496	Ohm.cm	1,10 ¹³	3,10 ⁹	4,10 ⁶	2,10 ²	1,10 ¹
<i>Surface resistivity</i>	IEC 167	Ohm/sq	1,10 ¹⁵	1,10 ¹¹	6,10 ¹⁰	1,10 ⁸	4,10 ⁴
<i>Young's Modulus</i>	ISO 527-1,2	MPa	1280	1625	1728	1795	1954
<i>Tensile strength at break</i>	ISO 527-1,2	MPa	28,2	33,2	35,5	36,8	38,2
<i>Strain at break</i>	ISO 527-1,2	%	520	436	154	64	16
<i>Charpy notched impact strength</i>	Internal method	kJ/m ²	2,4	3,0	3,2	3,0	2,4
<i>Melt flow index</i>	ISO 1133:1997	g/10 min	12,0	9,8	5,6	3,2	1,1
<i>Melting point</i>	ISO 11357-1,-3	°C	-	-	-	-	-
<i>Burning behavior</i>	UL 94	Class	-	-	-	-	-

Compounds were processed using an L/D ratio and a 48 twin-screw extruder under proprietary conditions.

Percolation Curves for Volume and Surface Resistivity



Electrical resistivity measurement in accordance to Nanocyl standard method, on standard injection molded IZOD specimens.

In order to get well-dispersed CNT aggregates, Nanocyl recommends the use of polymers with a high Melt Flow Index (MFI).

Commercial/Safety Information

Packaging

PLASTICYL™ PP2001 masterbatches (pellets) are available in different packaging:

- 20 kg sealed white plastic bags,
- 600 kg cardboard octabins.

Minimum Order Quantity

Nanocyl's minimum order quantity for PLASTICYL™ PP2001 is 20 kg.

Custom Grades

Besides the commercial grades, Nanocyl is able to toll-compound any type of PP masterbatches to meet its clients' needs.

Health and Safety

A Material Safety Data Sheets (MSDS) is available to provide both workers and emergency personnel with the proper procedures for handling or working with the PLASTICYL™ PP2001. This MSDS includes information such as physical data (form and color, melting point, etc.), handling and storage recommendations, first aid measures and ecological information. The Safety Data Sheet is provided with any order and should be observed.

Disclaimer

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