



Technical Data Sheet

ABC-SC-HDPE-101 High Density Polyethylene –
Carbon Nanotubes (CNT) masterbatches

General Information

ABC-SC-HDPE-101 is a conductive masterbatch based on high-density polyethylene (HDPE) with a carefully engineered formulation to ensure superior electrical conductivity and electrostatic discharge (ESD) properties. It is specifically designed for applications where these properties are critical, such as in electronics packaging, automotive components, and industrial applications requiring static control. Due to its high flow characteristics, ABC-SC-HDPE-101 is highly suitable 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, blow molding
- Conductive containers

Features & Benefits

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

Available Sizes:

See website for details.

Quality

Compounds were processed using an L/D ratio and a 48 twin-screw extruder under proprietary conditions. Specimens were molded by injection, according to the processing parameters below. In order to get well-dispersed CNT aggregates, ABC3D recommends the use of polymers with a high Melt Flow Index (MFI). Surface Resistivity results can be significantly influenced by molding/extrusion conditions.

Main Characteristics

CARBON NANOTUBES LOADING (%WT)	PARTICLE SIZE (Units/g) ISO 1183	MVR (cm ³ /10 MIN) NON-STANDARD TEST: 190°C; 21,6 kg; 4 mm	MELTING POINT (°C) ISO 11357-1-3	RESISTIVITY (kΩ)
15 ± 1,0	105 ± 15	25,0 ± 3,0	135	Max. 1,0

General Processing Guidelines for Injection Molding


Injection Speed	Mold Temp.	Material Temp.	Plasticizing Speed	Back Pressure	Holding Pressure	Holding Time
cm ³ /s	°C	°C	m/s	bars	bars	s
10	20	285	0,5	10	750	40

Typical Performance after Injection Molding

Properties	Standard	Unit	Neat HDPE	Antistatic HDPE	EMI/RFI Shielding HDPE
Young's Modulus	ISO 527-1,2	MPa	1053	1120	1312
Tensile strength at break	ISO 527-1,2	MPa	8,6	25	28
Strain at break	ISO 527-1,2	%	-	99	35
Charpy notched impact strength	Internal method	kJ/m ²	4	6	7
Melt flow -MVR (190°C; 3,8 kg; 2mm)	ISO 1133:1997	cm ³ /10 min	-	13	5
Color	-	-	White	Black	Black

Volume Resistivity Index

Volume Resistivity (Ω -CM)

Insulative →	1×10^{14}		Unfilled Plastics
	1×10^{12}		
Antistatic →	1×10^{10}		Antistatic Compounds
	1×10^8		
Dissipative →	1×10^6		ESD Compounds
	1×10^4		
	1×10^2		EMI/RFI Shielding Compounds
	1×10^0		
Conductive →	1×10^{-2}		
	1×10^{-4}		Metals

Note: Electrical resistivity measurement in accordance with ABC3D standard method based on standard injection molded IZOD specimens, processed according to parameters provided before (General Processing Guidelines for Injection Molding).

Commercial/Safety Information

Minimum Order Quantity:

Minimum order quantity for ABC-SC-HDPE-101 is 20 kg.

Custom Grades:

Besides the commercial grades, ABC3D is able to toll-compound any type of ABC-SC-HDPE-101. 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 ABC-SC-HDPE-101. 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

The technical data contained on this data sheet is furnished without charge or obligation and accepted at the recipient's sole risk. This data should not be used to establish specifications limits or used alone as the basis of design. The data provided is not intended to substitute any testing that may be required to determine fitness for any specific use.