

CABELEC[®] CC6057 Conductive Concentrate



Conductive Polypropylene Concentrate for Extrusion and Injection Moulding

CABELEC CC6057 conductive concentrate is an electrically conductive concentrate, made from carbon black and a polypropylene copolymer. The concentrate can be diluted at high levels depending on the processing conditions and the targeted specification for the electrical resistivity. Its electrical and mechanical properties are not dependent on atmospheric conditions.

Applications

CABELEC CC6057 conductive concentrate can be used in extrusion applications such as sheets and corrugated sheets for packaging electronics, where freedom from the hazard of electrostatic discharge is required.

CABELEC CC6057 conductive concentrate can also be used for injection moulding applications such as pallets or boxes where it can be diluted at high rates with natural or even recycled polypropylene.

Processing

Pre-drying

CABELEC CC6057 conductive concentrate absorbs moisture under normal storage conditions and this can result in surface blemishes. It is therefore advisable to dry the concentrate prior to use. Usually 2 - 4 hours in a drier at 80°C is sufficient time to reduce the moisture content to an acceptable level.

Extrusion

CABELEC CC6057 conductive concentrate can be processed on conventional extrusion equipment. The blend should be processed under low shear conditions. To promote good electrical and mechanical properties of the material it is suggested that high shear mixing elements be avoided.

As a general guide, for diluted compounds, extrusion temperatures of 190-220°C have been used successfully on extrusion lines. Actual extrusion temperatures should be adapted according to the nature of the equipment and the manufactured article to give optimum extrusion quality.

Injection Moulding

CABELEC CC6057 conductive concentrate can be processed on most types of injection moulding machine. In order to achieve good electrical conductivity, low shear conditions are required. The precise processing conditions depend on the machinery, output rate and complexity of the injected part under consideration. As a general guide, the following injection moulding temperatures have been used successfully: Barrel/nozzle: 200°C / 220°C and Mould: 30°C

Mould Design

Generous gates are helpful for the moulding of filled CABELEC conductive concentrates as for other highly filled thermoplastics.

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Physical Properties

Typical values for the CABELEC CC6057 conductive concentrate are presented in the following table. Some of them are characteristic of injection moulded pieces:

PROPERTY	TEST METHOD*	UNIT	VALUE
Density @ 23°C	CTM E023	kg/m ³	1130
Melt Flow Index (230°C/5 kg)	ISO 1133	g/10 min	1
Melt Flow Index (230°C/10 kg)	ISO 1133	g/10 min	15
Melt Flow Index (230°C/21.6 kg)	ISO 1133	g/10 min	74
Volume Resistivity injection moulding	CTM E043 B	Ohm.cm	1
Surface Resistivity injection moulding	CTM E042E	Ohm/sq	20

*Tests are performed according to Cabot Test Methods (CTM).

The data in the table above are typical test values intended as guidance only, and are not product specifications. Product specifications are available from your Cabot representative.

When diluting the concentrate with a polypropylene copolymer (PPC) of mfi 0.8 g/10min. (230°C/2.16kg) the following physical properties have been measured. The surface resistivity has been measured on a 300µm thick extruded tape whereas the mechanical properties have been evaluated on injection moulded test bars.

PROPERTY	TEST METHOD*	UNIT	VALUE		
			DILUTION OF CC6057 CONCENTRATE 40% PPC	50% PPC	55%PPC
Surface Resistivity (on 300µm tape)	CTM E042D	Ohm/sq	3*10 ²	2*10 ³	3*10 ⁵
Izod Impact	ISO180	kJ/m ²	67	71	73
Flexural Modulus	ISO178	MPa	1456	1380	1320
Tensile Strength at Yield	ISO527	MPa	28	27	26
Elongation at Break	ISO527	%	44	76	120

*Tests are performed according to Cabot Test Methods (CTM).

The data in the table above are typical test values intended as guidance only, and are not product specifications.

Packaging

CABELEC CC6057 conductive concentrate is supplied in pellet form packed in 25 kg bags and should be stored in a dry place. Larger quantities can be packaged to suit customer's specific requirements.

Storage life: up to 1 year provided it is stored as directed.



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