

GRAPHISTRENGTH® C M2-20

COPOLYAMIDE MASTERBATCH

TECHNICAL DATA SHEET

Description:

Graphistrength® C M2-20 is a black copolyamide masterbatch that contains perfectly dispersed MWCNT at a concentration of 20% by weight.

Graphistrength® C M2-20 is suited to the production of electrically conductive hot melt adhesives.

Graphistrength® C M2-20 is also suited to the production of high performance PA6 or PA6.6 compounds intended for use in electrostatic discharge (ESD) protection.

Key features:

Graphistrength® C M2-20 is provided in pellet form with the following key characteristics.

Property	Method	Unit	Typical value ⁽¹⁾
MWNT content	TGA	(wt%)	20.0 ⁽²⁾
Moisture content	Karl-Fisher	(wt%)	0.10-0.15

⁽¹⁾ Data not intended for specification purposes

⁽²⁾ Graphistrength® C M2-20 contains Graphistrength® MWCNT with purity > 90 %

Benefits and applications:

- When diluted in a high performance Platamid^{®(3)} copolyamide hot melt adhesive, Graphistrength® C M2-20 is an excellent answer for high demanding bonding challenges where electrical conductivity is required. Typical MWCNT loadings in the final compounds are in the range 1 to 3 wt% depending on the host matrix characteristics, the targeted performances, processing methods and conditions. The typical surface electrical resistivity that can be achieved is in the range $10^2 - 10^8$ ohm/sq.

Graphistrength® C M2-20 is particularly suited to hot melt applications in markets such as textile, construction, electronics and automotive application.

- When diluted in PA6 or PA6.6 (or another PA or PPA containing 6 sequences), Graphistrength® C M2-20 can also be used in industrial and automotive applications where ESD protection is required.

⁽³⁾ Platamid® is a registered trademark of Arkema.

Dilution and processing:

The dilution of Graphistrength® C M2-20 into high quality compounds can be achieved with standard equipments used in thermoplastics compounding such as twin-screw extruders. More information is provided in our *Dilution Guide of Graphistrength® Thermoplastic Masterbatches*.

The compounds can be processed on most equipment for polymer melt processing.

For hot melt applications, it is recommended to process Graphistrength® C M2-20 and Graphistrength® C M2-20 based compounds within the temperature range 200-240 °C. ESD properties are improved by high temperature extrusion.

For PA6 and PA6.6 applications, the processing temperature must be as high it is possible for the thermoplastics under consideration.

Example of hot melt application:

Preparation of the conductive hot melt adhesive filled with MWCNT:

- Graphistrength® C M2-20 dilution in Platamid® H106 up to 2wt% MWCNT loading through twin-screw extrusion (T=240°C).
- Film extrusion (T=240°C)
- Compression of plates PET/hot melt adhesive/PET (thickness: 170µm/500µm/170µm, T=150°C).

Adhesion is quantified with a peeling test and compared with the unfilled adhesive and the adhesive filled with Carbon Black (CB) prepared in equivalent conditions:

	Unfilled hot melt adhesive	Hot melt adhesive filled with 2% of MWCNT	Hot melt adhesive filled with 20% of CB
Electrical Resistivity (ohm/sq)	$R > 10^{12}$	$R < 10^6$	$R < 10^6$
Adhesion on Polyester – 15 mm peeling (N)	12	10	0

The MWCNT based high performance hot melt adhesive is covered by ARKEMA's patent (AM 2510)

Packaging and Storage:

Graphistrength® C M2-20 is provided in lined bags of 5 kg or 25 kg net. The product is indefinitely stable in its unopened original packaging when stored at normal temperatures.

Graphistrength® C M2-20 may absorb water if exposed for long periods of time to the atmosphere. In this case, the pellets must be dried at 80 °C preferably under vacuum for 12 to 24 hours before using.

Safety and Handling:

Graphistrength® C M2-20 is provided in pellet form where MWCNT are strongly embedded.

Graphistrength® C M2-20 doesn't present any specific health risk when using in thermoplastic processing. Consult the product MSDS for additional information on properties, hazards and handling.

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