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TECHNICAL INFORMATION SHEET

COAGULATED DISPERSION GRADE CD090E

Description

Fluon® CD090E is a white free flowing powder made by coagulating an aqueous dispersion of polytetrafluoroethylene. The polymer has a trace quantity of comonomer incorporated in the molecule to modify its crystallinity and resulting properties. The process to make CD090E does not use ammonium salts of perfluorooctanoic acid (PFOA).

Processing

Fluon® CD090E can be processed by paste extrusion of a lubricated mix followed by drying and sintering. Further information on these techniques may be found in Technical Service Note F3/4/5, " The processing of Fluon® PTFE coagulated dispersion powders".

End Uses

Fluon® CD090E is a low extrusion pressure polymer which has been designed for paste extrusion at high reduction ratio for wire coating or small diameter tubing with good transparency. Typical end uses include various types of wire, for example, hook-up wires and computer back panel wires, and small diameter tubing including spaghetti tubing where excellent transparency and surface finish are required.

This information sheet contains typical property data which should not be used for specification purposes.

Typical Properties

Property	Typical Value	Units	Test Method
Bulk density	450	kg / m^3	FTM 126
Mean particle size	580	microns	FTM 125
Moisture content (Desiccant pack weight increase 3 days after packing)	<6	g	FTM 121
Moisture (weight loss)	<0.05	%	FTM 140
Extrusion pressure at reduction ratio 1600:1 (0.79 mm die)	40	MPa	FTM 19
SSG	2.19	-	FTM 128
Reduction ratio range	400-4000:1	-	-
Colour	White	-	-

Tubing

The following conditions have been used to make tubing on Davis and Havelock vertical ram extruders with in-line drying and sintering followed by air quenching.

	0.85 mm Tube	**2.5 mm Tube**	**3.0 mm Tube**	**8.0 mm Tube**
Machine	Davis	Davis	150 te Havelock	150 te Havelock
Lubricant (VM&P Naphtha)	18%	18%	18%	18%
Conditioning time/temperature	24 hr/25°C	24 hr/25°C	24 hr/25°C	24 hr/25°C
Preform pressure	500 lb/in^2	500 lb/in^2	500 lb/in^2	500 lb/in^2
Extrusion cylinder	1.5 in	1.5 in	4.5 in	4.5 in
Mandrel diameter	0.25 in	0.25 in	0.75 in	0.75 in
Die diameter	0.038 in	0.125 in	0.135 in	0.35 in
Die angle	20 °	20 °	30°	30°
Core pin diameter	0.0278 in	0.105 in	0.092 in	0.29 in
Reduction ratio	3259:1	475:1	2016:1	500:1
Extrusion rate (tube speed)	47 feet/min	20 feet/min	0.6 m/min	0.5 m/min
Extrusion pressure	115 MPa	25 MPa	32 MPa	15 MPa
Drying:				
Temperature	240°C	240°C	120°C	120°C
Total drying oven length	3.0 metres	3.0 metres	3.2 metres	3.2 metres
Total residence time	0.2 min	0.5 min	5.3 min	6.4 min
Sintering:				
Temperature	400°C	400°C	450°C	450°C
Total sintering oven length	5.4 metres	5.4 metres	1.5 metres	1.5 metres
Total residence time	0.4 min	0.9 min	2.5 min	3.0min

Tubes made under these conditions have excellent transparency and a smooth surface finish.

AGC

TECHNICAL INFORMATION SHEET

Wire Coating

The following conditions have been used to coat wire with CD090E using a Davis extruder in-line drying and sintering followed by air quenching.

Reduction ratio	2500:1	3299:1
Machine	Davis	Davis
Lubricant (VM&P Naphtha)	18%	18%
Conditioning time/temperature	24 hr/25°C	24 hr/25°C
Preform pressure	500 lb/in^2	500 lb/in^2
Extrusion cylinder	1.5 in	1.5 in
Mandrel diameter	0.25 in	0.25 in
Die diameter	0.038 in	0.032 in
Die angle	20°	20°
Wire	7/0.20	7/0.16
Type	A	A
Guide tip clearance	0.062 in	0.033 in
Ram speed (rpm)	360	200
Extrusion rate (wire speed)	80 feet/min	94 feet/min
Extrusion pressure	110 MPa	153 MPa
Drying: Vaporising 1 (3.0 m) Total drying oven length Total residence time	 250°C 3.0 metres 0.12 min	 250°C 3.0 metres 0.10 min
Sintering: Sintering 1 (3.0 m) Sintering 2 (2.4 m) Total sintering oven length	 500°C 500°C 5.4 metres	 500°C 500°C 5.4 metres
Total residence time	0.22 min	0.19 min
OD of coated wire	0.037 in	0.029 in
Test voltage	2.5 kV	2.5 kV

The wires coated under these conditions had <1 fault/1000 feet.

TECHNICAL INFORMATION SHEET

Packaging

Fluon® CD090E is packed in plastic kegs with plastic lids containing 25 kg.
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Disposal

Waste polymer should be disposed of by landfill in accordance with any local regulations for the disposal of products of low toxicity or may be incinerated under approved controlled conditions.

Safety In Use

Users must refer to the relevant Material Safety Data Sheet.

Storage and Handling

Fluon® CD090E should be stored in clean dry conditions between 15°C and 18°C to ensure it does not become compacted and is easy to sieve.

The lubricated mixes of powder should be stored at 25°C for 24 hours before use in air tight containers to ensure that the lubricant is evenly distributed and that the powder will preform and extrude uniformly.

Food Contact Approval

Information on food contact approval is available from the AGC Chemicals Europe, Ltd Sales Office.

TECHNICAL INFORMATION SHEET

If you have an application that you think would benefit by using PTFE, PFA, ETFE or Fluoroelastomer, please contact AGC Chemicals Europe, Ltd at one of the addresses below:

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