Coagulated Dispersion Grades CD123E & CD127E

Technical Information Sheet

Description

Fluon® CD123E and CD127E are white, free-flowing powder made by coagulating an aqueous dispersion of polytetrafluoroethylene. These grades are high molecular weight homopolymers with excellent thermal stability. The processes to make CD123E and CD127E do not use perfluorooctanoic acid (PFOA) or its salts.

Processing

Fluon® CD123E and CD127E can be processed by paste extrusion of a lubricated mix followed by drying and sintering. Further information on these techniques can be found in Technical Service Note F3/4/5, "The Processing of Fluon® PTFE Coagulated Dispersion Powders".

End Uses

Fluon® CD123E and CD127E are high extrusion pressure polymers, which have been designed for paste extrusion at low to medium reduction ratio into tubes including pipe liners. Their excellent stability makes them ideally suited to the long sintering cycles needed when making thick section tubes for pipe liners.

CD123E has higher extrusion pressure and may be used at reduction ratios from 15 to 300:1. CD127E may be used at higher reduction ratios than CD123E.

CD123E is also suited to the manufacture of electrical tapes of good tensile strength and good thermal stability.

Typical Properties (not to be used for specification purposes)

Property		Typical Value	Units	Test Method
Bulk Density		545	kg/m^3	FTM 126
Mean Particle Size		530	µm	FTM 125
Moisture Content (weight loss)		< 0.05	%	FTM 140
Extrusion Pressure at 400:1 Reduction Ratio (1.59mm die)	CD123E	43	MPa	FTM 19
	CD127E	35		
SSG		2.16	-	FTM 128
Reduction Ratio range	CD123E	15—300:1	-	-
	CD127E	25—400:1	-	-
Colour		White	-	-
ASTM D4895-15 Classification		1 / 1 / B		

Tubing

The following conditions have been used with Fluon® CD123E to make tubing on a vertical ram extruder with in-line drying and sintering followed by air quenching.

	24 mm tube	42 mm tube
Machine	150 t Havelock	150 t Havelock
Lubricant (VM&P Naphtha)	17 %	17 %
Conditioning time / temperature	24 hr / 25 °C	24 hr / 25 °C
Preform pressure	500 lb/in^2	500 lb/in^2
Extrusion cylinder	4.5 in	4.5 in
Mandrel diameter	0.75 in	1.5 in
Die diameter	0.9415 in	1.74 in
Die angle	30°	30°
Core pin diameter	0.74 in	1.65 in
Reduction Ratio	60:1	60:1
Extrusion rate (tube speed)	0.15 m/min	0.5 m/min
Extrusion Pressure	8 MPa	17 MPa
Drying:		
Drying oven temperature	120 °C	120 °C
Drying oven length	3.2 m	3.2 m
Residence time	21 min	6.4 min
Sintering:		
Sintering oven temperature	450 °C	450 °C
Sintering oven length	1.5 m	1.5 m
Residence time	10 min	3 min

Tubes made under these conditions have a smooth surface finish and are white in colour.

Electrical Tape Production

The following conditions can be used to make normal density tapes from CD123E by extruding a rod or tape and then calendering.

1. Lubrication / Preforming		
Machine	20 t Havelock	
Polymer	CD123E	
Lubricant	18% odourless kerosene	
Conditioning time / temperature	24hr / 25 °C	
Preform pressure	350 psi	
2. Extrusion	**Rod**	**Tape**
Extrusion clinder	1.625 in	1.625 in
Die diameter	0.24 in	(0.35) in
Die angle	20°	-
Die temperature	30°C	25°C
Reduction Ratio	46:1	22:1
Ram speed	30 mm/min	30 mm/min
Extrusion Pressure	2.8 MPa	6.0 MPa
3. Calendering	**Rod**	**Tape**
Storage of extrudate (kerosene in container)	25 °C	25 °C
Calender bowl diameter	10 in	10 in
Calender temperature	30 °C	30 °C
Calendering speed	10 rpm	8 rpm
Tape thickness	0.006 in (0.15 mm)	0.006 in (0.15 mm)
4. Drying	**Rod**	**Tape**
Temperature	110 °C	110 °C
Pressure	Vacuum	Vacuum

Tapes made under these conditions have a tensile strength of 7-9 MPa and elongation to break of 200%.

Packaging

Fluon® CD123E and CD127E are packed to a minimum guaranteed weight of 25 kg in plastic kegs with plastic lids.

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 Safety Data Sheet.

Food Contact Approval

Information on Food Contact Approval is available from the AGC Chemicals Europe, Ltd. Sales Office.

Storage and Handling

Fluon® CD123E and CD127E should be stored in clean, dry conditions ideally below 15°C to ensure it does not become compacted and remains 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.

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

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