AXELERON™ FO 8864 BK CPD
Black Medium Density Polyethylene Compound for Cable Jacketing

Overview

AXELERON™ FO 8864 BK CPD is a high molecular weight, linear medium-density polyethylene black compound ("CPD") developed for fiber optic and conventional metallic conductor cable jacketing applications. The compound has very good processability and provides a tough cable jacket. AXELERON™ FO 8864 BK CPD also provides excellent resistance to environmental stress cracking and to weathering and thermal-oxidative degradation.

AXELERON™ FO 8864 BK CPD provides excellent low temperature optic signal attenuation performance in fiber optic cable jacketing applications. The compound combines reduced extrusion shrinkback stress with excellent tensile modulus properties. This minimizes the contractive forces exerted by the cable jacket on the optic cable core during temperature cycling.

Specifications

AXELERON™ FO 8864 BK CPD meets the following raw material specifications:

- ASTM D 1248: Type II, Class C, Category 4, Grades E9 and J4
- Federal LP-390C: Type III, Class M, Grades 2, 3, Category 4
- REA PE 39 and 89 (Raw Material Sections)

Physical	Nominal Value	(English)	Nominal Value	(SI)	Test Method
Density	0.941	g/cm³	0.941	g/cm³	ASTM D792
Melt Mass-Flow Rate (190°C/2.16 kg)	0.70	g/10 min	0.70	g/10 min	ASTM D1238
Environmental Stress-Cracking Resistance (ESCR)					ASTM D1693
10% Igepal, F0	> 1000	hr	> 1000	hr	
Carbon Black Content	2.6	%	2.6	%	ASTM D1603
Absorption Coefficient - (kAB/m)	> 400		> 400		ASTM D3349
Mechanical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Tensile Modulus - 1% Secant [1]					ASTM D638
-40°F (-40°C)	150000	psi	1030	MPa	
-4°F (-20°C)	115000	psi	793	MPa	
32°F (0°C)	80100	psi	552	MPa	
68°F (20°C)	45000	psi	310	MPa	
104°F (40°C)	29900	psi	206	MPa	
140°F (60°C)	18000	psi	124	MPa	
Tensile Strength [2]	4100	psi	28.3	MPa	ASTM D638
Tensile Elongation [2] (Break)	800	%	800	%	ASTM D638
Thermal	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Brittleness Temperature					ASTM D746
-- [3]	< -148	°F	< -100	°C	
-- [4]	-85.0	°F	-65.0	°C	
CLTE - Flow [5]					ASTM D696
-40°F (-40°C)	5.6E-5	in/in/°F	1.0E-4	cm/cm/°C	
-4°F (-20°C)	7.8E-5	in/in/°F	1.4E-4	cm/cm/°C	
32°F (0°C)	7.8E-5	in/in/°F	1.4E-4	cm/cm/°C	
68°F (20°C)	1.1E-4	in/in/°F	2.0E-4	cm/cm/°C	
104°F (40°C)	1.3E-4	in/in/°F	2.4E-4	cm/cm/°C	
140°F (60°C)	1.6E-4	in/in/°F	2.8E-4	cm/cm/°C	
Electrical	**Nominal Value**	**(English)**	**Nominal Value**	**(SI)**	**Test Method**
Dielectric Strength	500	V/mil	20	kV/mm	ASTM D149
Dielectric Constant	2.50		2.50		ASTM D1531
Dissipation Factor	3.0E-4		3.0E-4		ASTM D1531

Form No. 400-00088943en
Rev: 2017-01-12

Extrusion	Nominal Value (English)	Nominal Value (SI)
Melt Temperature	450 °F	232 °C

Extrusion Notes

AXELERON™ FO 8864 BK CPD has good extrusion processing latitude. High, stable output rates and moderate melt temperatures and pressures are obtainable with both polyethylene barrier and metering type extruder screws. Typical extrusion conditions are listed below; the exact conditions will depend upon the equipment used and the application.

Extruder

- Screw Type: PE Metering
- Screw LD: 18:1 to 24:1
- Compression Ratio: 2.5:1 to 3.0:1
- Screen Pack: 20/40/60/20 mesh

Temperature Profile

- Hopper: Water Cooling
- Feed Zone: 300°F (150°C)
- Center Zones: 440°F (225°C)
- Metering Zone: 440°F (225°C)
- Head: 440°F (225°C)
- Die: 440°F (225°C)
- Melt Temperature: 450°F (230°C)

AXELERON™ FO 8864 BK CPD cable jacketing can be applied with either pressure or sleeving (tube-on) type extrusion tooling. With tube-on extrusion, a minimum tubing tip diameter and a 2:1 drawdown ratio is recommended. If necessary, a higher drawdown ratio can be used to increase jacket tightness.

Notes

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.

[1] Reduced testing speed of 0.10 inch/min (2.5 mm/min) with an initial 1.50 inch (38mm) jaw separation. Modulus data will vary with testing speed. Unless otherwise noted, amples are tested in accordance with ASTM D 1248, "Polyethylene Plastics Molding and Extrusion Materials."

[2] Type IV, 2.0 in/min (50 mm/min)

[3] Notched, F20

[4] Notched, F50

[5] COE data generated on Dupont 942 Thermomechanical Analyzer.

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Published: 2005-11-17

Form No. 400-00088943en
Rev: 2017-01-12