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3M Advanced Materials Division

3M™ Dyneon™ Peroxide Cure Fluoroelastomer FPO 3600ULV

Ultra Low Viscosity Peroxide Curable

Features and Benefits

- 65.9% fluorine dipolymer of vinylidene fluoride and hexafluoropropylene (Type 1 FKM ASTM D1418)
- Peroxide curable with good steam and water resistance
- Excellent flow for molding complex shapes
- Good for making a high solid fluoroelastomer solution with solvents (e.g. ketones and esters)
- Excellent viscosity modifier
- Good physical properties with no post cure
- Low temperature cure capability

Note: Data in this document are not for specification purposes.

Product Description

3M™ Dyneon™ Peroxide Cure Fluoroelastomer FPO 3600ULV is an ultra low viscosity (ULV) fluoroelastomer. It is a 65.9% fluorine containing peroxide curable dipolymer. This product offers excellent flow compared to conventional fluoroelastomers used in many difficult molding applications. Potential applications range from molding complex shapes to high solid sealants and coatings or viscosity modification of higher viscosity elastomers.

Product Form and Packaging

Dyneon FPO 3600ULV is packaged in slab form and is available in 2.2 lb (1 kg) and 55.1 lb (25 kg) boxes.

Safety/Toxicology

Before processing 3M™ Dyneon™ Fluoroelastomers, read and follow all precautions and directions for use contained in the product label and Safety Data Sheet (SDS). General handling precautions and directions for use include: (1) Store and use all Dyneon fluoroelastomers only in well ventilated areas; (2) Do not smoke in areas contaminated with dust from fluoroelastomers; (3) Avoid eye contact; (4) After handling Dyneon fluoroelastomers wash any contacted skin with soap and water.

Potential hazards, including evolution of toxic vapors, can occur during compounding or processing under excessively high temperature conditions. Appropriate local exhaust ventilation such as vapor extractor units should be installed above compounding or processing equipment. When compounding, be sure to read and follow all precautions and directions for use from other compound ingredient suppliers.

Typical Properties (Not for specification purposes)

Property	
Fluorine Content	65.9%
Specific Gravity	1.80
Color	Translucent
Form	Slab
Glass Transition temperature (Tg)	-20°C (-4°F)
Mooney Viscosity – ML (1+10) @ 100°C	3.5
Brookfield Viscosity, LV4, 0.3 rpm @ 150°C (302°F) (poise)	9620

Typical Properties of Vulcanizate

Compound	phr
FPO 3600ULV	100
N990 MT Carbon Black	30
Zinc Oxide (ZnO)	3
Peroxide (VAROX™ DBPH - 50)	2
Co-agent (TAIC™, 98% Active)	3

Typical Rheological Properties [ASTM D5289] Moving Die Rheometer (MDR) 100 cpm, 0.5° Arc, 6 Minutes @ 177°C (350°F)

Property	
ML, Minimum Torque, Inch-lb (dN m)	0.0 (0.0)
t_s2, Time to 2 Inch-lb Rise from Minimum – Minutes	0.5
t'50, Time to 50% Cure – Minutes	0.7
t'90, Time to 90% Cure – Minutes	1.2
MH, Maximum Torque, Inch-lb (dN m)	13.5 (15.3)

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Typical Physical Properties [ASTM D412] Press Cure 5 Minutes @ 177°C (350°F)

Property	
Tensile, psi (MPa)	2082 (14.4)
100% Modulus, psi (MPa)	596 (4.1)
Elongation at Break, %	252
Hardness, Type A [ASTM D2240]	67

Post Cure 4 Hours @ 232°C (450°F)	
Tensile, psi (MPa)	2572 (17.7)
100% Modulus, psi (MPa)	689 (4.8)
Elongation at Break, %	220
Hardness, Type A [ASTM D2240]	70

Compression Set Resistance [ASTM D395 Method B, -214 O-rings]	
22 Hours @ 200°C (392°F) – Press Cure	36
22 Hours @ 200°C (392°F) – Post Cure	29
70 Hours @ 200°C (392°F) – Post Cure	46

Low Temperature Retraction [ASTM D1329]	
TR10, °C (°F)	-19 (-2.2)
TR70, °C (°F)	-10 (14)

3M Advanced Materials Division
Oakdale, MN 55128
Phone 1-800-810-8499
Web www.3m.com/advancedmaterials