3M™ Dyneon™ Fluoroelastomer FC 1650

Features and Benefits

- Composition: di-polymer of vinylidene fluoride and hexafluoropropylene
- Medium viscosity gumstock without incorporated curatives
- Process targets: injection and transfer molding, extrusion, calendering and coatings
- FC 1650 is amine or bisphenol curable

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

Typical Properties

Property	
Fluorine Content	65.9%
Specific Gravity	1.80
Color	Straw or White
Solubility	Ketones and Esters
Mooney Viscosity ML 1 + 10 @ 121°C (250°F)	Approximately 47

Product Description

3M™ Dyneon™ Fluoroelastomer FC 1650 can be compounded using standard water cooled internal mixers or two-roll mills with standard fillers and ingredients utilized in typical fluoroelastomer formulations. The "dry" ingredients should be blended before adding to the masticated gum. For best results, Dyneon FC 1650 should be banded on the mill several minutes prior to adding the blended dry ingredients. Once mixed, the compounded stocks have good scorch resistance and storage stability.

Product Form

FC 1650 is packaged in crumb form and is available in a returnable bulk shipping container system for 1,485 lbs (674 kg) of material. The bulk container system is comprised of 54 individual polyethylene bags containing 27.5 lbs (12.5 kg) of product. Crumb can vary in color and shape and may cold flow into a mass or bale.

Safety/Toxicology

Follow recommended handling precautions for use of 3M fluoroelastomers. General handling precautions include: (1) Store and use all 3M fluoroelastomers only in well ventilated areas. (2) Do not smoke in areas contaminated with dust from 3M fluoroelastomers. (3) Avoid eye contact. (4) After handling 3M fluoroelastomers wash any contacted skin with soap and water.

Potential hazards include evolution of toxic vapors during compounding or processing under high temperature conditions. Before processing 3M fluoroelastomers, consult the product MSDS (Material Safety Data Sheet) and follow all label directions and handling precautions. You should also read and follow all directions from other compound ingredient suppliers. Material Safety Data Sheets on 3M products are available from your 3M Sales Representative.

ISO 9001

All 3M fluoroelastomers are manufactured at ISO 9001 registered facilities. Our product realization process is also ISO 9001 registered.

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Typical Properties of Vulcanizate

Compound	phr
FC 1650	100
N990 MT Carbon Black	30
MgO	3
$Ca(OH)_2$	6
Phosphonium Accelerator	0.5
Dihydroxy Crosslinker	2.0

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

Temperature	177°C (350°F)
ML, Minimum Torque, Inch-lb (dN m)	1.2 (1.3)
t_s2, Time to 2 Inch-lb rise from Minimum – Minutes	1.8
t'50, Time to 50% Cure – Minutes	2.3
t'90, Time to 90% Cure – Minutes	3.2
MH, Maximum Torque, Inch-lb (dN m)	20.5 (23.1)

Typical Physical Properties
Press Cure 7 Minutes @ 177°C (350°F)
Post Cure 24 Hours @ 260°C (500°F)

Tensile, psi (MPa)	2000 (13.8)
100% Modulus, psi (MPa)	995 (6.9)
Elongation at Break, %	170
Hardness, Shore A [ASTM D2240]	75

Compression Set Resistance [ASTM D395 Method B, -214 O-rings]

Aged 70 Hours @ 200°C (392°F), % Set	15

TR10 [ASTM D1329]	-18°C (0°F)

Advanced Materials Division
3M Center
St. Paul, MN 55144-1000
1-800-810-8499
www.3M.com

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