3M™ Dyneon™ Fluoroelastomer FC 2211

Features and Benefits

- Composition: di-polymer of vinylidene fluoride and hexafluoropropylene
- Ultra low viscosity gumstock without incorporated curatives
- Process targets: injection and transfer molding, extrusion, calendering and coatings
- Viscosity modifier
- Greater flow and filler loadings compared to conventional high viscosity 66% fluoropolymers
- FC 2211 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	Translucent to Off-White
Solubility	Ketones and Esters
Mooney Viscosity ML 1 + 10 @ 100°C (212°F)	Approximately 20

Product Description

3M™ Dyneon™ Fluoroelastomer FC 2211 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 2211 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 2211 is packaged in slab form and is available in a returnable bulk shipping container system for 1,320 lbs (600 kg) of material. The bulk container system is comprised of 48 individual polyethylene bags containing 27.5 lbs (12.5 kg) of product. Smaller quantities are available in 55.1 lb (25.0 kg) boxes.

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, including evolution of toxic vapors, do exist 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 2211	100
N990 MT Carbon Black	30
MgO	3
$Ca(OH)_2$	6
Phosphonium Accelerator	0.5
Dihydroxy Crosslinker	2.0

Typical Rheological Properties
Moving Die Rheometer (MDR)
100 cpm, 0.5° Arc, 6 Minutes

Temperature	177°C (350°F)
ML, Minimum Torque, Inch-lb (dN m)	0.3 (0.34)
t_s2, Time to 2 Inch-lb Rise from Minimum – Minutes	2.2
t'50, Time to 50% Cure – Minutes	2.5
t'90, Time to 90% Cure – Minutes	3.8
MH, Maximum Torque, Inch-lb (dN m)	14.0 (15.8)

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

Tensile, psi (Mpa)	1870 (12.9)
100% Modulus, psi (Mpa)	600 (4.1)
Elongation at Break, %	180
Hardness, Shore A [ASTM D2240]	75

Compression Set Resistance, (ASTM D395 Method B, -214 O-rings)

Aged 70 Hours @ 200°C (392°F)	17%

TR10 [ASTM D1329]	-18°C (0°F)

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