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3M Advanced Materials Division

3M™ Dyneon™ Fluoroelastomer FG 5690Q

Features and Benefits

- High viscosity version of 3M™ Dyneon™ Fluoroelastomer FG 5630Q
- In compliance with FDA regulation 21 CFR 177.2600 for use in the production of rubber articles intended for repeated use in contact with food when used at no more than 60% by weight in the final compound, and properly post-cured for 16 hours at 230°C.
- When compared to diamine cured compounds this product gives:
  - Excellent mold release
  - Better mold flow
  - Outstanding compression set resistance
  - Excellent water resistance at elevated temperatures
- Process targets: Compression molding

Typical Applications

- Recommended for O-rings with direct food contact
- Molded shapes, composites

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

Typical Properties

Property	Units	Value
Fluorine Content	%	65.9
Specific Gravity		1.80
Color		Opaque Off-White
Solubility		Ketones and Esters
Mooney Viscosity ML 1 + 10 @ 121°C (250°F)	MU	Approximately 97

Product Description

3M Dyneon Fluoroelastomer FG 5690Q is a dipolymer of vinylidene fluoride and hexafluoropropylene with proprietary incorporated cure technology.

Processing Guidelines

Dyneon fluoroelastomer FG 5690Q can be compounded using standard water-cooled internal mixers or two-roll mills. The dry ingredients should be blended before adding to the masticated gum. For best results, Dyneon fluoroelastomer FG 5690Q should be banded on the mill several minutes prior to adding the blended dry ingredients. Once mixed, the compounded stocks display excellent processing characteristics and storage stability.

Delivered Product Form

Dyneon fluoroelastomer FG 5690Q is packaged in bale form and is available in a returnable bulk shipping container system for 600 kg (1,320 lbs) of material. The bulk container system is comprised of 48 individual polyethylene bags containing 12.5 kg (27.5 lbs) of product. Smaller quantities are available in 25.0 kg (55.1 lbs) boxes.

Note: Package size(s) may vary by region.

Compliance with Regulations

It is the responsibility of the user to determine whether its specific formulation and intended use comply with applicable laws and are suitable for its intended application. For food contact applications, fillers and ingredients utilized must be in compliance with applicable regulations for repeated food contact use.

Safety/Toxicology

Follow recommended handling precautions for use of Dyneon fluoroelastomers from 3M. General handling precautions include: (1) Store and use all Dyneon fluoroelastomers only in well-ventilated areas. (2) Do not smoke in areas contaminated with dust from Dyneon 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, do exist during compounding or processing under high-temperature conditions. Before processing Dyneon fluoroelastomers, consult the product Safety Data Sheet (SDS) and follow all label directions and handling precautions. You should also read and follow all directions from other compound ingredient suppliers. Refer to the Dyneon fluoroelastomer safety data sheet for additional safety information.

ISO Registrations

All 3M™ Dyneon™ Fluoroelastomers are manufactured at ISO 9001 and 14001 registered facilities.

Typical Properties of Vulcanizate

Compound	Amount (in parts/100)
3M™ Dyneon™ Fluoroelastomer FG 5690Q	100
N990 MT Carbon Black	30
MgO	3
$Ca(OH)_2$	6

Typical Rheological Properties [ASTM D5289]

Moving Die Rheometer (MDR) 100 cpm, 0.5° Arc
6 Minutes @ 177°C (351°F)

Property	Units	Value
ML, Minimum Torque	dN m (inch-lb)	3.7 (3.3)
ts2, Time to 2 Inch-lb Rise from Minimum	Minutes	2.2
t'50, Time to 50% Cure	Minutes	3.2
t'90, Time to 90% Cure	Minutes	4.3
MH, Maximum Torque	dN m (inch-lb)	27.3 (24.2)

Typical Physical Properties [ASTM D412 Method A, Die D]

Press Cure 5 Minutes @ 177°C (351°F)
Post Cure 16 Hours @ 230°C (446°F)

Property	Units	Value
Tensile	MPa (psi)	17.2 (2494)
100% Modulus	MPa (psi)	6.7 (971)
Elongation at Break	%	215
Durometer Type A Hardness [ASTM D2240]	Points	76

Compression Set Resistance [ASTM D1414]

70 Hours @ 200°C (392°F)

Property	Units	Result
Post Cured 16 Hours @ 230°C (446°F)	%	19
Post Cured 24 Hours @ 260°C (500°F)	%	17

Low Temperature [ASTM D1329]

Property	Units	Value
TR10	°C (°F)	-18 (0)

Customer Service

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