

3M™ Dyneon™ Fluoroelastomer FC 2181

Features and Benefits

- Composition: di-polymer of vinylidene fluoride and hexafluoropropylene
- Medium viscosity
- Process targets: compression, transfer molding, and calendaring
- Proprietary incorporated cure technology
- Excellent demolding of complex geometric profiles

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

Typical Properties

| Property | |
|---|--------------------------------|
| Fluorine Content | 65.9% |
| Specific Gravity | 1.80 |
| Color | Opaque Off-White to light pink |
| Solubility | Ketones and Esters |
| Mooney Viscosity ML 1 + 10 @ 121°C (250°F) | Approximately 44 |

Product Description

3M™ Dyneon™ Fluoroelastomer FC 2181 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 2181 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 2181 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 green 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/QS-9000

All 3M fluoroelastomers are manufactured at ISO 9001 registered facilities. 3M fluoroelastomers produced in North America are manufactured at QS-9000 registered facilities.



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Typical Properties of Vulcanizate

| Compound | phr |
|-----------------------|-----|
| FC 2181 | 100 |
| N-990 MT Carbon Black | 30 |
| MgO | 3 |
| Ca(OH) ₂ | 6 |

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) | 1.6 (1.8) |
| t ² , Time to 2 Inch-lb Rise from Minimum – Minutes | 1.0 |
| t ⁵⁰ , Time to 50% Cure – Minutes | 1.2 |
| t ⁹⁰ , Time to 90% Cure – Minutes | 1.7 |
| MH, Maximum Torque, Inch-lb (dN m) | 18.1 (20.5) |

Typical Physical Properties Press Cure 5 Minutes @ 177°C (350°F) Post Cure 24 Hours @ 260°C (500°F)

| | |
|--------------------------------|-------------|
| Tensile, psi (Mpa) | 2560 (17.6) |
| 100% Modulus, psi (Mpa) | 690 (4.8) |
| Elongation at Break, % | 240 |
| Hardness, Shore A (ASTM D2240) | 72 |

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

| | |
|-------------------------------|-----|
| Aged 70 Hours @ 200°C (392°F) | 13% |
|-------------------------------|-----|

| | |
|--------------------------|--------------------|
| TR10 (ASTM D1329) | -18°C (0°F) |
|--------------------------|--------------------|

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