



A 3M Company

# Dyneon™

## Fluoroelastomer

### FC 2230

#### Features and Benefits

- Composition: di-polymer of vinylidene fluoride and hexafluoropropylene
- Medium viscosity gumstock without incorporated curatives
- Process targets: transfer and compression molding, extrusion, calendaring and coatings
- FC 2230 is amine or bisphenol curable

#### Typical Properties (Data not for specification purposes)

|  |                    |
|--|--------------------|
| Fluorine Content [QCM 50.18.6.C]                             | 65.9%              |
| Specific Gravity [QCM 14.10]                                 | 1.80               |
| Color  | Translucent Amber  |
| Solubility   | Ketones and Esters |
| Mooney Viscosity<br>ML 1 + 10 @ 121°C (250°F) [QCM 2.14.4.C] | Approx. 38         |

#### Recommended Processing Procedures

Dyneon FC 2230 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, FC 2230 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.

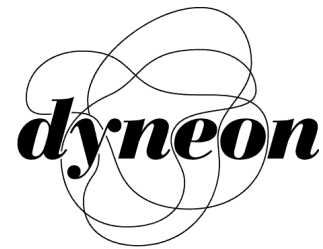
#### Product Form

FC 2230 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 Dyneon fluoroelastomers. 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 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 Dyneon products are available from your Dyneon Sales Representative or by dialing 651-733-5353.



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**ISO 9001/QS-9000**

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

**Typical Properties of Vulcanizate  
(Data not for specification purposes)**

| Compound                | phr |
|-------------------------|-----|
| FC 2230                 | 100 |
| MT Black (N990)         | 30  |
| MgO                     | 3   |
| Ca(OH) <sub>2</sub>     | 6   |
| Phosphonium Accelerator | 0.5 |
| Dihydroxy Crosslinker   | 2.0 |

**Typical Rheological Properties  
Monsanto Moving Die Rheometer (MDR2000®)  
100 cpm, 0.5° Arc, 6 minutes [QCM 2.19.1.C]**

| Temperature °C (°F)                                | 177° | (350°) |
|--|------|--------|
| ML, Minimum Torque, inch-lb (dN m)                 | 1.0  | (1.1)  |
| ts2, Time to 2 inch-lb rise from minimum - minutes | 1.9  |        |
| t'50, Time to 50% cure - minutes                   | 2.4  |        |
| t'90, Time to 90% cure - minutes                   | 3.4  |        |
| MH, Maximum Torque, inch-lb (dN m)                 | 19.5 | (22.0) |

**Typical Physical Properties [QCM 125.23.C and 125.17.C]  
Press Cure 7 minutes @ 177°C (350°F)  
Post Cure 24 hours @ 260°C (500°F)**

|                                 |      |        |
|---------------------------------|------|--------|
| Tensile, psi (Mpa)              | 1995 | (13.7) |
| 100% Modulus, psi (Mpa)         | 972  | (6.7)  |
| Elongation at break, %          | 165  |        |
| Hardness, Shore A (ASTM D 2240) | 73   |        |

**Compression Set, %, [ASTM D 395 Method B (O-rings)]**

|                               |    |
|-------------------------------|----|
| Aged 70 hours @ 200°C (392°F) | 15 |
|-------------------------------|----|

**TR10 [ASTM D 1329] °C (°F)**                      -18                      (0)

**Technical Information and Test Data**

Technical information, test data, and advice provided by Dyneon personnel are based on information and tests we believe are reliable and are intended for persons with knowledge and technical skills sufficient to analyze test types and conditions, and to handle and use raw polymers and related compounding ingredients. No license under any Dyneon or third party intellectual rights is granted or implied by virtue of this information.

**Important Notice:**

Because conditions of product use are outside Dyneon's control and vary widely, user must evaluate and determine whether a Dyneon product will be suitable for user's intended application before using it.

**The following is made in lieu of all express and implied warranties (including warranties of merchantability and fitness for a particular purpose): If a Dyneon product is proved to be defective, Dyneon's only obligation, and user's only remedy, will be, at Dyneon's option, to replace the quantity of product shown to be defective when user received it or to refund user's purchase price. In no event will Dyneon be liable for any direct, indirect, special, incidental, or consequential loss or damage, regardless of legal theory, such as breach of warranty or contract, negligence, or strict liability.**

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