

# 3M™ Dyneon™

## High Temperature Perfluoroelastomer

### PFE 4131TZ

#### Features and Benefits

- PFE 131TZ compounded with curative for ease in manufacturing
- Upper use temperature of 315°C
- Excellent compression set resistance
- Can be compounded to pass AMS 7257D
- Ideal for dry side (thermal processes) semiconductor applications, including plasma, and high temperature CPI and aerospace applications
- Low metal ion content with low extractables

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

#### Typical Properties

| Property                             |               |
|--------------------------------------|---------------|
| Specific Gravity                     | 2.0           |
| Color                                | Off-white     |
| Form                                 | Slab          |
| TR 10                                | -2°C (28°F)   |
| Brittleness Point                    | -35°C (-31°F) |
| Mooney Viscosity – ML (1+10) @ 121°C | 100           |

#### Product Description

3M™ Dyneon™ PFE 4131TZ is an incorporated cure high temperature perfluoroelastomer (HT PFE). It is designed to meet the challenges of higher temperature applications. It is classified as FFKM per ASTM D1418. Its fully fluorinated backbone structure provides a very broad chemical and thermal stability.

#### Product Form

Dyneon PFE 4131TZ is packaged in slab form. It is available in 2 kg boxes.

#### Safety/Toxicology

Before processing 3M perfluoroelastomers, read and follow all precautions and directions for use contained in the product label and Material Safety Data Sheet (MSDS). General handling precautions and directions for use include: (1) Store and use all 3M perfluoroelastomers only in well ventilated areas; (2) Do not smoke in areas contaminated with dust from 3M perfluoroelastomers; (3) Avoid eye contact; (4) After handling 3M perfluoroelastomers wash any contacted skin with soap and water. Potential hazards, including evolution of toxic vapors, can occur during compounding or processing under excessively high temperature conditions. Appropriate local exhaust ventilation such as vapor extractor units should be installed above compounding or processing equipment. When compounding, be sure to read and follow all precautions and directions for use from other compound ingredient suppliers.

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**Typical Properties of Vulcanizate**

| Compound              | phr |
|-----------------------|-----|
| PFE 4131TZ            | 100 |
| N550 FEF Carbon Black | 15  |

**Typical Rheological Properties [ASTM D5289]  
Moving Die Rheometer (MDR)  
100 cpm, 0.5° Arc, 15 Minutes @ 188°C (370°F)**

| Property                                                        |             |
|-----------------------------------------------------------------|-------------|
| ML, Minimum Torque, Inch-lb (dN m)                              | 0.95 (1.1)  |
| t <sub>s</sub> 2, Time to 2 Inch-lb Rise from Minimum - Minutes | 1.7         |
| t'50, Time to 50% Cure - Minutes                                | 2.9         |
| t'90, Time to 90% Cure - Minutes                                | 6.0         |
| MH, Maximum Torque, Inch-lb (dN m)                              | 17.6 (19.8) |

**Typical Physical Properties [ASTM D412]  
Press Cure 10 Minutes @ 188°C (375°F)  
Post Cure 16 Hours @ 250°C (482°F)**

| Property                       |             |
|--------------------------------|-------------|
| Tensile, psi (MPa)             | 2480 (17.1) |
| 100% Modulus, psi (MPa)        | 1750 (12.1) |
| Elongation at Break, %         | 155         |
| Hardness, Shore A [ASTM D2240] | 81          |

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

|                                             |    |
|---------------------------------------------|----|
| 70 Hours @ 232°C (450°F) – 25% Deformation  | 17 |
| 168 Hours @ 232°C (450°F) – 25% Deformation | 33 |
| 70 Hours @ 300°C (572°F) – 18% Deformation  | 39 |
| 168 Hours @ 300°C (572°F) – 18% Deformation | 46 |

**Product Stewardship—Replacement Emulsifier:** Dyneon™ and Dynamar™ products identified with a “Z” at the end of the product name indicate products that are made using a replacement emulsifier. This emulsifier, which Dyneon, a 3M subsidiary, began using in the manufacturing processes for these products in 2008, is a polymerization aid used to manufacture certain fluoropolymers and is not an intended ingredient in the polymers. The new emulsifier eliminates the use of the former polymerization aid, APFO (ammonium perfluorooctanoate, the ammonium salt of perfluorooctanoic acid (PFOA)), in the manufacture of these fluoropolymers. The use of the replacement emulsifier in the manufacture of these products is consistent with our product stewardship principles and our commitment to US EPA’s Voluntary PFOA Stewardship Program under which fluoropolymer manufacturers agreed to work towards eliminating PFOA in emissions and product content by the year 2015. **We are pleased to report that Dyneon completely eliminated the use of APFO in its manufacturing processes in December 2008.**

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