

3M Advanced Materials Division

3M™ Dyneon™ High Temperature Perfluoroelastomers PFE 81T, PFE 131T and PFE 191T

Features and Benefits

- Ideal for dry side (thermal processes) semiconductor applications including plasma, and high temperature CPI and aerospace applications
- Upper use temperature of 315°C
- Can be compounded to pass AMS 7257E
- Very low metal ion content with low extractables

Typical Properties

Property	Units	PFE 81T	PFE 131T	PFE 191T
Specific Gravity		2.0	2.0	2.0
Color		White	White	White
Form		Crumb	Crumb	Crumb
TR 10	°C (°F)	-2°C (28°F)	-2°C (28°F)	-2°C (28°F)
Brittleness Point	°C (°F)	-35°C (-31°F)	-35°C (-31°F)	-35°C (-31°F)
Mooney Viscosity ML1 + 10 @ 121°C (250°F)	MU	80	80	80

Product Description

3M™ Dyneon™ PFE 81T, PFE 131T and PFE 191T are technically advanced high temperature perfluoroelastomers (HT PFE). They are designed to meet the challenges of higher temperature applications. They are classified as FFKM per ASTM D1418. Their fully fluorinated backbone structures provide a very broad chemical and thermal stability.

Delivered Product Form

Dyneon PFE 81T, PFE 131T and PFE 191T are packaged in crumb form. They are available in 1 kg and 10 kg boxes.

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

Safety/Toxicology

Before processing 3M™ Dyneon™ Perfluoroelastomers, read and follow all precautions and directions for use contained in the product label and Safety Data Sheet (SDS). General handling precautions and directions for use include: (1) Store and use all Dyneon perfluoroelastomers only in well ventilated areas; (2) Do not smoke in areas contaminated with dust from perfluoroelastomers; (3) Avoid eye contact; (4) After handling Dyneon 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.

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

ISO Registrations

All Dyneon fluoroelastomers are manufactured at ISO 9001 and 14001 registered facilities.

Typical Properties of Vulcanizate

Compound	PFE 81TZ	PFE 131T	PFE 191T
3M™ Dyneon™ Peroxide Cure Perfluoroelastomer 81T	94	–	–
3M™ Dyneon™ Peroxide Cure Perfluoroelastomer 131T	–	94	–
3M™ Dyneon™ Peroxide Cure Perfluoroelastomer 191T	–	–	94
N550 FEF Carbon Black	15	15	15
Aerosil® R972	1.5	1.5	1.5
3M™ Dyneon™ Perfluoroelastomer Curative 01CZ	7.5	7.5	7.5

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

Property	Units	PFE 81T	PFE 131T	PFE 191T
ML, Minimum Torque	dN m (inch-lb)	1.0 (0.9)	1.3 (1.2)	1.6 (1.4)
ts2, Time to 2 Inch-lb Rise from Minimum	Minutes	3.4	2.4	2.1
t'50, Time to 50% Cure	Minutes	4.7	3.6	3.7
t'90, Time to 90% Cure	Minutes	8.4	7.0	8.3
MH, Maximum Torque	dN m (inch-lb)	11.4 (10.1)	20.1 (17.8)	28.9 (25.6)

Typical Physical Properties [ASTM D412] Press Cure 15 Minutes @ 188°C (370°F) Post Cure 24 Hours @ 250°C (482°F)

Property	Units	PFE 81T	PFE 131T	PFE 191T
Tensile	MPa (psi)	11.9 (1720)	15.9 (2300)	15.6 (2300)
100% Modulus	MPa (psi)	4.7 (685)	9.1 (1310)	15.2 (2200)
Elongation at Break	%	230	165	110
Durometer Type A Hardness [ASTM D2240]	Points	71	77	80

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

Property	PFE 81T	PFE 131T	PFE 191T
70 Hours @ 232°C (450°F) – 25% Deformation	27	20	15
168 Hours @ 232°C (450°F) – 25% Deformation	35	25	18
70 Hours @ 300°C (572°F) – 18% Deformation	50	43	33
168 Hours @ 300°C (572°F) – 18% Deformation	61	52	45

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