

3M Advanced Materials Division

# 3M™ Dyneon™ Peroxide Cure Fluoroelastomer FPO 3850

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## Features and Benefits

- High fluorine content
- Medium viscosity
- No metal oxides required for cure
- Process targets: compression and transfer molding, extrusion, calendaring
- Excellent resistance against chemical fluids
- Good physical properties right out of the press

## Typical Applications

- Suitable for seals, such as O-rings and gaskets

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

## Typical Properties

Property	Units	Value
Color		White to Light Brown
Fluorine Content	%	70.1
Mooney Viscosity ML 1 + 10 @ 121°C (250°F)	MU	Approximately 50
Solubility		Ketones and Esters
Specific Gravity	%	1.89
Tg	°C (°F)	-6 (21)

## Product Description

3M™ Dyneon™ Peroxide Cure Fluoroelastomer FPO 3850 is a terpolymer of vinylidene fluoride, hexafluoropropylene, and tetrafluoroethylene plus cure site monomer.

## Processing Guidelines

Dyneon fluoroelastomer FPO 3850 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 fluoroelastomer FPO 3850 should be banded on the mill several minutes prior to adding the blended dry ingredients. Low mooney and medium mooney grades can be blended to achieve desired viscosity.

## Delivered Product Form

Dyneon fluoroelastomer FPO 3850 is packaged in crumb form and is available in 25 kg (55 lbs) boxes, comprised of 2 individual polyethylene bags containing 12.5 kg (27.5 lbs) of product. Due to the nature of crumb material, product color may vary within a bag and between bags and lots. It is typical to see variations of opaqueness and color due to product cold flow.

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

## ISO Registrations

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

## Safety/Toxicology

Before processing 3M™ Dyneon™ Fluoroelastomers, 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 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.

Compounding or processing under excessively high temperature conditions may cause the evolution of toxic vapors. 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.

## Typical Properties of Vulcanizate

Compound	Amount (in parts/100) With ZnO	Amount (in parts/100) Without ZnO
3M™ Dyneon™ Fluoroelastomer FPO 3850	100	100
TAIC®-DLCA (72%)	2.5	2.5
Varox® DBPH-50	1.5	1.5
ZnO	3	0
Carbon Black N-990	30	30

## Typical Rheological Properties [ASTM D5289]

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

Property	Units	With ZnO	Without ZnO
ML, Minimum Torque	dNm (in-lb)	1.8 (1.6)	1.6 (1.42)
MH, Maximum Torque	dNm (in-lb)	26.0 (23.0)	25.4 (22.5)
ts2, Time to 2 Inch-lb Rise from Minimum	Minutes	0.46	0.47
t'50, Time to 50% Cure	Minutes	0.69	0.70
t'90, Time to 90% Cure	Minutes	1.18	1.25

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

Press Cure 10 Minutes @ 177°C (351°F)

Property	Units	With ZnO	Without ZnO
Durometer Type A Hardness [ASTM D2240]	Points	68	69
Tensile	MPa (psi)	18.4 (2662)	18.4 (2674)
Elongation at Break	%	270	267
100% Modulus	MPa (psi)	5.4 (782)	4.9 (711)

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

Press Cure 10 Minutes @ 177°C (351°F)

Post Cure 4 Hours @ 232°C (450°F)

Property	Units	With ZnO	Without ZnO
Durometer Type A Hardness [ASTM D2240]	Points	71	69
Tensile	MPa (psi)	24.3 (3520)	25.1 (3643)
Elongation	%	253	243
100% Modulus	MPa (psi)	5.8 (844)	5.8 (847)

### Heat Resistance [ASTM D573]

Press Cure 10 Minutes @ 177°C (351°F)

Post Cure 4 Hours @ 232°C (450°F)

Property	Units	With ZnO	Without ZnO
70 Hours @ 200°C (392°F)			
Change in Hardness	Points	0	1
Change in Tensile Strength	%	-5	2
Change in Ultimate Elongation	%	-5	-4
70 Hours @ 232°C (450°F)			
Change in Hardness	Points	-1	0
Change in Tensile Strength	%	-6	-13
Change in Ultimate Elongation	%	3	2

### Compression Set Resistance

Press Cure 10 Minutes @ 177°C (351°F)

Post Cure 4 Hours @ 232°C (450°F)

Test Conditions	Sample Tested	Unit	With ZnO	Without ZnO
70 Hours @ 200°C (392°F) ASTM D1414	-214 O-ring	%	24	31
22 Hours @ 150°C (302°F) VDA 675 218	15 × 2 mm Disc	%	43	41

### Low Temperature [ASTM D1329]

Property	Unit	With ZnO	Without ZnO
TR10	°C (°F)	-	-6.5 (20.3)

## Customer Service

### Europe

**Dyneon GmbH**  
**3M Advanced Materials Division**  
Carl-Schurz-Straße  
41453 Neuss  
Germany  
Phone: +00 800 396 366 27  
Fax: +00 800 396 366 39  
www.dyneon.eu

### Italy

Phone: 0 800 7 910 18  
Fax: 0 800 7 910 19

### Latin America

**3M Brasil**  
Via Anhanguera km  
110 Sumare  
Sao Paulo CEP 13181-900  
Brasil  
Phone: 0800 0132333

**3M Mexico**  
Santa Fe 190, Col. Santa Fe  
Deleg. Alvaro Obregon  
Mexico D.F., C.P. 01210  
México  
Phone: 0052 5552700 400  
Ext 82935

### Asia

**3M Japan**  
6-7-29, Kita-Shinagawa  
Shinagawa-ku  
Tokyo 141-8684  
Japan  
Phone: 81 570 022 123

**3M Korea**  
19F, 82, Uisadang-daero  
Yeongdeungpo-gu, Seoul, 150-705  
Korea  
Phone: 82 2 3771 4027

**3M Taiwan**  
6F, No.95, Sec. 2  
Dunhua S. Rd.  
Taipei 10682  
Taiwan  
Phone: 886 2 2704 9011

**3M Thailand**  
150 Soi Chalongsong 31  
Ladkrabang Bangkok, 10520  
Thailand  
Phone: 66 2739 4803 9  
Ext 2354

### USA

**3M Advanced Materials Division**  
3M Center, 280-01W-03  
St. Paul, MN 55144-1000  
United States  
Phone: 1 800 810 8499

Please visit [3M.com/fluoropolymers](http://3M.com/fluoropolymers) for additional regional contact information.

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### 3M Advanced Materials Division

3M Center  
St. Paul, MN 55144 USA

Phone 1-800-810-8499  
Web [www.3M.com/fluoropolymers](http://www.3M.com/fluoropolymers)

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