

3M™ Dyneon™ Fluoroelastomer FC 1650

Features and Benefits

- Composition: di-polymer of vinylidene fluoride and hexafluoropropylene
- Medium viscosity gumstock without incorporated curatives
- Process targets: injection and transfer molding, extrusion, calendaring and coatings
- FC 1650 is amine or bisphenol curable

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

Typical Properties

Property	
Fluorine Content	65.9%
Specific Gravity	1.80
Color	Straw or White
Solubility	Ketones and Esters
Mooney Viscosity ML 1 + 10 @ 121°C (250°F)	Approximately 47

Product Description

3M™ Dyneon™ Fluoroelastomer FC 1650 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 1650 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 1650 is packaged in crumb form and is available in a returnable bulk shipping container system for 1,485 lbs (674 kg) of material. The bulk container system is comprised of 54 individual polyethylene bags containing 27.5 lbs (12.5 kg) of product. Crumb can vary in color and shape and may cold flow into a mass or bale.

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 include evolution of toxic vapors 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

All 3M fluoroelastomers are manufactured at ISO 9001 registered facilities. Our product realization process is also ISO 9001 registered.



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

Typical Properties of Vulcanizate

Compound	phr
FC 1650	100
N990 MT Carbon Black	30
MgO	3
Ca(OH) ₂	6
Phosphonium Accelerator	0.5
Dihydroxy Crosslinker	2.0

Typical Rheological Properties [ASTM D5289] Moving Die Rheometer (MDR) 100 cpm, 0.5° Arc, 6 Minutes @ 177°C (350°F)

Temperature	177°C (350°F)
ML, Minimum Torque, Inch-lb (dN m)	1.2 (1.3)
t ₂ , Time to 2 Inch-lb rise from Minimum – Minutes	1.8
t ⁵⁰ , Time to 50% Cure – Minutes	2.3
t ⁹⁰ , Time to 90% Cure – Minutes	3.2
MH, Maximum Torque, Inch-lb (dN m)	20.5 (23.1)

Typical Physical Properties Press Cure 7 Minutes @ 177°C (350°F) Post Cure 24 Hours @ 260°C (500°F)

Tensile, psi (MPa)	2000 (13.8)
100% Modulus, psi (MPa)	995 (6.9)
Elongation at Break, %	170
Hardness, Shore A [ASTM D2240]	75

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

Aged 70 Hours @ 200°C (392°F), % Set	15
--------------------------------------	----

TR10 [ASTM D1329]	-18°C (0°F)
-------------------	-------------

Warranty, Limited Remedy, and Disclaimer: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. User is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application. User is solely responsible for evaluating third party intellectual property rights and for ensuring that user's use of 3M product does not violate any third party intellectual property rights. Unless a different warranty is specifically stated in the applicable product literature or packaging insert, 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OF NON-INFRINGEMENT OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damages arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

Technical Information: Technical information, recommendations, and other statements contained in this document or provided by 3M personnel are based on tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed. Such information is intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.



Advanced Materials Division

3M Center
St. Paul, MN 55144-1000
1-800-810-8499
www.3M.com

Please recycle. Printed in USA.
© 3M 2014. All rights reserved.
Issued: 3/14 9669HB
98-0800-0526-1

3M and Dyneon are trademarks of 3M Company.
Used under license.