



A 3M Company

Dyneon™

Base Resistant Elastomer

BRE 7231X

Features

- Composition: Terpolymer of tetrafluoroethylene, propylene and vinylidene fluoride
- Improved resistance to new types of amine containing automotive fluids and other basic chemicals
- Improved low temperature sealing performance
- Application targets: bonded shaft seals and other molded goods
- Excellent processability and metal adhesion
- Process targets: injection, transfer and compression molding
- Proprietary incorporated cure technology

Typical Properties (Experimental-Data not for specification purposes)

Fluorine Content	60%
Specific Gravity	1.60
Color	Straw
Solubility	Ketones and Esters
Mooney Viscosity ML 1 + 10 @ 121°C (250°F) (3M 2.14.4)	Approx. 34

Recommended Processing Procedure

BRE 7231X 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. **The cure system in BRE 7231X is retarded by contamination with fluoroelastomers (FKM). For this reason, curatives and/or chemical dispersions in FKM, as well as blends with FKM, should not be used.** For best results, BRE 7231X 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.

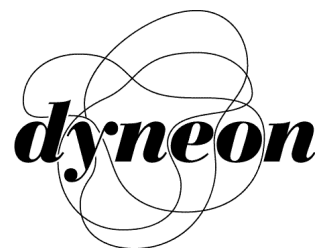
Product Form

BRE 7231X 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 27.5 lb. (12.5 kg) green polyethylene bags. Smaller quantities are available in 55.1 lb. (25.0 kg) boxes.

Safety/Toxicology

Follow recommended handling precautions for use of Dyneon base resistant elastomers. General handling precautions include: (1) Store and use all Dyneon base resistant elastomers only in well ventilated areas. (2) Do not smoke in areas contaminated with dust from Dyneon base resistant elastomers. (3) Avoid eye contact. (4) After handling Dyneon base resistant elastomers 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 base resistant elastomers, 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™ base resistant elastomers are manufactured at ISO 9001 registered facilities. Dyneon base resistant elastomers produced in North America are manufactured at QS-9000 registered facilities.

Typical Properties of Vulcanizate (Experimental-Data not for specification purposes)

Compound	phr
BRE 7231X	100
MT Black (N990)	30
MgO	3
Ca(OH) ₂	6

Typical Rheological Properties Monsanto Moving Die Rheometer (MDR2000®) 100 cpm, 0.5° Arc, 6 minutes

Temperature °C (°F)	177°	(350°)
ML, Minimum Torque, inch-lb (dN m)	1.2	(1.3)
ts2, Time to 2 inch-lb rise from minimum - minutes	1.4	
t'50, Time to 50% cure - minutes	1.6	
t'90, Time to 90% cure - minutes	2.4	
MH, Maximum Torque, inch-lb (dN m)	10.0	(11.3)

Typical Physical Properties [3M 125.17.1 and 125.17] Press Cure 10 minutes @ 177°C (350°F) Post Cure 16 hours @ 232°C (450°F)

Tensile, psi (Mpa)	1900	(13.1)
100% Modulus, psi (Mpa)	800	(5.5)
Elongation at break %	200	
Hardness, Shore A (ASTM D 2240)	72	

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

Aged 70 hours @ RT	27
Aged 70 hours @ 150°C (302°F)	19
Aged 70 hours @ 177°C (350°F)	20

TR10 [ASTM D 1329] °C (°F) -9 (16)

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.

Product Identification

The "X" product designation indicates that this is a newly commercialized product and Dyneon reserves the right to make additional process modifications without notice to purchasers as long as the product meets Dyneon published specifications. Once the commercial production process for this product is standardized, the "X" designation will be dropped from the product code.

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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