



Viton® fluoroelastomer

From DuPont Performance Elastomers

Technical Information

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A-500

Introduction

Viton® A-500* fluoroelastomer is a new generation “A-family” gum polymer that provides improved processing when compared with existing fluoroelastomers.

Viton® A-500 is designed for use with the clean molding bisphenol curative, Viton® Curative No. 50.

Compared to “A-family” dipolymers, Viton® A-500 provides:

- Improved compression molding
- Better mold release
- Less mold fouling
- Faster cure rate
- Improved compression set resistance

Applications

- Compression and transfer molding
 - O-rings
 - gaskets
 - seals
- Profile extrusion
- Calendered goods

* Viton® A-500 was formerly named VTR-6517.

Product Description

Chemical Composition	Dipolymer of hexafluoropropylene and vinylidene fluoride
Physical Form	Free-flowing pellets
Color	Silver-gray
Odor	None
Specific Gravity	1.82
Solubility and Ketones	Low molecular weight esters
Storage Stability	Excellent
Mooney Viscosity (ML 1+10 at 121°C [250°F])	50

Safety and Handling

Before handling or processing Viton® A-500, please read and be guided by the recommendations in DuPont Performance Elastomers bulletin “Handling Precautions for Viton® and Related Chemicals.”

Viton® A-500 should be handled like other types of Viton®. Keep off skin and wash well after handling. For the safe handling of other compounding ingredients, please consult specific manufacturers.

Table 1
Viton® A-500 Compared with Viton® E-60C

	Viton® A-500	Viton® E-60C
Viton® A-500	96.5	—
Viton® E-60C	—	100
MT Black	30	30
High Activity Magnesium Dioxide	3	3
Calcium Hydroxide	6	6
VC-50	2.5	—
VPA No. 1	0.5	—
VPA No. 3	0.5	—
Stock Properties		
Mooney Scorch, MS at 121°C (250°F)		
Minimum, units	47	41
Time to 1-pt rise, min	30	30
ODR at 177°C (350°F), Microdie, 3° arc, 12 min		
M _L , N·m (in·lb _F)	2.0 (17)	1.7 (15)
t _{S2} , min	1.5	2.1
t ₉₀ , min	2.9	4.4
M _{H'} , N·m (in·lb _F)	14.2 (123)	13.8 (119)
Vulcanizate Properties		
Press Cure: 5 min/177°C (350°F)		
Post Cure: 24 hr/232°C (450°F)		
Stress/Strain—Original		
100% Modulus, MPa (psi)	7.2 (1050)	7.2 (1050)
Tensile Strength, MPa (psi)	15.6 (2260)	14.2 (2060)
Elongation at break, %	195	180
Hardness, durometer A	78	80
Stress/Strain—After 70 hr/275°C (528°F)		
100% Modulus, MPa (psi)	5.6 (810)	6.6 (950)
Tensile Strength, MPa (psi)	12.5 (1810)	12.0 (1740)
Elongation at break, %	205	185
Hardness, durometer A	78	79
Compression Set, Method B, O-rings, %		
22 hr/200°C (392°F)	9	11
70 hr/200°C (392°F)	15	22
70 hr/232°C (450°F)	31	43
336 hr/200°C (392°F)	26	43

Test Procedures
(Test temperature is 24°C [75°F] except where specified otherwise)

Property Measured	Test Procedure
Compression Set	ASTM D395-85, Method B (25% deflection)
Compression Set—Low Temperature	ASTM D1299-87, Method B (25% deflection)
Compression Set, O-rings	ASTM D1414-78 (87)
Hardness	ASTM D2240-87, durometer A
Mooney Scorch	ASTM D1646-87, using the small rotor. Minimum viscosity and time to a 1-unit, 5-unit or a 10-unit rise are reported.
Mooney Viscosity	ASTM D1646-87, ten pass 100°C, 121°C
ODR (Vulcanization characteristics measured with an oscillating disk cure meter)	ASTM D2084
Property Change After Oven Heat-Aging	ASTM D573-88
Stress/Strain Properties	
100% Modulus	ASTM D412-87, pulled at 8.5 mm/s (20 in/min)
Tensile Strength	
Elongation at Break	
Stiffness, Torsional, Clashberg	ASTM D1043-87
Temperature Retraction	ASTM D1329-88
Volume Change in Fluids	ASTM D471-79

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