

# The O-Ring Store LLC



We make getting o-rings easy!

## **TEFLON/FEP ENCAPSULATED VITON DATA SHEET FOR COMPOUND TEV**

### **Compound Features:**

- Virtually chemically inert encapsulation material.
- Better elasticity and sealing ability than a solid PTFE O-Ring.
- FDA compliant per CFR 177.1550
- USP Class VI compliant.
- NSF compliant.
- Low coefficient of friction.
- Good compression set resistance.
- Good wear resistance.

### **Compound Limitations:**

- Low elastic material.
- Hard to install in certain components.
- Limited to only static applications.

### **Total Shore A Durometer:**

**90-95 Durometer**

### **Temperature Range:**

**-10°F to +300°F (-23°C to +149°C)**

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MECHANICAL PROPERTIES			
Properties	ASTM Test Method	Unit of Measure	FEP Encapsulation Compound Property
Specific Gravity	D792	%	2.15
Elongation	D638	%	250 ~ 330
Tensile Strength	D638	Psi	2,800 ~ 5,000
Flexural Strength	D790	Psi	No break
Compressive Strength	D695	Psi	2,200
Tensile Elastic Modulus (Young's Modulus)	D638	Psi	50,000
Flexural Modulus	D790	Psi	78,000 ~ 92,000
		103MPa (103kgf/cm <sup>2</sup> )	0.5-0.6 (5.5-6.5)
Flex Life	D2176	MIT Cycles	5,000 ~ 80,000
Hardness Durometer	D636	Shore D	55
Coefficient of Friction	On Steel	COF	0.05
Abrasion Resistance	Taber	Taber	14 ~ 20
Impact Strength IZOD 73°F/23°C Notched Ft/Lbs./In	D256	-	No Break
THERMAL PROPERTIES			
Properties	ASTM Test Method	Unit of Measure	FEP Encapsulation Compound Property
Melting Point	-	°C (°F)	260 (500)
Upper Service Temperature	20,000 H	°C (°F)	200 (392)
Flame Rating	UL 94	-	V-0
Thermal Conductivity	-	BTU/hr/ft <sup>2</sup> /deg F in	1.4
		cal/sec/cm <sup>2</sup> ,°C/cm	6 x 10
Linear Coefficient of Thermal Expansion	D696	10-5 °C	8.3 ~ 10.5
Heat of Fusion	-	BTU/LB	11
Heat of Combustion	-	BTU/LB	2200
Low Temperature Embrittlement	-	°C (°F)	-268 (-450)
ELECTRICAL PROPERTIES			
Properties	ASTM Test Method	Unit of Measure	FEP Encapsulation Compound Property
Dielectric Constant	D150	10 <sup>3</sup> Hz	2.1
		10 <sup>6</sup> Hz	2.1
Dielectric Strength	D149	10 mil film	>2000
Volume Resistivity	D257	ohm-cm	>10 <sup>18</sup>
Surface Resistivity	D257	ohm/sq.	>10 <sup>17</sup>

Information within is believed to be accurate and reliable. However, The O-Ring Store, LLC makes no warranty, expressed or implied, that parts supplied in this material will perform satisfactorily in specific applications. It's the customer's responsibility to evaluate the material prior to use.

**1005 Warner Ave, Suite A Lewiston ID 83501 | Phone (208) 413-6377 Fax (208) 413-6719**

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GENERAL PROPERTIES			
Properties	ASTM Test Method	Unit of Measure	FEP Encapsulation Compound Property
Chemical / Solvent Resistance	D543	-	Excellent
Water Absorption	24hrs	%	<0.01
Deformation Under Load	D257 (24hrs @ 986psi 100°C)	%	5
	D257 (24hrs @ 1987psi 125°C)	%	3
Refractive Index	-	%	1.338
Limiting Oxygen Index	-	%	>95

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## Technical Information

### 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 with "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

### Safety and Handling

Before handling or processing Viton™ A-500, please read and be guided by the recommendations as described in the Chemours technical bulletin, "Handling Precautions for Viton™ and Related Chemicals."

Viton™ A-500 should be handled similar to other types of Viton™. Keep off skin and wash well after handling. For safe handling of other compounding ingredients, please refer to the respective manufacturers' information.

### 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	Low molecular weight esters and ketones
Storage Stability	Excellent
Mooney Viscosity, ML 1 + 10 at 121 °C (250 °F)	50

\*Viton™ A-500 was formerly named VTR-6517.

**Table 1. General Properties of 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 Oxide	3	3
Calcium Hydroxide	6	6
VC-50	2.5	—
VPA No. 1	0.5	—
VPA No. 3	0.5	—
<b>Stock Properties</b>		
<b>Mooney Scorch, MS at 121 °C (250 °F)</b>		
Minimum, in-lb	47	41
Time to 1-unit rise, min	30	30
<b>ODR at 177 °C (350 °F), Microdie, 3° Arc, 12 min</b>		
M <sub>L</sub> , N·m in-lbf	2.0 (17)	1.7 (15)
t <sub>s2</sub> , min	1.5	2.1
t'90, min	2.9	4.4
M <sub>H</sub> , N·m in-lbf	14.2 (123)	13.8 (119)
<b>Vulcanizate Properties</b>		
Press-Cure: 10 min at 177 °C (350 °F) Post-Cure: 24 hr at 232 °C (450 °F)		
<b>Stress/Strain—Original</b>		
100% Modulus, MPa (psi)	7.2 (1,050)	7.2 (1,050)
Tensile Strength, MPa (psi)	15.6 (2,260)	14.2 (2,060)
Elongation at Break, %	195	180
Hardness, durometer A, points	78	79
<b>Stress/Strain—After 70 hr at 275 °C (528 °F)</b>		
100% Modulus, MPa (psi)	5.6 (810)	6.6 (950)
Tensile Strength, MPa (psi)	12.5 (1,810)	12.0 (1,740)
Elongation at Break, %	205	185
Hardness, durometer A, points	78	79
<b>Compression Set, Method B, O-Rings, %</b>		
22 hr at 200 °C (392 °F)	9	11
70 hr at 200 °C (392 °F)	15	22
70 hr at 232 °C (450 °F)	31	43
336 hr at 200 °C (392 °F)	26	43

## Test Procedures

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-, 5-, and 10-unit rise are reported.
Mooney Viscosity	ASTM D1646, ten pass 100 °C (212 °F) and 121 °C (250 °F)
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 Tensile Strength Elongation at Break	ASTM D412-87, pulled at 8.5 mm/sec (20 in/min)
Stiffness, Torsional, Clash-Berg	ASTM D1043-87
Temperature Retraction	ASTM D1329-88
Volume Change in Fluids	ASTM D471-79

Note: Test temperature is 24 °C (75 °F), except where specified otherwise.

## For more information, visit [Viton.com](http://Viton.com)

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