# **Technical Information**

#### Introduction

Viton Extreme ETP-600S\* combines the excellent thermal resistance of Viton fluoroelastomers with unique resistance to chemicals and environments that have historically exceeded the capabilities of conventional fluoroelastomers. Viton Extreme ETP-600S provides:

- Excellent resistance to acid, hydrocarbon, and low molecular weight esters, ketones, and aldehydes
- Inherent resistance to base attack and volume changes in highly caustic solutions, amines, and hot water
- Low-temperature flexibility (Tg -10 °C [14 °F])

Compounds based on ETP-600S can be readily processed in the same manner used for mixing, preforming, and molding conventional fluoroelastomers.

### Safety and Handling

Before handling or processing Viton Extreme ETP-600S, be sure to read and be guided by the suggestions in the Chemours technical bulletin, "Handling Precautions for Viton and Related Chemicals."

# **Product Description**

Chemical Composition	Copolymer of ethylene, tetrafluoroethylene, perfluoromethylvinyl ether, and a cure site monomer
Physical Form	Sheet
Appearance	Off-white to tan
Odor	None
Mooney Viscosity, ML 1+10 at 121 °C (250 °F)	Nominal 60
Specific Gravity	1.82
Storage Stability	Excellent
Fluorine, %	~67

\*Viton™ Extreme™ ETP-600S was formerly named VTR-8710.



Viton Fluoroelastomers

Table 1. General Properties of Viton™ Extreme™ ETP-600S

	Viton" Extreme" ETP-600S
Compound Formulation	
Viton™ Extreme™ ETP-600S	100.0
Zinc Oxide	3.0
Viton™ Curative No. 7 (VC-7)	3.0
Luperox® 101XL45	3.0
MT (N990) Carbon Black	30.0
Total	139.0
Mooney Scorch at 121 °C (250 °F)	
ML, Mooney Units	48
T1, min	19.9
T5, min	25.2
T10, min	28.8
T15, min	>30
ODR at 177 °C (351 °F), 3° arc, 12 min clock	
M <sub>L</sub> , dNm	25.7
M <sub>H</sub> , dNm	108.5
t <sub>s</sub> 1, min	0.8
$t_s 2$ , min	0.9
T'50, min	1.8
T'90, min	4.3
MDR at 177 °C (351 °F), 0.5 arc, 12 min clock	
$M_{l}$ , dNm	2.7
M <sub>H</sub> , dNm	17.7
t <sub>s</sub> 1, min	0.4
t <sub>s</sub> 2, min	0.5
T'50, min	0.7
T'90, min	1.8
T'95, min	2.7
Physical Properties at 23 °C (73 °F), Cured 7 min at 177 °C (351 °F), Post-cured 16 hr at 200 °C	
M50, MPa	2.8
M100, MPa	7.9
Tb, MPa	18.3
Eb, %	225
Hardness, Shore A	76
Physical Properties at 23 °C (73 °F), Aged 168 hr at 250 °C (482 °F)	
M50, MPa	2.3
M100, MPa	7.0
Tb, MPa	15.9
Eb, %	265

continued

Viton<sup>w</sup> Fluoroelastomers

Table 1. General Properties of Viton™ Extreme™ ETP-600S (continued)

Change in M50, %         −18           Change in M100, %         −11           Change in ID, %         −13           Change in ID, %         18           Change in ID, %         18           Change in ID, %         18           Change in ID, %         19           M50, MPa         1,3           M100, MPa         40           15, MPa         10.1           16, MPa         10.1           16, MPa         200           18 archaes, Shore A         80           Change in M50, %         −54           Change in M50, %         −54           Change in M50, %         −49           Change in M50, %         −45           Change in M50, %         −45           Change in M50, %         −54           Change in M50, %         −27           M50, MPa         27           M50, M		Viton" Extreme" ETP-600S
Change in M50, %         −18           Change in M100, %         −11           Change in ID, %         −13           Change in ID, %         18           Change in ID, %         18           Change in ID, %         18           Change in ID, %         19           M50, MPa         1,3           M100, MPa         40           15, MPa         10.1           16, MPa         10.1           16, MPa         200           18 archaes, Shore A         80           Change in M50, %         −54           Change in M50, %         −54           Change in M50, %         −49           Change in M50, %         −45           Change in M50, %         −45           Change in M50, %         −54           Change in M50, %         −27           M50, MPa         27           M50, M	Change in S/S after 168 hr at 250 °C (482 °F)	
Change in 1b, %	Change in M50, %	-18
Change in Eb. %         18           Change in Hd (# pts)         −1           Physical Properties at 23 °C (73 °F), Aged 168 hr at 23 °C (73 °F) in MEK         1.3           M 100, MPa         4.0           1b, MPa         10.1           Eb., %         200           Hardness, Shore A         60           Change in MSo, %         −54           Change in MSo, %         −49           Change in MDo, %         −49           Change in Hd (nts)         −16           Change in Hd (nts)         −16           Change in Hd (nts)         −2           Change in Hd (nts)         −2           Wolune Change, %         −21           Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water           M50, MPa         7.2           Tb, MPa         17.2           Bb, %         2.7           M100, MPa         7.2           Tchange in Tb, %         7.2           Change in Tb, %         7.2           Change in Tb, %         7.2           Change in Tb, %         −2           Change in Tb, %         −2           Change in Tb, %         −2           Change in Tb, % <td< td=""><td>Change in M100, %</td><td>-11</td></td<>	Change in M100, %	-11
Change in Hd (# pts)         −1           Physical Properties at 23 °C (73 °F), Aged 168 hr at 23 °C (73 °F) in MEK         1.3           M50, MPa         40           1b, MPa         101           Eb, %         200           Hardness, Shore A         60           Change in SS after 168 hr at 23 °C (73 °F) in MEK         −54           Change in M50, %         −54           Change in M50, %         −49           Change in M50, %         −49           Change in M50, %         −45           Change in M50, %         −45           Change in M50, %         −45           Change in H2 (ns)         −16           Volume Change, %         −21           Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water           M50, MPa         27           M100, MPa         72           1b, M6a         12           Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water           M50, MPa, %         27           M100, MPa, %         27           M100, MPa, %         27           M100, MPa, %         22           M50, MPa, %         22           M50, MPa         2	Change in Tb, %	-13
Physical Properties at 23 °C (73 °F), Aged 168 hr at 23 °C (73 °F) in MEX           M50, MPa         1.3           M50, MPa         4.0           1b, MPa         10.1           bb, %         200           Hardness, Shore A         60           Change in MSO, %         -54           Change in M100, %         -49           Change in M100, %         -45           Change in M10, %         -45           Change in Hb, %         -11           Change in Hb, %         -16           Change in ND, Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         21           M50, MPa         2.7           M100, MPa         7.2           1b, MPa         17.2           1b, MPa         17.2           1b, MPa         220           Hardness, Shore A         7.5           Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         7.5           M50, MPa, %         2.7           M100, MPa, %         7.2           Change in Ib, %         -6           Change in Ib, %         -6           Change in Ib, (fight)         -1           Volume Change, %         -2	Change in Eb, %	18
Physical Properties at 23 °C (73 °F), Aged 168 hr at 23 °C (73 °F) in MEX           M50, MPa         1.3           M50, MPa         4.0           1b, MPa         10.1           bb, %         200           Hardness, Shore A         60           Change in MSO, %         -54           Change in M100, %         -49           Change in M100, %         -45           Change in M10, %         -45           Change in Hb, %         -11           Change in Hb, %         -16           Change in ND, Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         21           M50, MPa         2.7           M100, MPa         7.2           1b, MPa         17.2           1b, MPa         17.2           1b, MPa         220           Hardness, Shore A         7.5           Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         7.5           M50, MPa, %         2.7           M100, MPa, %         7.2           Change in Ib, %         -6           Change in Ib, %         -6           Change in Ib, (fight)         -1           Volume Change, %         -2		-1
M50, MPa       1.3         M100, MPa       4.0         1b, MPa       10.1         Eb, %       200         Hardness, Shore A       60         Change in S/S after 168 hr at 23 °C (73 °F) in MEX       -54         Change in M50, %       -54         Change in B, %       -45         Change in Bb, %       -11         Change in Bb, %       -11         Change in Hd, (bts)       -16         Volume Change, %       -21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       72         M100, MPa       72         Th, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       27         M100, MPa, %       72         Change in Tb, %       -6         Change in Tb, %       -6         Change in Tb, %       -6         Change in Tb, %       -2         Change in Tb, %       -2         Change in Tb, %       -2         Change in Tb, %       -6 <td>Physical Properties at 23 °C (73 °F), Aged 168 hr at 23 °C (73 °F) in MEK</td> <td></td>	Physical Properties at 23 °C (73 °F), Aged 168 hr at 23 °C (73 °F) in MEK	
Tb, MPa       10.1         Eb, %       200         Hardness, Shore A       60         Change in NS after 168 hr at 23 °C (73 °F) in MEK       -54         Change in M100, %       -49         Change in Tb, %       -45         Change in Hd (bts)       -16         Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       2.7         M100, MPa       7.2         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       2.2         Change in Tb, %       -6         Change in Tb, %       -6         Change in Tb, %       -2         Change in Tb, %       -2         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M60, MPa       62         Tb, MPa       15	M50, MPa	1.3
Tb, MPa       10.1         Eb, %       200         Hardness, Shore A       60         Change in NS after 168 hr at 23 °C (73 °F) in MEK       -54         Change in M100, %       -49         Change in Tb, %       -45         Change in Hd (bts)       -16         Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       2.7         M100, MPa       7.2         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       2.2         Change in Tb, %       -6         Change in Tb, %       -6         Change in Tb, %       -2         Change in Tb, %       -2         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M60, MPa       62         Tb, MPa       15	M100, MPa	4.0
Hardness, Shore A 60 Change in S/S after 168 hr at 23 °C (73 °F) in MEK Change in M50,% −54 Change in M100, % −49 Change in Itb, % −45 Change in Bb, % −11 Change in Hd (pts) −16 Change, % −16 Change, % −16 Wolume Change, % −2 Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water  M50, MPa 17.2 Eb, % −2 Change in Itb, % −6 Change in Hd, (pts) −7 Change in Hd, (pts) −7 Eb, % −2 Change in Hd, (pts) −6 Change in Eb, % −2 Change in Hd, (pts) −6 Change in Eb, % −2 Change in Hd, (pts) −6 Change in Eb, % −2 Change in Hd, (pts) −2 Change in	Tb, MPa	10.1
Hardness, Shore A 60 Change in S/S after 168 hr at 23 °C (73 °F) in MEK Change in M50,% −54 Change in M100, % −49 Change in Itb, % −45 Change in Bb, % −11 Change in Hd (pts) −16 Change, % −16 Change, % −16 Wolume Change, % −2 Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water  M50, MPa 17.2 Eb, % −2 Change in Itb, % −6 Change in Hd, (pts) −7 Change in Hd, (pts) −7 Eb, % −2 Change in Hd, (pts) −6 Change in Eb, % −2 Change in Hd, (pts) −6 Change in Eb, % −2 Change in Hd, (pts) −6 Change in Eb, % −2 Change in Hd, (pts) −2 Change in	Eb, %	200
Change in M50, %       -54         Change in M100, %       -49         Change in Tb, %       -45         Change in Eb, %       -11         Change in Hd (pts)       -16         Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       2.7         M100, MPa       7.2         Tb, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M50, MPa, %       2.7         Change in Tb, %       -6         Change in Tb, %       -6         Change in Tb, %       -6         Change in Hd, (pts)       -2         Volume Change, %       -2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Hardness, Shore A	60
Change in M100,%       -49         Change in Tb, %       -45         Change in Eb, %       -11         Change in Hd (pts)       -16         Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       2.7         M100, MPa       7.2         Tb, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -2         Volume Change, %       -2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Change in S/S after 168 hr at 23 °C (73 °F) in MEK	
Change in M100,%       -49         Change in Tb, %       -45         Change in Eb, %       -11         Change in Hd (pts)       -16         Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       2.7         M100, MPa       7.2         Tb, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -2         Volume Change, %       -2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Change in M50, %	-54
Change in Eb, %       —11         Change in Hd (pts)       —16         Volume Change, %       —21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       —7.2         Tb, MPa       17.2         Eb, %       —20         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       —2.7         M100, MPa, %       7.2         Change in Tb, %       —6         Change in Eb, %       —2         Change in Hd, (pts)       —1         Volume Change, %       —2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       —2         M100, MPa       —1         M100, MPa       —2         M100, MPa       —2         M100, MPa       —3         M100, MPa       —3	Change in M100, %	-49
Change in Eb, %       —11         Change in Hd (pts)       —16         Volume Change, %       —21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa       —7.2         Tb, MPa       17.2         Eb, %       —20         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       —2.7         M100, MPa, %       7.2         Change in Tb, %       —6         Change in Eb, %       —2         Change in Hd, (pts)       —1         Volume Change, %       —2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       —2         M100, MPa       —1         M100, MPa       —2         M100, MPa       —2         M100, MPa       —3         M100, MPa       —3	Change in Tb, %	-45
Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water       2.7         M50, MPa       2.7         M100, MPa       1.72         Tb, MPa       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water       2.7         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Change in Eb, %	-11
Volume Change, %       21         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water       2.7         M50, MPa       2.7         M100, MPa       1.72         Tb, MPa       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water       2.7         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Change in Hd (pts)	-16
M50, MPa       2.7         M100, MPa       7.2         Tb, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Hd, (pts)       -2         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Volume Change, %	21
M100, MPa       7.2         Tb, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in w	rater
Tb, MPa       17.2         Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Hb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	M50, MPa	2.7
Eb, %       220         Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	M100, MPa	7.2
Hardness, Shore A       75         Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Tb, MPa	17.2
Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in water         M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Eb, %	220
M50, MPa, %       2.7         M100, MPa, %       7.2         Change in Tb, %       -6         Change in Bb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Hardness, Shore A	75
M100, MPa, %       7.2         Change in Tb, %       -6         Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Physical Properties at 23 °C (73 °F), Aged 168 hr in 100 °C (212 °F) in 30% potassium hydroxide in w	vater
Change in Tb, %  Change in Eb, %  Change in Hd, (pts)  Change, %  Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive  M50, MPa  M100, MPa  Eb, %  26  27  28  29  20  20  20  21  20  21  21  21  21  21	M50, MPa, %	2.7
Change in Eb, %       -2         Change in Hd, (pts)       -1         Volume Change, %       2         Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	M100, MPa, %	7.2
Change in Hd, (pts)  Volume Change, %  Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive  M50, MPa  2.2  M100, MPa  6.2  Tb, MPa  15.7  Eb, %  215	Change in Tb, %	-6
Volume Change, % 2  Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive  M50, MPa 2.2  M100, MPa 6.2  Tb, MPa 15.7  Eb, % 215	Change in Eb, %	-2
Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH additive         M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Change in Hd, (pts)	-1
M50, MPa       2.2         M100, MPa       6.2         Tb, MPa       15.7         Eb, %       215	Volume Change, %	2
M100, MPa 6.2 Tb, MPa 15.7 Eb, % 215	Physical Properties at 23 °C (73 °F), Aged 168 hr in 150 °C (302 °F) in axle lubricant with 6% high pH	additive
Tb, MPa     15.7       Eb, %     215	M50, MPa	2.2
Eb, % 215	M100, MPa	6.2
	Tb, MPa	15.7
Hardness, Shore A 76	Eb, %	215
	Hardness, Shore A	76

continued

Viton<sup>w</sup> Fluoroelastomers

Table 1. General Properties of Viton<sup>™</sup> Extreme<sup>™</sup> ETP-600S (continued)

	Viton" Extreme" ETP-600S
Change in S/S after 168 hr at 150 °C (302 °F) in axle lubricant with 6% high pH additive	
Change in M50, %	-22
Change in M100, %	-21
Change in Tb, %	-14
Change in Eb, %	-4
Change in Hd (pts)	0
Volume Change, %	4
Compression Set, Method B (0-Rings)	
Aged 70 hr at 150 °C (302 °F), %	34
Aged 70 hr at 200 °C (392 °F), %	51
Aged 336 hr at 150 °C (302 °F), %	50
Low Temperature Properties	
TR10, °C (°F)	-7 <b>(19)</b>
Tg by MDSC, °C (°F)	-10 (14)

Viton\* Fluoroelastomers

### **Test Procedures**

Property Measured	Test Procedure
Compression Set	ASTM D3955, Method B (25% deflection)
Compression Set—Low Temperature	ASTM D1299, Method B (25% deflection)
Compression Set, O-Rings	ASTM D1414
Hardness	ASTM D2240, durometer A
Mooney Scorch	ASTM D1646, using the small rotor. Minimum viscosity and time to a 1-, 5-, or a 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
Stress/Strain Properties 100% Modulus Tensile Strength Elongation at Break	ASTM D412, pulled at 8.5 mm/sec (20 in/min)
Stiffness, Torsional, Clash-Berg	ASTM D1043
Temperature Retraction	ASTM D1329
Volume Change in Fluids	ASTM D471

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

# For more information, visit Viton.com

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