Viton™ GLT-200S A

Fluoroelastomers

Product Information

Introduction

Viton™ GLT-200S A fluoroelastomer is a 64% fluorine, peroxide-cured, low temperature fluoroelastomer similar to Viton™ GLT-600S A, but with a significantly lower gum polymer viscosity of ~25 (ML at 121 °C (250 °F)). Viton™ GLT-200S A utilizes the latest Advanced Polymer Architecture (APA) and FWRD technologies from Chemours, enabling high performance in the most critical applications, without the use of a fluorinated surfactant during production.

Features

- Ideal for low temperature applications with a Tg of -32°C (-26 °F).
- Excellent fluid resistance to aromatic hydrocarbons and alcohols, including methanol and ethanol, biodiesel, oils, hot water and steam, as well acids.
- Compatible with latest EV fluids, (oils and coolants, transmission, and thermal fluids) as well as cooling systems used in hydrogen applications.
- Excellent physical properties with high elongation, both original and aged in standard compounds and in formulations with no or low filler, even after aging.
- Outstanding compression set resistance with either low or no post-cure.
- Great color stability in mineral filled compound formulations.
- Ideal for blending with Viton™ GLT-600S A to reach intermediate viscosity ranges for injection molding as well as with other FWRD APA grades (*e.g.*, GBL-S A, GFLT-S A).
- Manufactured without fluorinated surfactant.

Compounding and processing

- Viton™ Curative No. 7 (VC-7) is the suggested coagent for all Viton™ GLT-200S A compounds and is usually used at a 2.5 phr level or lower, unless high modulus is needed. High levels of VC-7 can bleed out and cause molding flaws.
- The use of TMAIC (trimethallyl isocyanurate) is not suggested, as it causes poor mold release and high compression set.
- 2,5-Bis(*tert*-butylbutoxy)-2,5-dimethylhexane is used commonly as crosslinking peroxide, often as 45% active free flowing powder on a silica/calcium carbonate carrier. Typical levels are 1.5 phr or lower.
- The suggested process aids for Viton™ GLT-200S A are Struktol® HT-290, either alone or in combination with Struktol® WS-280 (recommended level 0.75 to 1.0phr). Armeen® 18D or PAT®-44/04 are also suitable for use with Viton™ GLT-200S A compounds.
- Viton™ GLT-200S A can be easily compounded on hot roll mills as well as in internal mixers (recommended >72% load factor for the latter).

Safety and Handling

Before handling or processing Viton™ GLT-200S A, be sure to read and be guided by the suggestions in the Chemours technical bulletin, “Handling Precautions for Viton™ and Related Chemicals”.

Product Description

Viton™ GLT-200S A	
Chemical Composition	Terpolymer of perfluoromethylvinyl ether, vinylidene fluoride, tetrafluoroethylene, and a proprietary cure site monomer
Physical Form	Sheet
Appearance	Off-white to tan
Odor	None
Mooney Viscosity, ML 1 + 10 at 121 °C (250 °F)	25
Specific Gravity	1.80
Storage Stability	Excellent
Fluorine, %	~64

Table 1. General properties of Viton™ GLT-200S A

Compound	phr
Viton™ GLT-200S A	100
Thermax® Floform N990	30
Zinc Oxide	3
Viton™ Curative No. 7 (VC-7)	2.2
Luperox® 101 XL 45	1.5
Struktol® HT 290	1
Rheological Properties	
Mooney Viscosity, ML 1+10 at 121 °C (250 °F)	
Final Mooney, MU	32
Mooney Viscosity, ML 1+4 at 100 °C (212 °F)	
Final Mooney, MU	48
MDR Cure Rate - 180 °C (356 °F) / 6 min / arc 0.5°	
ML, dNm	0.69
MH, dNm	24.3
Ts1, min	0.37
Ts2, min	0.41
T10, min	0.42
T50, min	0.60
T90, min	0.97
Mooney Scorch - 135 °C (275 °F) / 45 min	
Initial Mooney, MU	24
Minimum Mooney, MU	12
Ts1, min	6.2
Ts2, min	6.7
T5, min	7.8
T10, min	8.7
T35, min	10.8
Low Temperature Properties	
Tg by DSC - Polymer	
Tg, °C	-32
Temperature Retraction – Press Cure: 10 min / 180°C (356 °F), Post-Cured: 16 hr / 230 °C (446 °F)	
TR10, °C	-30
TR30, °C	-27
TR50, °C	-25
TR70, °C	-22

Vulcanizate Properties	Post-Cured:	Post-Cured:	Post-Cured:
Press Cure: 10 min / 180 °C (356 °F)	**None**	**4 hr / 200 °C (392 °F)**	**16 hr / 230 °C (446 °F)**
Hardness Shore A, 1 sec			
Shore A, pts	70	71	76
Tensile Properties, Type 2, at 23 °C (73 °F)			
Tensile Strength, MPa	9.6	11.0	16.3
Elongation at Break, %	310	285	270
Modulus at 100%, MPa	2.8	3.1	3.7
Tear Strength			
Tear Strength Type B - Angle without nick Test Pieces			
Tear Strength, kN/m at 23 °C (73 °F)	16	18	22
Tear Strength, kN/m at 150 °C (302 °F)	4	4	5
Compression Set Properties:	**Post-Cured:**	**Post-Cured:**	**Post-Cured:**
Curing conditions: 10 min / 180 °C (356 °F)	**None**	**4 hr / 200 °C (392 °F)**	**16 hr / 230 °C (446 °F)**
Compression Set, 70 hr at 200 °C (392 °F), Type B			
Compression Set, %	27	24	24
Compression Set, 168 hr at 200 °C (392 °F), Type B			
Compression Set, %	42	39	36
Compression Set, VW, 94 hr at 180 °C (356 °F)			
Compression Set at 5 sec, %	-	-	54
Compression Set at 30 min, %	-	-	45

Table 2. Aging Properties of Viton™ GLT-200S A

Aging Properties	
Post-Cured: 16 hr / 230 °C (446 °F)	
Heat Aging, 168 hr at 250 °C (482 °F)	
Hardness Shore A, 1 sec	
Shore A, pts	75
Delta Hardness, pts	0
Tensile Properties, Type 2, at 23 °C (73 °F)	
Tensile Strength, MPa	16.2
Delta TS, %	-5
Elongation at Break, %	310
Delta Elongation, %	+11
Modulus at 100%, MPa	3.9
Delta 100%, %	+2
Fluid Aging, 168 hr at 150 °C (302 °F) in Motul® ATF VI (Dexron® VI)	
Hardness Shore A, 1 sec	
Shore A, pts	73
Delta Hardness, pts	-2
Tensile Properties, Type 2, at 23 °C (73 °F)	
Tensile Strength, MPa	15.7
Delta TS, %	-4
Elongation at Break, %	275
Delta Elongation, %	+2
Modulus at 100%, MPa	3.8
Delta 100%, %	+1
Weight & Volume Change	
Weight Change, %	+1
Volume Change, %	+1

Table 3. Compound Ingredients

Compound	Supplier
Thermax® Floform N990	Cancarb Limited
Zinc Oxide (99% pure, 5 microns)	Sigma-Aldrich
Viton™ Curative No. 7 (VC-7)	The Chemours Company
Luperox® 101 XL 45	Arkema
Struktol® HT 290	Schill+Seilacher

Table 4. Test Procedures

Property Measured	Test Procedure
Compression Set	ISO 815-1:2019
Compression Set VW	VW PV 3307:2004-08
Hardness	ISO 48-4:2018
MDR (moving die rheometer)	ISO 6502-3:2023
Mooney Viscosity	ISO 289-1:2015
Mooney Scorch	ISO 289-2:2020
DSC (differential scanning calorimetry)	ISO 22768:2020
Temperature Retraction	ISO 2921:2019
Fluid Aging	ISO 1817:2022
Heat Aging	ISO 188:2023
Stress/Strain Properties	ISO 37:2024
Tear Strength	ISO 34-1:2022

Test temperature is 23 °C (73 °F), except where specified otherwise.

For more information, visit viton.com

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