

Product Information

Introduction

Viton™ GBL-200S A fluoroelastomer is a 68% fluorine, peroxide-cured fluoroelastomer similar to Viton™ GBL-600S A, but with a significantly lower gum polymer viscosity of ~25 (ML at 121 °C (250 °F)). Viton™ GBL-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

- Excellent fluid resistance to oils, hot water and steam, as well as acids.
- 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.
- Ideal for blending with Viton™ GBL-600S A to reach intermediate viscosity ranges for injection molding as well as with other FWRD APA grades (e.g., GF-S A, GLT-S A, ...).
- Easily processable via injection molding in standard carbon black and mineral filled formulations.
- Manufactured without fluorinated surfactant.

Compounding and processing

- Viton™ Curative No. 7 (VC-7) is the suggested coagent for all Viton™ GBL-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 (trimethylalyl 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. Based on a DoE (Design of Experiment) study, the level of peroxide needs to be at least >1phr to obtain a reasonable cure speed and properties. No post-cure gives a slightly higher compression set (~4pts) than a short 2-4hrs post-cure at 230 °C.

- The suggested process aids for Viton™ GBL-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™ GBL-200S A compounds.
- Viton™ GBL-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™ GBL-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™ GBL-200S A	
Chemical Composition	Terpolymer of hexafluoropropylene, 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	1.85
Storage Stability	Excellent
Fluorine, %	~68

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

Compound		phr		
Viton™ GBL-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		31		
Mooney Viscosity, ML 1+4 at 100 °C (212 °F)				
Final Mooney, MU		50		
MDR Cure Rate - 180 °C (356 °F) / 6 min / arc 0.5°				
ML, dNm		0.67		
MH, dNm		24.6		
Ts1, min		0.40		
Ts2, min		0.45		
T10, min		0.46		
T50, min		0.68		
T90, min		1.14		
Mooney Scorch - 135 °C (275 °F) / 45 min				
Initial Mooney, MU		23		
Minimum Mooney, MU		11		
Ts1, min		6.0		
Ts2, min		6.5		
T5, min		7.7		
T10, min		8.9		
T35, min		11.7		
Low Temperature Properties				
Tg by DSC - Polymer				
Tg, °C		-17		
Temperature Retraction – Press Cure: 10 min / 180°C (356 °F), Post-Cured: 16 hr / 230 °C (446 °F)				
TR10, °C		-17		
TR30, °C		-14		
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		69	71	76
Tensile Properties, Type 2, at 23 °C (73 °F)				
Tensile Strength, MPa		10.8	12.8	19.5
Elongation at Break, %		400	340	330
Modulus at 100%, MPa		2.6	2.9	3.9
Tear Strength				
Tear Strength Type B – Angle without nick Test Pieces				
Tear Strength, kN/m at 23 °C (73 °F)		19	22	27
Tear Strength, kN/m at 150 °C (302 °F)		4	4	6
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, %		29	26	23
Compression Set, 168 hr at 200 °C (392 °F), Type B				
Compression Set, %		42	39	34
Compression Set, VW, 94 hr at 180 °C (356 °F)				
Compression Set at 5 sec, %		-	-	50
Compression Set at 30 min, %		-	-	37

Table 2. Aging Properties of Viton™ GBL-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	76
Delta Hardness, pts	0
Tensile Properties, Type 2, at 23 °C (73 °F)	
Tensile Strength, MPa	16.0
Delta TS, %	-18
Elongation at Break, %	410
Delta Elongation, %	+25
Modulus at 100%, MPa	3.6
Delta 100%, %	-8
Fluid Aging, 168 hr at 150 °C (302 °F) in Motul® ATF VI (Dexron® VI)	
Hardness Shore A, 1 sec	
Shore A, pts	75
Delta Hardness, pts	-1
Tensile Properties, Type 2, at 23 °C (73 °F)	
Tensile Strength, MPa	18.1
Delta TS, %	-8
Elongation at Break, %	320
Delta Elongation, %	-3
Modulus at 100%, MPa	4.0
Delta 100%, %	+2
Weight & Volume Change	
Weight Change, %	+0.7
Volume Change, %	+1.6

Table 3. Compound Ingredients

Compound Ingredients	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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