

Vamac[®] GLS

Ethylene Acrylic Elastomer - Technical Data

Description

DuPont[™] Vamac[®] GLS is a terpolymer of ethylene, methyl acrylate, and a cure site monomer cured using a diamine-based vulcanization system. Compared with Vamac[®] G, Vamac[®] GLS offers significantly improved resistance to oil swell and chemicals such as diesel fuel. Vamac[®] GLS elastomer contains a small amount of processing aid and has a nominal specific gravity of 1.06. It has a mild acrylic odor. Storage stability is excellent.

Product Properties

Property	Target Value	Method
Mooney Viscosity ML 1+4 at 100 °C	18.5	ASTM D1646
Volatiles	≤ 0.4 wt %	Internal DuPont Test
Form (25kg nominal bale size)	51.6 x 34.4 x 13.6 cm	Visual inspection
Color	Clear to light yellow translucent	Visual inspection

Handling Precautions

Because Vamac[®] ethylene-acrylic elastomers contain small amounts of residual methyl acrylate monomer, adequate ventilation should be provided during storage and processing to prevent worker exposure to methyl acrylate vapor. Additional information may be found in the Vamac[®] product Safety Data Sheet (SDS), and DuPont[™] bulletin, *Safe Handling and Processing of Vamac[®]*.

Compounds and Vulcanizate Properties

Compounds of Vamac[®] are formulated and processed by customers to meet their own specific performance requirements.

DuPont has independently formulated a wide variety of Vamac[®] compounds for its own short- and long-term properties testing programs. A typical compound of Vamac[®] GLS is reviewed in Table 1, followed by vulcanizate performance test data (Table 2) that can help end-users evaluate the potential fitness of similar compounds for their own applications.

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Table 1 – Sample Compound of DuPont[™] Vamac[®] GLS

Ingredients	Parts
Vamac [®] GLS	100
Antioxidant: Naugard [®] 445	2
Release agent: stearic acid	1.5
Release agent: Vanfre [®] VAM (alkylphosphate)	1
Release agent: Armeen [®] 18 (octadecylamine)	0.5
FEF black (N550)	60
Curative: Diak [™] No. 1 (hexamethylene diamine carbamate)	1.5
Cure Accelerator: DOTG (guanidine coagent)	4
Plasticizer: TP-759	10
Total Parts	180.5
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Stock Properties	
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Mooney Scorch: MS at 121 °C	
Minimum Viscosity, units	14.9
Time to 10-unit rise, min.	10.1

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Table 2 – Physical Properties of Vulcanizate

Press Cure, Slabs: 5 min. at 177 °C

Post-cure: 4 hrs at 175 °C

Glass Transition Temperature, DSC, °C	-30
Tear Strength at 23 °C, Die C, dN/m	34.0
Compression Set, Method B	
70 hrs. at 150 °C, %	20
168 hrs. at 150 °C, %	28
Volume Swell, Immersed 70 hrs at 150 °C in IRM 903 Oil, %	26.7

Stress/Strain and Hardness	Original Value (Not Aged)	Air Aged 7 Days at 150 °C	Air Aged 14 Days at 175 °C
100% Modulus, MPa	6.4	6.8	9.5
Delta 100% Modulus, %	—	+5	+47
Tensile Strength, MPa	16.1	15.6	15.4
Delta Tensile Strength, %	—	-3	-5
Elongation at Break, %	272	278	193
Delta Elongation at Break, %	—	+2	-29
Hardness, A Durometer	68	72	86
Delta Hardness, points	—	+4	+18

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The test methods used in the work are shown below:

<i>Rheology</i>	<u>ASTM</u>
Mooney Viscosity	D 1646
Mooney Scorch	D 1646
<i>Physicals</i>	
Hardness	D 2240
Tensile, Elongation, Modulus	D 412
Tear, Die C	D 624
Fluid Ageing	D 471
Compression Set	D 395
Tg by DSC	D 3418
Ageing in Air	D 573

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