

Vamac® HVG

Ethylene Acrylic Elastomer - Technical Data

Description

DuPont™ Vamac® HVG is an unfilled gum ethylene/acrylic elastomer similar to Vamac® G but offering higher compound viscosity. The higher viscosity of compounds made with Vamac® HVG results in improved green strength and related processing advantages, such as:

- Improved collapse resistance of extrudates;
- Enhanced preform dimensional stability; and
- Improved moldability through elimination of trapped air.

Compounds of Vamac® HVG are often selected for applications such as compression molded goods, highly plasticized compounds, and extruded tubing and hose.

Vamac® HVG contains a small amount of processing aid and has a nominal specific gravity of 1.04. It has a mild acrylic odor.

Product Properties

Property	Target Value	Method
Mooney Viscosity ML 1+4 at 100 °C	26	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®*.

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Vamac[®] HVG

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Comparison of Compounds of Vamac[®] HVG and Vamac[®] G

Table 1 shows the physical properties of compounds made from the two polymers, as well as a 50/50 blend of Vamac[®] G and Vamac[®] HVG. The first three compounds contain 60 phr of N550 carbon black. The last three compounds contain 80 phr of N774 carbon black. In both sets of compounds, the compound viscosity increases as the level of Vamac[®] HVG increases.

Scorch levels also increase with Vamac[®] HVG, probably due to higher viscosity. The physical properties of the cured compounds are similar.

Table 1 – Compounds made from Vamac[®] HVG and Vamac[®] G

Formulation: Polymer and carbon black as shown, and 10 phr TP759, 1.5 phr Stearic Acid, 1.0 phr Vanfre[®] VAM, 0.5 phr Armeen[®] 18D, 2.0 phr Naugard[®] 445, 1.5 phr Diak[™] #1, 4 phr DOTG
Cure conditions – 5 min. press cure at 175 °C and 4 hr post cure at 175 °C.

	G	HVG	G/HVG	G	HVG	G/HVG
Vamac [®] G	100		50	100		50
Vamac [®] HVG		100	50		100	50
Black, N550	60	60	60			
Black, N774				80	80	80
Stock Properties						
Mooney Viscosity ML (1+4) at 100 °C, MU	33	55	41	28	57	41
Mooney Scorch – 121 °C						
Minimum Viscosity, MU	11.2	23.4	17.2	11.1	25.6	16.9
t10, min.	14.1	10.5	12.7	13.7	8.3	10.2
t18, min.	>21	17.6	>21	>21	15.6	16.3
MDR summary at 177 °C, 1° arc						
ML, dNm	0.6	1.3	0.8	0.6	1.1	0.8
MH, dNm	22.0	25.8	23.8	21.5	25.9	23.9
tS2, min.	1.0	0.8	0.9	1.0	0.8	0.9
t50, min.	3.0	2.3	2.6	2.9	2.2	2.5
t90, min.	13.2	9.7	12.1	11.9	7.0	9.8

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Table 1 (continued)

Original Physical Properties	G	HVG	G/HVG	G	HVG	G/HVG
Hardness, Shore A, pts.	66	64	64	65	63	62
Modulus at 100% Elongation, MPa	5.1	6.0	5.7	4.8	6.0	5.3
Tensile Strength, MPa	14.7	16.4	15.8	14.2	16.0	15.8
Elongation at Break, %	295	275	290	290	255	270
Compression Set – 70 hrs/150 °C, %	20	16	18	22	16	18

The test methods used in the work are shown below:

Rheology

Mooney Viscosity D 1646

Mooney Scorch D 1646

MDR D 5289

Physicals

Hardness D 2240

Tensile, Elongation, Modulus D 412

Compression Set D 395

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