

# Vamac® G

## Ethylene Methylacrylate Elastomer

Vamac G is a terpolymer of ethylene, methylacrylate, and a cure site monomer. It is cured using an amine-based vulcanisation system.

This gum elastomer includes a small amount of processing aid and has a mild acrylic odor. Use adequate ventilation during storage, mixing, and processing to prevent accumulation of residual vapors. Storage stability is excellent.

Bale size is nominally: 560 x 370 x 165 mm

### Major Performance Properties and Applications

Vamac® G has excellent high-temperature durability and oil resistance with service lubricants, coupled with good low-temperature flexibility. Compounds of Vamac® G are typically rated at 175 °C for heat resistance, with oil swell values around 50% in IRM 903 oil. The properties of Vamac® G make it well suited for a wide range of automotive applications, including powertrain seals and gaskets, rocker cover and piston seals, oil coolant hoses, power steering hoses, turbocharger hoses, crankcase ventilating tubes, coverings for fuel and coolant hoses, O-rings, grommets and spark plug boots.

Vamac® G is an excellent vibration damping material that is uniquely insensitive to temperature over a range of -30 °C to 160 °C. Compounds of Vamac® G are suitable for use in torsional dampers and isolator pads.

Vamac® G is a halogen-free polymer and does not decompose to give off corrosive gasses when exposed to flame. It is used for flame-retarded, low-smoke, nonhalogen wire and cable jackets and in nonhalogen, low-smoke flooring.

Vamac® G is well suited for injection, transfer and compression moulding, and is easily extruded.

### Compound and Vulcanisate Properties

Compounds of Vamac® are formulated and processed by customers to meet their own specific performance requirements. Many of the highest-performing compounds are vulcanizates of Vamac® are proprietary, and cannot be published. We have independently formulated a wide variety of Vamac® compounds for its own short- and long-term properties testing programs.

A typical compound of Vamac® G is reviewed below. Vulcanisate performance test data are given to help endusers evaluate the potential fitness of similar compounds for their own applications.

### Sample Compound, Vamac® G

Ingredients	Parts
Vamac® G	100
Antioxidant: Naugard® 445	1
Release agent: Stearic acid	1.5
Release agent: Vanfre® VAM (alkylphosphate)	1
Release agent: Armeen® 18 (octadecylamine)	0.5
SRF black (N774)	65

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Curative: Diak™ No. 1 (hexamethylene diamine carbamate)	1.5
Coaccelerator: DOTG (guanidine coagent)	4
Total Parts	174.5

### Product information

Resin Identification	AEM	ISO 1043
Part Marking Code	>AEM<	ISO 11469
Colour	Clear <sup>[1]</sup>	
Viscosity, Mooney, ML 1'+4' at 100 °C	16.5	ISO 289-1-2
Volatiles	≤0.4 %	EN 1400 / EN 14350-2
Maximum Service Temperature	175 °C	
[1]: clear to light yellow translucent		

### Rheological properties

Viscosity, Mooney, compound, ML 1'+4' at 100 °C	40	ISO 289-1-2
Scorch, Mooney viscosity, MS at 121 °C	≥16	ISO 289-1-2
Scorch, time to 10 unit rise, MS at 121 °C	13 min	ISO 289-1-2

### Cure conditions

Cure time	10 min
Cure temperature	175 °C
Post cure time	4 h
Post cure temperature	175 °C

### Typical mechanical properties

Tensile stress at 100% strain	5.1 MPa	ISO 527-1/-2
Tensile stress at break	17 MPa	ISO 527-1/-2
Tensile strain at break	280 %	ISO 527-1/-2
Shore A hardness	68	ASTM D 2240
Compression set, 150 °C, 70h	16 %	ISO 815
Compression set, 150 °C, 168h	21 %	ASTM D 395B
Compression set, 180 °C, 168h	24 %	ASTM D 395B

### Thermal properties

Glass transition temperature, 10 °C/min	-28 °C	ASTM D 3418
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### Physical/Other properties

Density	1030 kg/m <sup>3</sup>	ISO 1183
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### Characteristics

Processing	Injection Moulding, Extrusion, Transfer Moulding, Compression moulding
Delivery form	Bale
Special characteristics	Heat stabilised or stable to heat

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### Additional information

Compression molding

### Handling Precautions

Because Vamac® G contains small amounts of residual methylacrylate monomer, adequate ventilation should be provided during mixing and processing to prevent worker exposure to methylacrylate vapor. Additional information may be obtained in the Material Safety Data Sheet (MSDS), and our bulletin *Safe Handling and Processing of Vamac®*.

### Chemical Media Resistance

#### Mineral oils

- ✓ SAE 10W40 multigrade motor oil, 23°C
- ✓ SAE 10W40 multigrade motor oil, 130°C
- ✓ SAE 80/90 hypoid-gear oil, 130°C
- ✓ Insulating Oil, 23°C
- ✓ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✓ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✓ Hydraulic oil Pentosin CHF 202, 125°C

#### Standard Fuels

- ✗ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✗ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✗ Diesel fuel (pref. ISO 1817 Liquid F), >90°C
- ✗ Diesel EN 590, 100°C

#### Symbols used:

- ✓ possibly resistant  
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).
  - ✗ not recommended - see explanation  
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).
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