

Classification

The copolymer (EPR) and terpolymer (EPDM) ethylene-propylene (diene) belong to an interesting elastomer family whose properties of atmospheric and chemical agents resistance, good behavior to high and low temperatures, good electric characteristics make them suitable for valued applications with competitive costs.

Polymer type

The most important parameters that characterize the properties of ethylene-propylene elastomer are:

- middle molecular weight
- ethylene content
- type and quantity of third monomer

The combinations of above, allow the choice of the most appropriate types for the varied applications. The copolymer, chemically saturated polymer chain, offer a greater high temperature and chemical resistance, while the terpolymer are appreciated for their greater process versatility.

Polymer Type		Terpolymer			Copolymer	
Hardness ShA	Pti	70	73	50	68	60
Tensile strength	Mpa	15	13	11	17	14
Elongation	%	350	270	550	350	500
Compression set 22 H @ 70°C		15			7	
Compression set 70 H @ 100°C		40	52	51	20	25
Brittle Point	°C	-47		-50		-48
Heat Resistance		72 H @ 100°C			72 H @ 125°C	
Tensile strength	%	+5	+1	-8	+3	+4
Elongation	%	-35	-25	-27	-6	-8
Hardness ShA	Pti	+5	+4	+6	+2	+
		H ₂ O/glycol 50/50 70 H @ 100°C			NaOH 2% 7days@90°C	H ₂ SO ₄ 30% 7days@100°C
Tensile strength	%		-3		-3	+4
Elongation	%		-10		-2	-3
Hardness ShA	Pti		+4		+2	-1
Volume	%		+2		+1	+1

Applications

The vulcanized items based on copolymer or terpolymer ethylene-propylene are characterized by the following:

- excellent ozone and oxygen resistance both under static and dynamic conditions
- excellent atmospheric agents resistance
- good temperature resistance (up to 150°C) in dry and humid conditions
- good low temperature resistance (up to -55°C)
- excellent dielectric characteristics
- good resistance to a wide range of chemical products (organic and inorganic acids, alcohol, amines, antifreeze liquids, bleaching agents, detergents)
- low water permeability

The application fields range from the transportation sector to the electrical cabling. Meaning it is present in electric household appliances, home construction, polyolefin and engine motor oil modification, waterproofing, foot wear and food-grade utensils.