

# EnDura<sup>®</sup> E90SR

## High temperature steam resistant EPDM



### Description

A high temperature, steam resistant, EPDM elastomer material designed for geothermal applications including pumps, valves, turbines, drilling tools and equipment. In addition to geothermal applications EnDura<sup>®</sup> E90SR may be used in steam applications for enhanced oil recovery and general purpose high temperature hot water and steam applications.

EnDura<sup>®</sup> E90SR offers a maximum temperature rating in anaerobic steam up to 288°C (550°F), and may be used in short durations up to 315°C (600°F) in steam. This performance greatly exceeds standard EPDM materials.

EPDM provides broad chemical resistance to polar fluids, however E90SR is not recommended for hydrocarbon based oils and fuels. The material has been tested for explosive decompression resistance in carbon dioxide to NACE TM0297-97.

### Key Attributes

- ▶ Specifically developed for high temperature steam and geothermal applications
- ▶ Longer seal life and high temperature resistance compared to standard EPDM materials
- ▶ Resistant to polar fluids
- ▶ Tested to **NACE TM0297-97** ED standard

### Typical Applications

- ▶ High temperature water/steam and geothermal applications.
- ▶ Geothermal explorations, drilling and completion equipment.
- ▶ Steam injection for enhanced oil recovery
- ▶ Seals for pumps, valves, and turbines
- ▶ O-rings, T-seals, and custom molded seals

### Other materials in this range

EnDura<sup>®</sup> V91A (FKM) -46°C to +225°C (-51°F to +437°F)  
 EnDura<sup>®</sup> V91K (FKM) -35°C to +225°C (-31°F to +437°F)  
 EnDura<sup>®</sup> V91J (FKM) -18°C to +225°C (-1°F to +437°F)  
 EnDura<sup>®</sup> A90H (TFE/P) 0°C to +250°C (+32°F to +482°F)  
 Perlast<sup>®</sup> G92E (FFKM) -15°C to +260°C (+5°F to +500°F)

Tested to  
**NACE TM0297**



### Typical Material Properties

Property	ASTM	ISO	Value
Material Type			EPDM
Colour			Black
Hardness: (°IRHD)	D1415	ISO48	87
Tensile Strength (MPa) (psi)	D412	ISO37	20 2900
Elongation at break (%)	D412	ISO37	250
Specific Gravity (g/cm <sup>3</sup> )	D792	ISO1183	1.12
Modulus @ 100% (MPa)			6.4
Compression Set (%): 24 hrs @ 135°C (275°F) 70 hrs @ 135°C (275°F)	D395	ISO815	25 37
TR10	D1329		-50°C
Tear Strength (kN/m)	D624	ISO34	40
Minimum Operating Temperature			-50°C (-58°F)
Maximum Operating Temperature in water/steam			+288°C (+550°F)

**SPECIAL NOTE:** This information is to the best of our knowledge accurate and reliable. However, Precision Polymer Engineering Ltd makes no warranty, expressed or implied, that parts manufactured from this material will perform satisfactorily in the customer's application. It is the customer's responsibility to evaluate parts prior to use, especially in applications where their failure may result in injury and/or damage. It should also be noted that all elastomeric parts have a finite life. Therefore a regular programme of inspection and replacement is strongly recommended. The material properties above should not be used for specification purposes.

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 Official web site: [www.oring.su](http://www.oring.su)

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<b>Ageing in steam - 168hrs at 288°C (550°F)</b>		
Hardness	IRHD	82
Ultimate tensile strength	MPA	16
Elongation at break	%	280
Volume change	%	8.2
Compression set	%	75
<b>Ageing in steam – 24hrs at 316°C (600°F)</b>		
Hardness	IRHD	75
Ultimate tensile strength	MPA	4
Elongation at break	%	55
Volume change	%	12.6
Compression set	%	89
<b>Ageing in artificial seawater – 70hrs at 200°C (392°F)</b>		
Hardness change	Points	+5
Ultimate tensile strength change	%	+6
Elongation change	%	+11
Volume change	%	+1.185
<b>Ageing in 37% hydrochloric acid – 168hrs at 23°C (73°F)</b>		
Hardness change	Points	+1
Ultimate tensile strength change	%	+9
Elongation change	%	+3
Volume change	%	+1.015
<b>Dry ageing in air – 70hrs at 125°C (257°F)</b>		
Hardness change	Points	+5
Ultimate tensile strength change	%	-10
Elongation change	%	-23
<b>Dry ageing in air – 168hrs at 125°C (257°F)</b>		
Hardness change	Points	+7
Ultimate tensile strength change	%	-13
Elongation change	%	-38
<b>Fluid resistance</b>		
100% IRM 903, 70hrs at 100°C (202°F) volume change	%	+100
10% IRM 903, 168hr at 288°C (550°F) volume change	%	+80