

VICTOR REINZ® VR 90**Technical Data Sheet US/334****Edition: 12/2016, supersedes all prior editions.****Material**

VR 90 is an asbestos-free gasket material. It is composed of aramide fibres, inorganic fillers and other asbestos substitutes which are resistant to high temperatures. These are firmly bonded to high-grade elastomers under elevated pressure and temperature to achieve exceptionally high gas sealability.

Properties

VR 90 does not contain any physiologically harmful substances or color pigments.

VR 90 exhibits high tensile strength, stress and shearing resistance. The material is excellently suited to sealing off gases and fluids, e.g. oils, solvents, fuels, freons, liquid gases, water/antifreeze mixtures, saline solutions and many other media. It is also suitable for sealing hot water and steam up to approx. 390 °F, with stationary applications, and a mounting surface pressure of at least 7250 psi. For steam applications please consult Target Marketing.

Other characteristic properties of the material are excellent temperature resistance, stress resistance under high operating pressure and ease of handling. In most cases, VR 90 can be used effortlessly to replace CAF materials within a temperature range of up to 390 °F.

Application

For DIN and ANSI flanged joints, apparatus, pumps, fittings and pipelines in industrial plants; e.g. in gas and hot water units, in solar panels, in convection radiators and connections; for sealing joints in internal combustion engines subject to high mechanical and thermal stress (oil, water, fuel and vacuum pumps etc.); for transmission, refrigerating and air compressors.

Since VR 90 is physiologically safe, it is particularly suitable for use in contact with drinking water and foods and for the sealing of highly pure, pollutant-sensitive products such as paint bases, vitamins, etc.

Surfaces

The standard version of **VR 90** has a non-stick top and bottom layer with a high coefficient of friction. This facilitates dismantling. Additional surface treatment is unnecessary in most cases.

However, a graphite coating on one or both sides of the gasket is required when used in components which rotate on the gasket during assembly, e.g. in screwed joints, radiator caps, etc., as in this case a low friction value is required.

Approvals**DIN- DVGW**

(acc. to DIN 3535, part 6 FA)

FDA- compliant

acc. to 21 CFR § 177.2600 – suitable for flat gaskets with all types of foodstuffs

WRAS

Certification of gasket materials for use in drinking water (acc. to British Standard BS 6920)

VP 401 (HTB)

Gaskets with higher thermal resistance

Fire Safe

acc. to British Standard BS 6755

BAM

German Federal Institute for Materials Research and Testing, flanged joints in oxygen- conducting steel pipes up to 100 bar and 80 °C

Grade X

acc. to BS 7531

UVV 61

"Gases", AD- B7 (VdTÜV) in conjunction with metal inner eyelet, blowout- proof gasket

TA Luft

High- quality gasket (200 °C for 48 h and 2000 h)

Germanischer Lloyd (DNV GL)

Approval for shipbuilding

Technical DataNominal thickness
0.08" (2.00 mm)
unless otherwise
specified

Density	112 - 125 lb/ft ³ (1.8 - 2.0 g/cm ³)
Ignition loss DIN 52 911	≤ 34 %
Tensile strength transverse ASTM F 152	> 2610 psi (> 18 N/mm ²)
Creep Relaxation ASTM F 38 B (1/32")	15 %
Residual stress DIN 52 913	
16 h, 570 °F (300 °C)	≈ 3626 psi (≈ 25 N/mm ²)
16 h, 350 °F (175 °C)	≈ 5220 psi (≈ 36 N/mm ²)
VR-Hot compression test (@7250 psi)	
Thickness decrease 68 °F (20 °C)	6 %
Thickness decrease additional, at maximum continuous application temperature	8 % (480 °F / 250 °C)
Compressibility and recovery ASTM F 36, procedure J	
compressibility	5 - 8 %
recovery	≥ 55 %
Sealability against nitrogen ASTM F 37 B (1/32")	
	0.12 ml/h

DIN 3535, part 6 FA \approx 0.2 cm³/min

Swelling ASTM F 146

in IRM 903 Oil (replaces ASTM Oil No. 3)

5 h, 300 °F (150 °C)

increase in thickness 0 - 7 %

increase in weight 7 % maximum

in ASTM Fuel B

5 h, ambient temperature

increase in thickness 0 - 10 %

increase in weight 10 % maximum

in water / antifreeze (50:50)

5 h, 210 °F (100 °C)

increase in thickness 0 - 10 %

increase in weight 10 % maximum

Leachable chloride content < 100 ppm

Iron content < 0.3 %

Thermal conductivity \approx 0.29 btu/ft h °F
(\approx 0.5 W/(m·K))

Electrical specific resistance

after storage

at 50 % relative humidity, 48 h \approx 20 kV/mm

at 570 °F (300 °C), 4 h \approx 30 kV/mm

Electrical specific resistance

after storage

at 55 % relative humidity, 48 h \approx 1 x 10¹² Ω cm

at 250 °F (120 °C), 1 h \approx 2 x 10¹³ Ω cm

Temporary **peak temperature** 750 °F (400 °C)

Maximum **continuous temperature** 480 °F (250 °C)

temperature

for steam up to 390 °F (200 °C)

with metal inner eyelet up to 430 °F (220 °C)

Maximum **operating pressure** 2180 psi (150 bar)

ASTM F 104 "line call-out" F711110A9B2E12K7M6



Maximum continuous temperature and maximum pressure must not occur simultaneously, please refer to the table entitled "[Max. operating pressures at various temperatures and with various media](#)"!

Sealing parameters see table: "[Sealing parameters](#)"



The data quoted above are valid for the material "as delivered" without any additional treatment. In view of the multiplicity of possible installation and operating conditions, definitive conclusions cannot be drawn for all applications regarding the behavior in a sealing joint. For this reason, we do not give any warranty for technical data. They do not represent warranted properties. If you have any doubt, please contact us and specify exact operating conditions.

Form of delivery

Sheets 60 x 60 inch, 60 x 120 inch, 60 x 180 inch

Nominal thicknesses and tolerances

acc. to ASTM F 104 (**inch**)

Limits of size within a delivery

1/64	1/32	3/64	1/16	3/32	1/8
+ 0.005	± 0.005	± 0.005	± 0.008	± 0.008	± 0.008
- 0.002					

More exact tolerances by arrangement.

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