

novatec® PREMIUM XP

The new generation
of fibre-reinforced graphite gaskets.



GASKETS

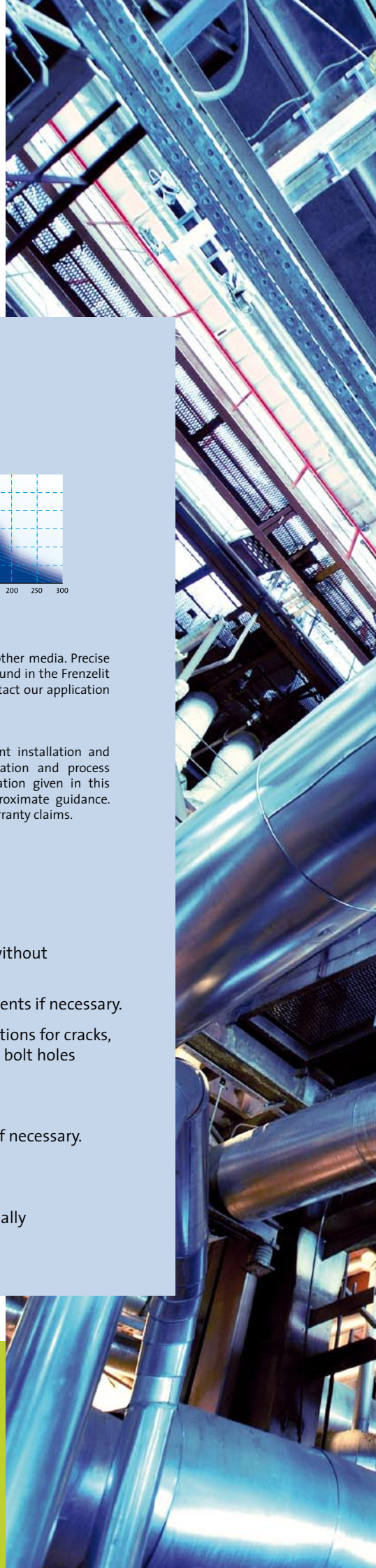
TECHNICAL TEXTILES

EXPANSION JOINTS

INSULATION

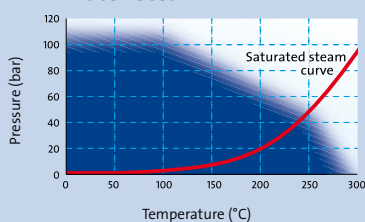
NEW MATERIALS

 **Frenzelit**
creating hightech solutions



Application recommendations depending on the pressure and temperature

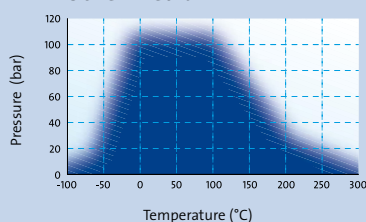
Water/steam



The pressure and temperature limits indicated are influenced to a major extent not only by the characteristics of the material but also by the installation conditions (the surface pressure level in particular). The information provided must therefore be considered an estimate that is on the safe side rather than a fixed application limit.

The application recommendations for different temperature and pressure levels in the graphs apply to a gasket thickness of 2.0 mm and with smooth flanges. Higher limits are possible when thinner gaskets are being used!

Other media*



*Example for the most common other media. Precise data for individual cases can be found in the Frenzelit novaDISC program or you can contact our application engineering specialists.

Warranty exclusion

In view of the variety of different installation and operating conditions and application and process engineering options, the information given in this prospectus can only provide approximate guidance. There is as a result no basis for warranty claims.

Installation instructions

- Clean the surfaces that being sealed and remove traces of old gaskets without damaging the flange surface.
- Check the flange surfaces for parallelity and unevenness; make adjustments if necessary.
- Before installing them, check gaskets that have been stored in dry conditions for cracks, surface damage, dimensional accuracy and – in the case of gaskets with bolt holes – congruence of the bolting pattern with the flange.
- Do not use any sealing agents! Fit gaskets dry and grease-free!
- Check the condition of the bolts before fitting them and use new bolts if necessary.
- Install the gaskets consistently and carefully by hand first.
(Attention: never tighten the first bolt too securely!).
- Tighten the bolts with a suitable tool. Apply the specified torque diagonally in several stages.

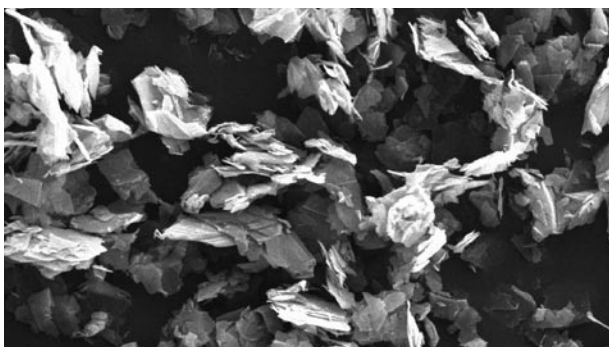
Gasket parameters according to DIN EN 13555:
Available to be downloaded from

www.frenzelit.com/novatecPREMIUMXP-e



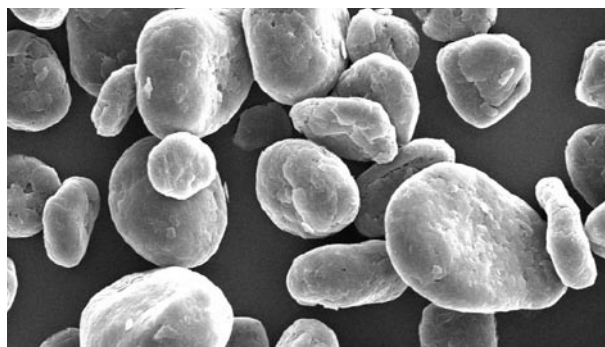
novatec® PREMIUM XP – the high-performance all-rounder

novatec® PREMIUM XP is the new and more efficient “Extended Performance” (XP) generation of graphite gaskets reinforced with aramid fibres that have been developed by Frenzelit. A considerable reduction in leakage and at the same time, excellent residual stress and chemical resistance levels are achieved thanks to careful graphite structural design and ingenious process engineering. With novatec® PREMIUM XP it is possible to configure gasket systems in accordance with DIN EN 1591-1 with the sealing category L_{0,01} as outlined in VDI 2290. In this context, the unique combination of aramid fibres and graphite makes it possible to standardise gaskets far beyond the existing options with elastomer-bonded fibre gaskets for a wide range of different applications up to a maximum of 300°C.



The morphology is what makes the difference

Graphite is not a uniform material. Its sealing properties are influenced to a major extent not only by the degree of purity and the particle size but also by the structure of the graphite. Thanks to careful morphological design, the “Extended Performance” generation of novatec® PREMIUM XP reaches a new level of sealing quality and makes it possible to create seals that satisfy the strict requirements specified by the German “TA Luft” air pollution regulations and VDI 2290. The photos show two special graphite structures that act as the basic material for novatec® PREMIUM XP



Media-resistant at high temperatures

The graphite – Kevlar® material combination guarantees efficiency that exceeds all standard flexible fibre materials (FA). The high graphite content combined with the low bonding agent content leads to substantially higher chemical resistance levels. The application temperature range is increased to up to 300°C at the same time. The residual stress level is better than anything achieved with conventional FA gaskets. The non-stick coating that remains effective for a long period of time is an additional advantage.

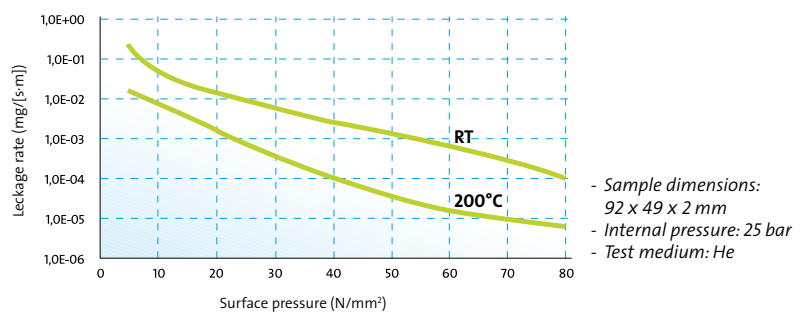
Kevlar® is a DuPont registered trademark.

Characteristic data – quantifiable application benefits

The advantages at a glance:

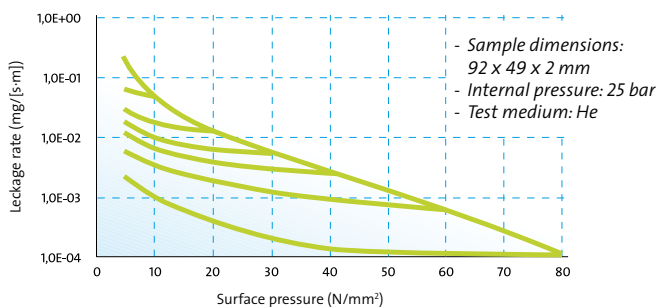
- Considerable reduction in leakage thanks to optimised graphite morphology
- Compliance with German air pollution regulations ("TA Luft") and with VDI 2290 gasket system design specifications
- Excellent residual stress
- Extended temperature range up to 300°C
- High media resistance
- Anti-stick coating that remains effective for a long period of time
- Simple processing / handling

Leakage rate under the influence of temperature



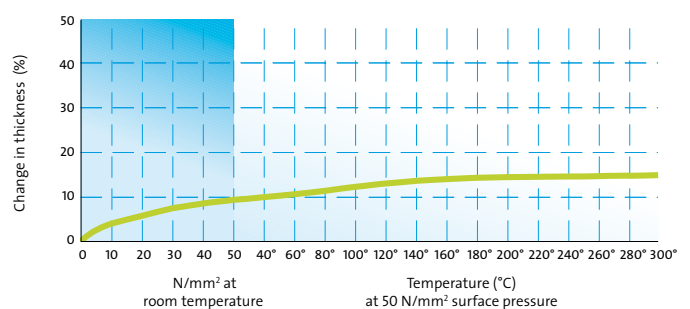
novatec® PREMIUM XP is designed for minimum leakage. The microporosity of the innovative gasket material decreases under the influence of temperature and surface pressure.

Leakage properties (thickness 2.0 mm)



The new generation of novatec® PREMIUM XP demonstrates considerably less leakage at the standard surface pressure levels.

Compression set – Temp-Test (thickness 2.0 mm)



The thickness of novatec® PREMIUM XP decreases to a particularly small extent under the influence of temperature. At 300°C, thickness is only 5 % lower than at room temperature.



General material data			
Components	Graphite, aramid fibre, NBR		
Approvals	DVGW, KTW, WRAS, W 270, VP 401, Germanisches Lloyd, BAM (max. 110°C/130 bar), TA Luft, SVGW, EC No. 1935/2004		
Identification colour	Royal blue		
Anti-stick coating	A 310 on both sides		
Dimensional and thickness tolerances	According to DIN 28 091-1		
Physical properties	Standard	Unity	Value*
Gasket thickness 2.0 mm			
Identification	DIN 28 091-2		FA - A 1 - O
Density	DIN 28 090-2	[g/cm ³]	1.74
Tensile strength	DIN 52 910		
longitudinal		[N/mm ²]	20
transverse		[N/mm ²]	18
Residual stress $\sigma_{DE/16}$	DIN 52 913		
175 °C		[N/mm ²]	37
300 °C		[N/mm ²]	30
Compressibility	ASTM F 36 J	[%]	6
Recovery	ASTM F 36 J	[%]	60
Cold compressibility ϵ_{KSW}	DIN 28 090-2	[%]	6
Cold recovery ϵ_{KRW}	DIN 28 090-2	[%]	3
Hot creep $\epsilon_{WSW/200}$	DIN 28 090-2	[%]	8
Hot recovery $\epsilon_{WRW/200}$	DIN 28 090-2	[%]	2
Recovery R	DIN 28 090-2	[mm]	0.04
Specific leakage rate	DIN 3535-6	[mg/(s·m)]	≤ 0.05
Specific leakage rate $\lambda_{2,0}$	DIN 28 090-2	[mg/(s·m)]	≤ 0.05
Fluid resistance	ASTM F 146		
ASTM IRM903	5h/150 °C		
Weight change		[%]	8
Thickness increase		[%]	5
ASTM Fuel B	5h/23 °C		
Weight change		[%]	8
Thickness increase		[%]	5
Chloride content	FZT PV-001-133	[ppm]	≤ 50
* Modal value (typical value)			
Product data			
Dimensions [mm]	1500 x 1500	2000 x 1500	
Thicknesses [mm]	0.5/0.8	1.0/1.5/2.0/3.0	
Further dimensions and thicknesses are available on request			

If you have any application engineering questions, we will be delighted to answer them. Just contact:

gaskets@frenzelit.de



novatec® PREMIUM XP

engineered graphite with Kevlar®

Material profile:

- Highly compressed gasket material with good stress relaxation, temperature resistance and with good ductility
- The main components are graphite and aramid fibres, bound with NBR
- State-of-the-art material which combines the advantages of graphite and aramid.

Typical applications:

- For the general and chemical industry
- Oils and fats, acids and alkalis, solvents, refrigerants, water, steam

Supply data:

- Sheet sizes in mm: 2000x1500
- Thickness in mm: 1.0 / 1.5 / 2.0 / 3.0
- Special sheet sizes upon request
- Other thicknesses upon request

General data	Binders:	NBR		
	Approvals:	DVGW / KTW / WRAS / W270 / VP401 / GL / BAM (max. 110°C / 130 bar) / TA Luft / SVGW EG Nr. 1935/2004		
	Colour:	royal blue		
	Branding:	honeycomb with Frenzelit		
	Anti-stick coating:	both sides A310 standard		
	Tolerances in thickness:	acc. DIN 28091-1		
Physical properties (Gasket thickn. 2.00mm)	Property	Standard	Unity	Value *
	Identification	DIN 28 091-2		FA - A 1 - O
	Density	DIN 28 090-2	[g/cm³]	1.74
	Tensile strength	DIN 52 910		
	longitudinal		[N/mm²]	20
	transverse		[N/mm²]	18
	Residual stress $\sigma_{dE/16}$	DIN 52 913		
	175 °C		[N/mm²]	37
	300 °C		[N/mm²]	30
	Compressibility	ASTM F 36 J	[%]	6
	Recovery	ASTM F 36 J	[%]	60
	Cold compressibility ϵ_{KSW}	DIN 28 090-2	[%]	6
	Cold recovery ϵ_{KRW}	DIN 28 090-2	[%]	3
	Hot creep $\epsilon_{WSW/200}$	DIN 28 090-2	[%]	8
	Hot recovery $\epsilon_{WRW/200}$	DIN 28 090-2	[%]	2
	Recovery R	DIN 28 090-2	[mm]	0.04
	Specific leakage rate	DIN 3535-6	[mg/(m.s)]	≤ 0.05
	Specific leakage rate $\lambda_{2,0}$	DIN 28 090-2	[mg/(m.s)]	≤ 0.05
	Fluid resistance	ASTM F 146		
	ASTM IRM903	5h/150 °C		
	Weight change		[%]	8
	Thickness increase		[%]	5
	ASTM Fuel B	5h/23 °C		
	Weight change		[%]	8
	Thickness increase		[%]	5
	Chloride content	FZT PV-001-133	[ppm]	≤ 50

* = Mode (typical value)

Issue: 02.12

Modifications: 1

Supersedes all prior versions

The technical data stated has been determined with standard material under laboratory conditions. With the variety of installation and operating conditions no guarantee claim can be inferred regarding the behaviour of a flanged joint.

We reserve the right to product changes which serve the purpose of technical progress.