novatec® PREMIUM XP

The new generation of fibre-reinforced graphite gaskets.
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!

*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 parallellity 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 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.
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

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

### Identification colour
Royal blue

### Anti-stick coating
A 310 on both sides

### Dimensional and thickness tolerances
According to DIN 28 091-1

### Physical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Standard</th>
<th>Unity</th>
<th>Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification</td>
<td>DIN 28 091-2</td>
<td>FA - A 1 - O</td>
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<tr>
<td>Density</td>
<td>DIN 28 090-2</td>
<td>[g/cm³]</td>
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<td>Tensile strength</td>
<td>DIN 52 910</td>
<td>[N/mm²]</td>
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<tr>
<td>Residual stress α_s/DIN</td>
<td>DIN 52 913</td>
<td>[N/mm²]</td>
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<tr>
<td>175 °C</td>
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<td>[N/mm²]</td>
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</tr>
<tr>
<td>300 °C</td>
<td></td>
<td>[N/mm²]</td>
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<tr>
<td>Compressibility</td>
<td>ASTM F 36 J</td>
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<tr>
<td>Recovery</td>
<td>ASTM F 36 J</td>
<td>[%]</td>
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<tr>
<td>Cold compressibility ε_CW</td>
<td>DIN 28 090-2</td>
<td>[%]</td>
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<tr>
<td>Cold recovery</td>
<td>DIN 28 090-2</td>
<td>[%]</td>
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<tr>
<td>Hot creep ε_WCW/200</td>
<td>DIN 28 090-2</td>
<td>[%]</td>
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<td>Hot recovery</td>
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<td>[%]</td>
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<td>Recovery R</td>
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<td>[mm]</td>
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<tr>
<td>Specific leakage rate λ_2,0</td>
<td>DIN 28 090-2</td>
<td>[mg/(s·m)]</td>
<td>≤ 0.05</td>
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<tr>
<td>Fluid resistance</td>
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<tr>
<td>Weight change</td>
<td>ASTM IRM 903</td>
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<tr>
<td>Thickness increase</td>
<td>ASTM IRM 903</td>
<td>5h/150 °C</td>
<td>5</td>
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<tr>
<td>Weight change</td>
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<td>Chloride content</td>
<td>FZT PV-001-133</td>
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* Modal value (typical value)

### Product data

<table>
<thead>
<tr>
<th>Dimension [mm]</th>
<th>1500 x 1500</th>
<th>2000 x 1500</th>
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<tr>
<td>Thicknesses [mm]</td>
<td>0.5/0.8</td>
<td>1.0/1.5/2.0/3.0</td>
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</table>

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
Good for people and the environment.

From research and development to our manufacturing operations and use of the product by the customer: quality assurance and a responsible approach to resources and the environment are a firm commitment we observe in everything we do throughout the life cycle of all products.

Frenzelit has obtained certification that the company complies with the requirements of ISO 9001, ISO/TS 16949 and ISO 14001. This means complete transparency in all areas and therefore provides a high degree of security – for the benefit of our employees, the environment and our customers.

Gasket materials from Frenzelit:

- **novapress®**: Compressed fibre gaskets
- **novaform®**: Special compressed fibre gaskets, metal, dispenser or silk screen gaskets
- **novatec®**: Fibre-reinforced graphite gaskets
- **novaphit®**: Graphite gaskets from expanded pure graphite / reinforced with stainless steel inserts
- **novafion®**: PTFE gaskets
- **novaMICA®**: High-temperature gaskets made from phlogopite mica with an expanded stainless steel metal insert
- **isoplan®**: High-temperature gaskets and insulation material
- **novaplan®**: Facing material for cylinder head gaskets, head shield papers

Qualitätsmanagement
ISO 9001
ISO/TS 16949

Umweltmanagement
ISO 14001