# novatec® PREMIUM II
# The standard gasket for industrial applications.


- GASKETS
- TECHNICAL TEXTILES
- EXPANSION JOINTS
- INSULATION
- NEW MATERIALS

Frenzelit

creating
hightech
solutions

## Your wish ...

- Higher safety standards
- Higher temperature resistance
- Higher media resistance
- All-purpose products
- Maximum design reliability
- Optimised adaptability
- Better handling properties

## ... is our command.

- novatec® PREMIUM II is the standard gasket.
- novatec® PREMIUM II covers 80% of all industrial applications.

# Typical applications for novatec® PREMIUM II

- All-purpose use in many areas of industry in general and the chemical industry in particular
- Oils and greases, acids and alkalis, solvents, refrigerants, water, steam
- Compliance with the German pollution regulations e.g. TA Luft in these areas:
  - Petrochemicals
  - Gerneral industry
  - Chemical industry
  - Plant engineering

# Optimum benefits thanks to a unique material composition

**Media-resistant at high temperatures**

novatec® PREMIUM II is the second generation of the proven novatec® PREMIUM range. The graphite – Kevlar® material combination guarantees an efficiency level that exceeds all standard fibre gaskets on the market. The large proportion of graphite combined with the small proportion of bonding agent provides resistance to about 80% of all the media used commonly for general industrial applications as well as in the chemical industry particularly.

**Excellent pressure resistance**

novatec® PREMIUM II has long-term resistance properties and guarantees constant reliability throughout the maintenance cycle. Pressure resistance is higher than with all conventional high-pressure gaskets. The long useful life extended maintenance intervals and can therefore be relied on to cut costs.

**Optimised adaptability**

Due to its material structure, novatec® PREMIUM II compensates for flange unevenness and roughness that are found in old systems in particular.

**Unique release properties**

The special process used to apply the release coating incorporated in the blue colour makes the coating considerably more effective than conventional fibre gaskets, while the solvent-free formulation means it contributes actively to protection of the environment.

**Tool-friendly processing**

novatec® PREMIUM II is simple and excellent to process because of the large proportion of graphite it contains.

**Better handling properties**

Since they are very flexible, even sheets 3.0 mm thick can be shipped inexpensively in tubes. novatec® PREMIUM II proves to be extremely rugged when handled improperly during transport and installation.

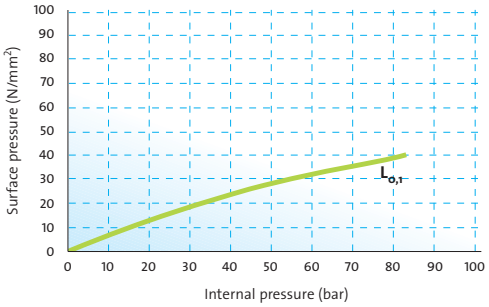
**Single-piece gaskets of all sizes and thicknesses**

novatec® PREMIUM II is available in large formats and all normal thicknesses. Special dimensions can be produced in a single piece without any complicated processing operations.

Kevlar® is a trademark registered by DuPont.


# Technical information about novatec® PREMIUM II

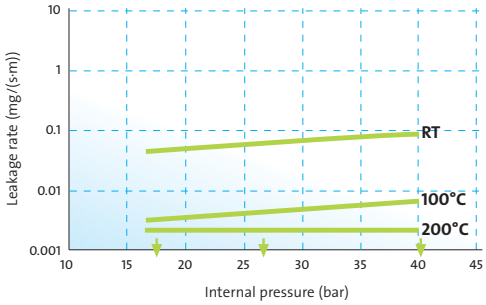
## Specific leakage rate




novatec® PREMIUM II remains well below the leakage limits specified by DIN 3535.

*Leakage category: L = 0.1 mg/(s·m) · test gas: nitrogen · thickness: 2.0 mm*

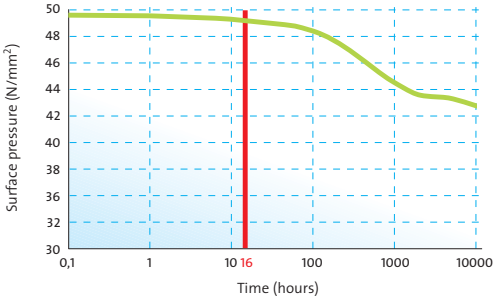
## Leakage rate under the influence of temperature




novatec® PREMIUM II is designed for minimum leakage. Microporosity under the influence of temperature and surface pressure is reduced and the gasket material is transformed into a closed, homogeneous structure. Leakage at 200 °C is lower than the detection limit in mass flow rate measurement of 0.001 mg/(s•m).

*Surface pressure: σ = 30 N/mm² · specimen dimensions: 90 x 50 x 2 mm*
*test medium: $N_2$*

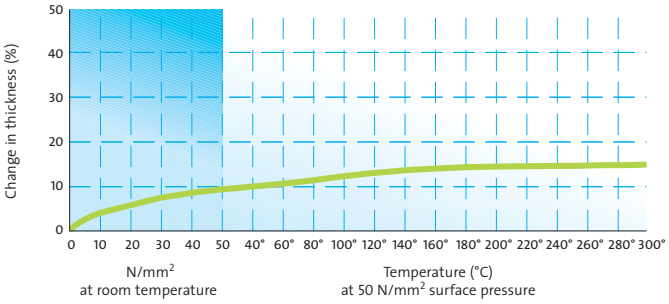
## Long-term creep relaxation




novatec® PREMIUM II has very high long-term pressure resistance properties and thus provides constant reliability throughout the maintenance cycle.

*Gasket dimensions: 75 x 55 x 1.5 mm · surface pressure: 48 - 50 N/mm²*
*test temperature: 300 °C · stiffness C: 840 kN/mm*

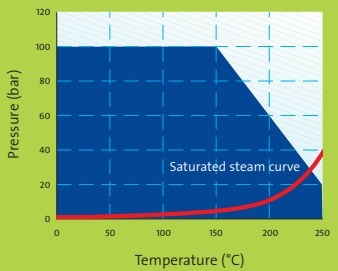
## Deformation under temperature 2.0 mm



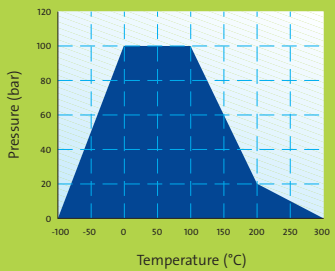

The thickness of novatec® PREMIUM II decreases to a particularly small extent under the influence of temperature. At 300 °C, thickness is only 5 % lower than at room temperature.

## Recommendations for use according to the pressure and temperature

### Water/steam




### Other media*




The temperature and pressure recommendations in the graphs apply to gaskets with a thickness of 2.0 mm and smooth flanges. Higher stresses are possible when thinner gaskets are used!

*Example for the most common other media. Exact data for specific individual cases are available in the Frenzelit novaDISC programme or contact our application engineering specialists.

### Warranty exclusion

In view of the variety of different installation and operation 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.

# Material data

### Material profile

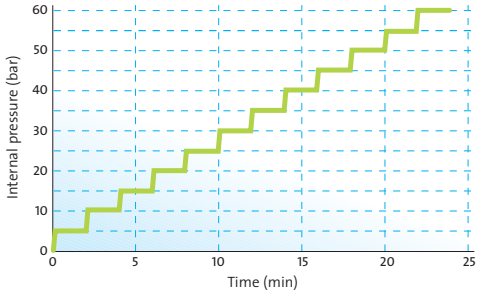
- Very compact gasket material, pressure-resistant, temperature-resistant and with good forming properties
- The main components are graphite and aramide fibres, bonded with NBR.
- State-of-the-art composite material that combines the advantages of graphite and aramide.

### Blow-out test passed easily

Proof of the blow-out resistance of the gasket system is required in addition to leakage testing. According to VDI 2200 (draft 06/2005), the gasket has to be able to withstand 1.5 times nominal pressure at very reduced surface pressure levels. The gasket is fitted in a DIN flange DN40/PN40 at 30N/mm$^2$.

After storage of the flange system at 200 °C for 24 hours, nitrogen is applied gradually at a pressure of up to a maximum of 60 bar. Pressure would drop very rapidly if the gasket failed.

The gasket is then tested at two considerably reduced surface pressure levels. If the test is passed at 10 N/mm$^2$, a further reduction is made to 7.5 N/mm$^2$. Even in the most critical case of an extremely low surface pressure level of 7.5 N/mm$^2$ and maximum pressure of 60 bar, novatec® PREMIUM II demonstrates its impressive blow-out resistance in line with the German pollution regulations – without internal edging. We can provide a certificate confirming this on request.




### General data

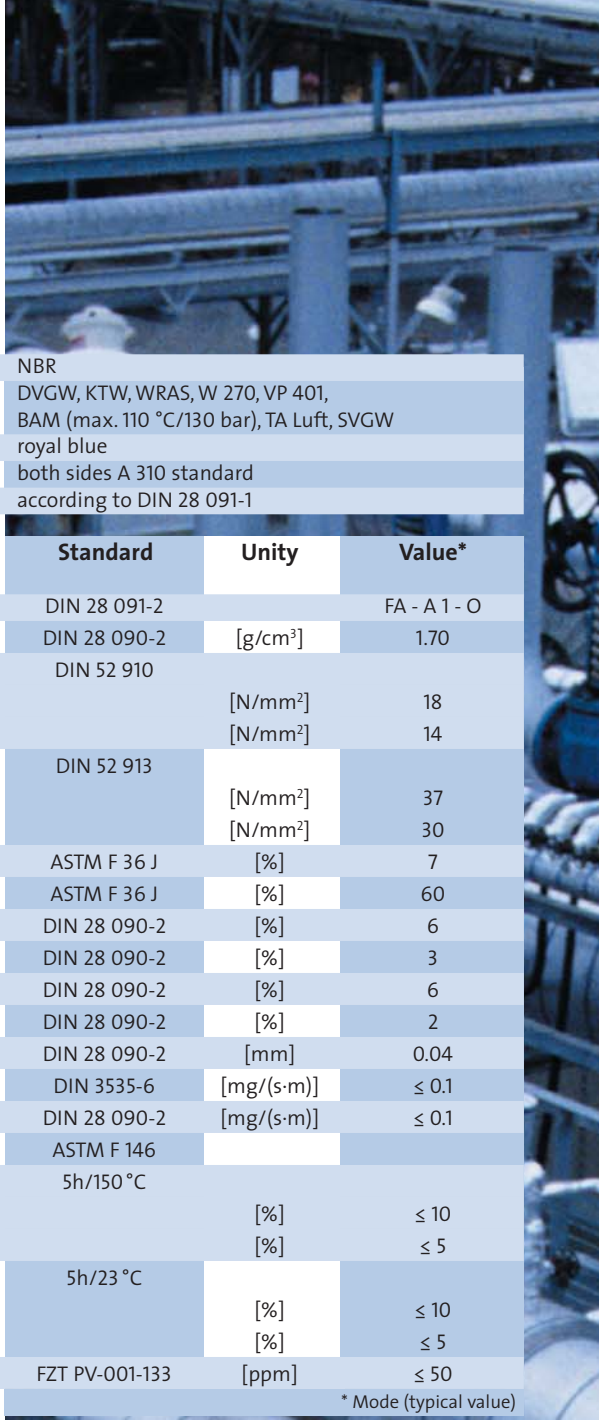
| | |
|---|---|
| Binders | NBR |
| Approvals | DVGW, KTW, WRAS, W 270, VP 401, BAM (max. 110 °C/130 bar), TA Luft, SVGW |
| Colour | royal blue |
| Anti-stick coating | both sides A 310 standard |
| Tolerances in thickness | according to DIN 28 091-1 |

| **Physical properties** Gasket thickness 2.0 mm | **Standard** | **Unity** | **Value*** |
|---|---|---|---|
| Identification | DIN 28 091-2 | | FA - A 1 - O |
| Density | DIN 28 090-2 | [g/cm$^3$] | 1.70 |
| Tensile strength | DIN 52 910 | | |
| longitudinal | | [N/mm$^2$] | 18 |
| transverse | | [N/mm$^2$] | 14 |
| 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 | [%] | 7 |
| Recovery | ASTM F 36 J | [%] | 60 |
| Cold compressibility $\varepsilon_{KSW}$ | DIN 28 090-2 | [%] | 6 |
| Cold recovery $\varepsilon_{KRW}$ | DIN 28 090-2 | [%] | 3 |
| Hot creep $\varepsilon_{WSW/200}$ | DIN 28 090-2 | [%] | 6 |
| Hot recovery $\varepsilon_{WRW/200}$ | DIN 28 090-2 | [%] | 2 |
| Recovery R | DIN 28 090-2 | [mm] | 0.04 |
| Specific leakage rate | DIN 3535-6 | [mg/(s·m)] | ≤ 0.1 |
| Specific leakage rate $\lambda_{2,0}$ | DIN 28 090-2 | [mg/(s·m)] | ≤ 0.1 |
| Fluid resistance | ASTM F 146 | | |
| ASTM IRM903 | 5h/150 °C | | |
| Weight change | | [%] | ≤ 10 |
| Thickness increase | | [%] | ≤ 5 |
| ASTM Fuel B | 5h/23 °C | | |
| Weight change | | [%] | ≤ 10 |
| Thickness increase | | [%] | ≤ 5 |
| Chloride content | FZT PV-001-133 | [ppm] | ≤ 50 |

* Mode (typical value)

### Product data

- Dimensions in mm: 1500 x 1500
  Thicknesses in mm: 0.5/0.8
- Dimensions in mm: 2000 x 1500
  Thicknesses in mm: 1.0/1.5/2.0/3.0
- Further dimensions and thicknesses are available on request



Do you have any questions about your application?

The gasket information service will help you:

**gaskets@frenzelit.de**

# Good for people and the environment.

Frenzelit has obtained certification that the company complies with the requirements of both ISO/TS 16949 and ISO 14001. This means complete transparency in all areas and a high degree of security for our customers.

**Quality management**
ISO/TS 16949

**Environmental management**
ISO 14001

**German fugitive emission regulations with clear instructions**

The air pollution regulations that have applied in Germany since October 2002 define and specify the commitments for operators of industrial equipment that requires approval.

Clear rules are made there for flange connections. In this context, technically tight flange connections have to be used in accordance with VDI 2440 (issue 11/2000).

novatec® PREMIUM II has been tested extensively at a temperature of 250 °C at MPA Stuttgart and has been classified as a high-quality gasket in accordance with the VDI directive 2440 for the German pollution regulations. The leakage rate of $2.3 \cdot 10^{-5}$ mbar · l/(s·m) is therefore substantially lower than the maximum acceptable limit of $10^{-4}$ mbar · l/(s·m), which is measured with the help of a helium mass spectrometer at a surface pressure level of 30 N/mm² and with pressure of 1 bar.

Staatliche Materialprüfungsanstalt
Universität Stuttgart

MPA STUTTGART

**Zertifikat**

Die Flachdichtung vom Typ **novatec PREMIUM II**

der **Frenzelit-Werke GmbH & Co. KG**
**Frankenhammer**
**95456 Bad Berneck**

wurde von uns nach den Vorgaben der VDI-Richtlinie 2440 (Ausgabe November 2000) geprüft. Nach 48-stündiger Auslagerung bei 250°C an Luft und anschließender Leckagemessung bei Raumtemperatur und 1 bar Druckdifferenz mittels Helium-Massenspektrometrie erfüllt sie mit

$2.3 \cdot 10^{-5}$ mbar l / (s·m)

das Leckagerateriterium

$10^{-4}$ mbar l / (s·m)

und gilt damit hinsichtlich des oben genannten Leckagekriteriums als

**hochwertig im Sinne der TA Luft.**

Dieses Zertifikat gilt nur in Verbindung mit unserem
**Prüfungsbericht 950 924 002 Dr.Koc/Ith/Gue vom 09. Mai 2003**
und den dort niedergelegten Prüf- und Randbedingungen.

Stuttgart, den 09.05.2003

Dipl.-Ing. R. Hahn
**Fachgruppenleiter Dichtungstechnik**

Nach DIN EN ISO/IEC 17025 durch die DAP Deutsches Akkreditierungssystem Prüfwesen GmbH akkreditiertes Prüflaboratorium.
Die Akkreditierung gilt für die in der Urkunde aufgeführten Prüfverfahren (DAP-Reg.-Nr.: DAP-PL-2007.00).
Zusätzliche Akkreditierungen und Zertifizierungen nach DIN EN ISO 9001 durch DAP/PTB, KBA und TÜV.



FL/4/12.08/03/FL

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