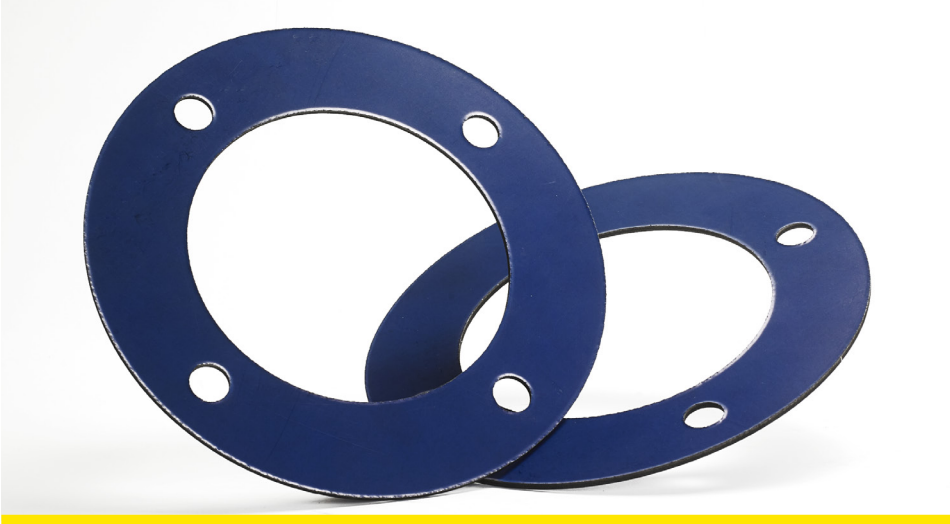
# Dixo® 7000 XP

## The new generation of fibre-reinforced graphite gaskets



### MATERIAL DESCRIPTION:

Dixo® 7000 XP is a newly developed version of a aramid fibre-reinforced graphite gaskets. The concept of XP involves a considerable increase in the material's sealing capability, compression set and media resistance thanks to the advanced construction of its graphite structure, which has been made possible thanks to an ingenious manufacturing technology. Dixo® 7000 XP has been developed in cooperation with Frenzelit GmbH under the concept name XP ("Extended Performance").

Using Dixo® 7000 XP makes it possible to configure sealing systems in accordance with EN 1591-1 sealing class $L_{0.01}$ as per regulation VDI 2290. The unique combination of aramid fibres and graphite makes it possible to standardise gaskets in applications far beyond the existing options of elastomer-bonded fibre gaskets in a broad range of applications at temperatures up to max. +300°C.

Dixo® 7000 XP consists of a mixture of graphite and aramid fibres vulcanised together with a very small amount of NBR rubber. This composition gives the material a very broad media resistance range, which covers the most common applications in the process and power generating industries.

Dixo® 7000 XP is coated on both surfaces with an eco-friendly anti-stick facing, which is entirely free from solvents.

**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 its purity and particle size, but also by the structure of the graphite. Thanks to its careful morphological design, the new generation of soft gasket material (which goes by the collective name of XP, Extended Performance) now makes it possible to create seals which meet the rigorous emission requirements specified in the German regulations "TA-Luft" and VDI 2290. The illustrations below show the two special graphite morphologies which together form the primary structure in Dixo® 7000 XP.

**Broad media register at high temperatures**

The combination of graphite/aramid fibre in Dixo® 7000 XP guarantees an efficiency which surpasses all conventional rubber bonded fibre materials. The high graphite content in combination with the very low content of bonding agent means significantly higher chemical resistance, while at the same time the max. temperature limit is increased to up to +300°C. Moreover, the residual seating stress level is considerably better than anything achieved with conventional rubber bonded fibre materials. The anti-stick coating that remains effective for a long period of time is an additional advantage.

### APPLICATIONS:

Dixo® 7000 XP is ideal for sealing of pipe flanges, lids, covers and split casing flanges.

The gasket is resistant to steam, water, petroleum products, refrigerants, solvents, gases, weak acids and alkalis etc.

For further information on areas of application, please see the diagrams on the following page.

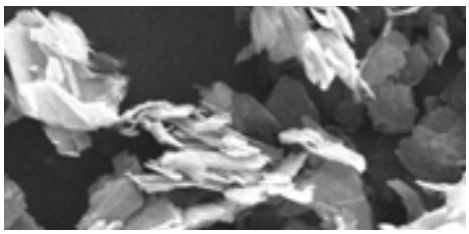
Recommended flange surface finish:
Ra 3.2 - 12.5 µm.

### PROPERTIES:

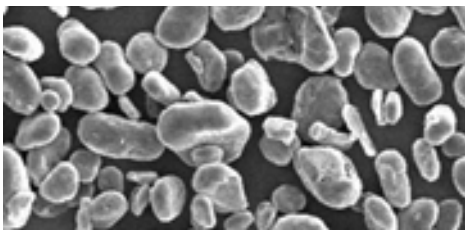
Dixo® 7000 XP is pliable and easy to work, and has the following unique properties:

- 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
- high temperature resistance. Extended temperature range up to +300°C
- excellent residual seating stress
- broad media resistance range
- high adaptability to unevenness of the flange faces
- anti-stick coating that remains effective for a long period of time
- simple processing and handling

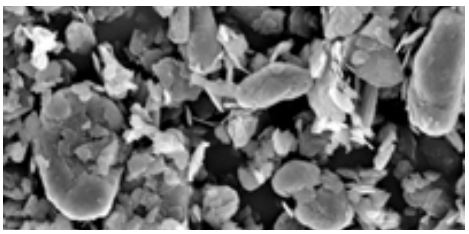
Dixo® 7000 XP is an ideal universal gasket which may advantageously replace conventional rubber bonded aramid and carbon fibre based materials. Its excellent thermal stability contributes to low compression set, which in turn minimises relaxation in the bolted joint and hence permits extension of the periods between service intervals.



Graphite flake structure.



Graphite grain structure.



The main structure in Dixo® 7000 XP is a defined mix of graphite flakes and grains.

## TECHNICAL DATA:

| | | |
|---|---|---|
| Temperature range: | -100°C, for max temperature, see diagram | |
| Max. internal pressure: | approx. 100 bar in ideal conditions | |
| Recommended seating stress: | see table | |
| Gasket group, as per TKN 87: | 2 | |
| m-factor: | 2.5 | |
| y-factor: | see table | |
| Hot compression test (DIN 52 913 @ 175°C): | | 37 N/mm2 |
| Hot compression test (DIN 52 913 @ 300°C): | | 30 N/mm2 |
| Tensile strength, transverse (DIN 52 910): | | 18 N/mm2 |
| lateral (DIN 52 910): | 20 N/mm2 | |
| Compressibility (ASTM F36J): | 6% | |
| Recovery (ASTM F36J): | 60% | |
| Weight increase (ASTM F 146): | 8% in oil ASTM IRM903 @ 5h/150°C<br>8% in ASTM Fuel B @ 5h/23°C | |
| Thickness increase (ASTM F 146): | 5% in oil ASTM IRM903 @ 5h/150°C<br>5% in ASTM Fuel B @ 5h/23°C | |
| Gas leakage (DIN 3535-6): | ≤ 0.05 mg/m•s | |
| Density (DIN 28 090-2): | 1.74 g/cm3 | |
| Chloride content (FZT PV-001-133): | ≤ 50 ppm | |

## INSTALLATION INSTRUCTIONS:

Use as thin a gasket as possible, taking into account the flatness, surface finish and condition of the flanges. A thickness of 1.5 mm is generally recommended. Avoid applying sealants or anti-stick compounds to the sealing surfaces. Dixo® 7000 XP already has an effective anti-stick coating on the sealing surfaces that remains effective for a long period of time.

Always remember to lubricate bolt threads and nut facings with an eco-friendly lubricant. We recommend that Grafex® GTL graphite lubrication paste in combination with Nord-Lock® locking washers are used for best results.

Tighten the bolts to the prescribed tightening torque in three stages.

## RECOMMENDED SEATING STRESS:

| | During installation | | | In service | | | |
|---|---|---|---|---|---|---|---|
| | | Min. seating stress | Max. seating stress | Max. seating stress | | | |
| Internal pressure | Thickness mm | +20°C N/mm² | +20°C N/mm² | +20°C N/mm² | +100°C N/mm² | +200°C N/mm² | +300°C N/mm² |
| 10 bar | 1.0 | 6 | 190 | 190 | 145 | 85 | 75 |
| | 1.5 | 7 | 145 | 145 | 100 | 70 | 60 |
| | 2.0 | 8 | 120 | 120 | 75 | 60 | 50 |
| | 3.0 | 16 | 100 | 100 | 60 | 50 | 45 |
| 16 bar | 1.0 | 8 | 190 | 190 | 145 | 85 | 75 |
| | 1.5 | 9 | 145 | 145 | 100 | 70 | 60 |
| | 2.0 | 10 | 120 | 120 | 75 | 60 | 50 |
| | 3.0 | 25 | 100 | 100 | 60 | 50 | 45 |
| 25 bar | 1.0 | 13 | 190 | 190 | 145 | 85 | 75 |
| | 1.5 | 16 | 145 | 145 | 100 | 70 | 60 |
| | 2.0 | 17 | 120 | 120 | 75 | 60 | 50 |
| | 3.0 | 38 | 100 | 100 | 60 | 50 | 45 |
| 40 bar | 1.0 | 16 | 190 | 190 | 145 | 85 | 75 |
| | 1.5 | 21 | 145 | 145 | 100 | 70 | 60 |
| | 2.0 | 26 | 120 | 120 | 75 | 60 | 50 |
| | 3.0 | 53 | 100 | 100 | 60 | 50 | 45 |

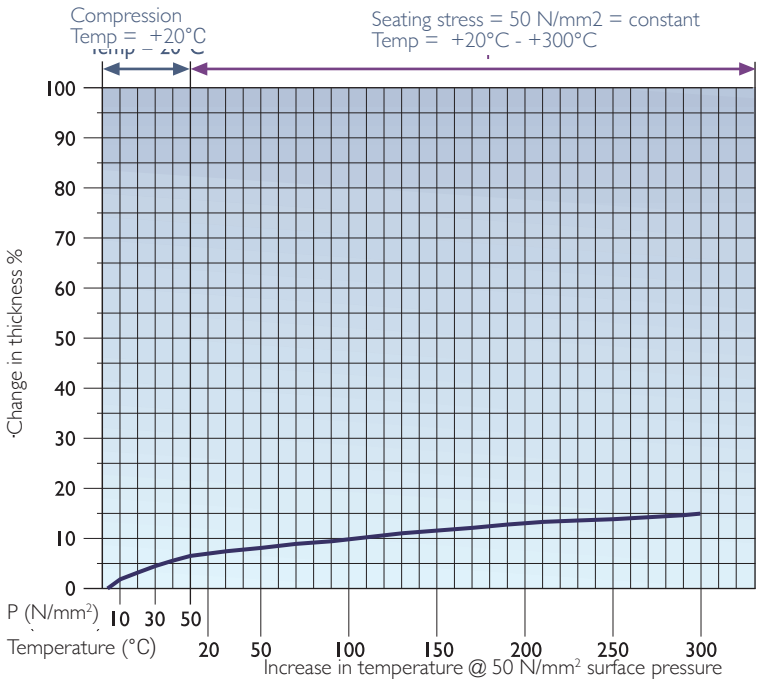
## STANDARD DIMENSIONS:

Dixo ® 7000 XP sheets are stocked in the following standard dimensions:

| Thickness mm | Sheet size mm | Kg per sheet | Part number |
|---|---|---|---|
| 0.5 | 1500 x 1500 | 2.0 | 276905 |
| 1.0 | 1500 x 2000 | 5.2 | 276910 |
| 1.5 | 1500 x 2000 | 7.8 | 276915 |
| 2.0 | 1500 x 2000 | 10.4 | 276920 |
| 3.0 | 1500 x 2000 | 15.6 | 276930 |

We also stock ready-cut gaskets as per EN 1514-1 IBC and ASME B16.21 IBC in thickness 1.5 mm. We also manufacture finished gaskets according to customer´s specifications.

## COMPRESSION SET 50 N/MM² - 300°C (2.0 MM):




### Approvals:

Dixo® 7000 XP has been subjected to extensive tests in demanding applications and has the following approvals:

***TA-Luft***
Meets the tightness criteria $10^{-4}$ mbar • l/(m • s) as per guidelines VDI 2440 and VDI 2200.

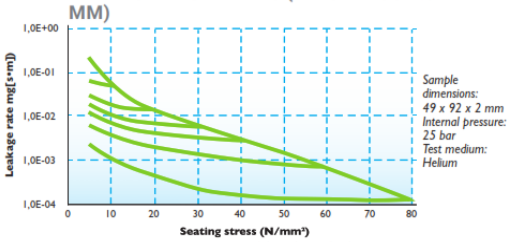
***Bundesanstalt für Materialforschung und-prüfung (BAM)***
Approved for use in oxygen applications up to max. +100°C and max.130 bar.

***Deutsche Vereinigung des Gas- und Wasserfaches e.v (DVGW)***
Approved for use in gas applications asp per test method DIN 3535-6.

Approved for use in drinking water applications as per test method W 270.

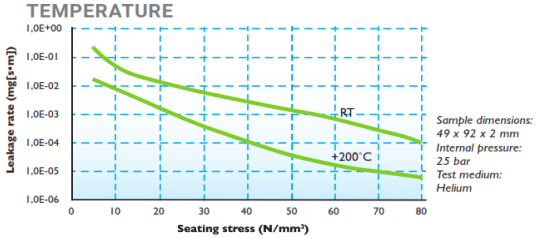
***Water Regulations Advisory Scheme Material (WRAS)***
Approved for use in drinking water applications.

## LEAKAGE PROPERTIES (THICKNESS 2.0 MM)




The new generation of rubber bonded graphite/aramid gasket materials provides considerably lower leakage values at normal seating stresses compared with earlier generations.

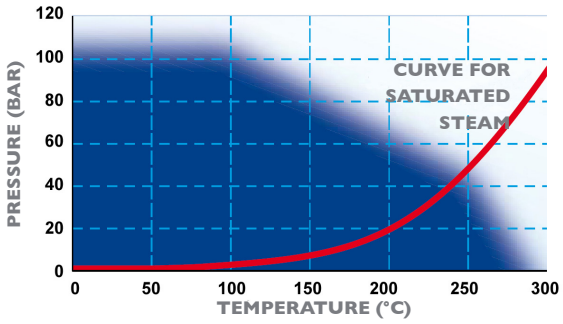
## LEAKAGE RATE UNDER THE INFLUENCE OF TEMPERATURE



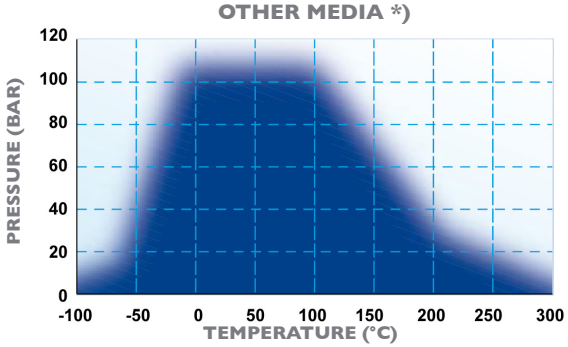

Dixo® 7000 XP is designed for minimum leakage. The microporosity of the innovative gasket material decreases under the influence of temperature and seating stress.

## AREA OF APPLICATION, TAKING INTO ACCOUNT PRESSURE AND TEMPERATURE FOR THE MOST COMMON MEDIA GROUPS:

### WATER/STEAM




### OTHER MEDIA *)




The stated limit values apply under favourable conditions. If in doubt, please contact the technical support department of DENSIQ AB. Our media database can provide information of chemical resistance, and we can also calculate flange joints in order to check the right surface pressure will be achieved.

The pressure and temperature limits indicated are influenced not only by the properties 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.

*) Examples of the most common other media. For precise data on individual cases, please contact our application engineering specialists for further information.