

Gasket material

KLINGER®top-chem2003

☒ User defined flange

☐ Select standard flange

Type of gasket

☐ Circular ring type

☒ Circular full face type

☐ Oval

☐ Oval with holes

☐ Rectangular

☐ Rectangular with holes

☐ Complex dimension

Dimension of gasket

The remaining width $x = < 5$ mm.
To prevent technical related gasket problems,
a remaining width $x = > 5$ mm is recommended.

All figures in mm

----- = Compressed diameter of the gasket

Internal pressure

☒ reduces gasket stress

☐ increases gasket stress

Service conditions

Temperature: 70 °C

Pressure: 1.0 bar

Aggregate state: gaseous

Medium: Ethylene

Chemical formula: C₂H₄

Concentration: 100 %

Flange Dimension

Flange: User defined flange

Nominal diameter:

Nominal pressure:

Tightness

λ 20 °C: 0.000 mg/sm

λ T °C: 0.000 mg/sm

Tightness acc. to DIN

☒ 20 °C ☐ T °C

Tightness class acc.DIN 28090: 0.045 mg/sm

L0.01 L0.1 L1.0

Bolt characteristics

Number: 12

Quality: 5.8

0.2 % Creep limit: 400.00 MPa

Type of bolt: DIN-bolt/Hex. Head

Size: M-8

Friction: 0.20

Torque: 20.89 Nm

Bolt force properties

Max. bolt load: 14.6 kN

Yield: 67 %

Bolt force: 9.80 kN

Total bolt force: 117.7 kN

Bolting-up Method: Torque Wrench

Gasket conditions

☐ Automatic choice

Gasket Material Selection

Gasket	Points
KLINGER® Quantum	79
KLINGER® top-sil-ML1	74
KLINGER® top-chem2003	74
KLINGER® top-chem2005	74
KLINGER® top-chem2006	72
KLINGER® top-chem2000	72
KLINGER® top-chem2000soft	72
KLINGERSIL® C4400	67

Thickness: 1.5 mm

Compr. Area: 4656.00 mm²

Total Area: 10387.00 mm²

Gasket stress

σ BO: 84 MPa

σ VO: 180 MPa

σ E min: 5 MPa

$\Delta \sigma$ p: 0 MPa

σ BU: 5 MPa

σ VU: 5 MPa

σ calc: 25 MPa

σ relax: 20 MPa

Graphical analysis of gasket stress

Installation conditions

Operating conditions

Info - Selected gasket

Media resistance to Ethylene is very good.

Maximum allowed temperature is 260 °C.

Additional Information

Please consider that high bolt forces can lead to bending of the flanges.
KLINGER®expert makes a theoretical assumption that flanges are rigid.
Further information in the "help" menu.
You have chosen a DIN or EN flange. Please consider that high bolt forces can lead to bending of the flanges.
KLINGER®expert makes a theoretical assumption that flanges are rigid.
Approvals valid according to German law.

Disclaimer

The characteristic values on which the gasket calculations are based have been derived from the latest research in the Klinger laboratories and to the best of our knowledge and judgement.

Further investigations in this field will make future updates of the calculational values and procedures possible.

The values and parameters calculated with KLINGER®expert are based on a static calculation of the information provided, such as temperature, pressure, bolt loads, etc.

An explicit calculation of the actual conditions, which takes account of plant-specific boundary conditions, such as load change behaviour, additional piping forces, flange bending, etc., is not possible because of the complexity of the relationships.

For these reasons, the establishment of any guarantee claims, of any nature whatsoever, for the functionality of flange connections with gaskets which are calculated with KLINGER@expert is not possible.

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Own Comment

Actual Max Pressure is 0.5bar Software will only allow 1bar input so leak potential is less.

The bolt grade selected for this material is very close to the figures on the spread sheet.
Therefore, no adjustments to the results are required.

At 21Nm, both torque and bolt load values are below the max recommended values shown on the
TSF datasheet .

Ethylene Oxide is not available for the selection so Ethylene is used. This has smaller molecules
so leakage calculation is safe.

The gasket material is PTFE that is generally recognised to be extremely resistant to Ethylene Oxide.

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