

Certificate No: **TAP00001MJ** Revision No:

# TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gaskets and Sealings

with type designation(s)

Flat Gasket - KLINGER®top-chem 2000, KLINGER®top-chem 2003, KLINGER®top-chem 2005, KLINGER®top-chem 2006

Issued to

# Rich. Klinger Dichtungstechnik GmbH & Co. KG Gumpoldskirchen, NÖ, Austria

is found to comply with **ASTM F36 DIN 28090** 

## **Application:**

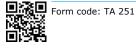
Refer to section Application in the certificate. Refer to certificate. Temperature range: Refer to certificate. Max. working press.: Design: Plate material.

Sizes: 1500x1500mm. Thickness 1.0, 1.5, 2.0 and 3.0mm

Issued at Hamburg on 2019-06-04 This Certificate is valid until 2024-05-16. for **DNV GL** DNV GL local station: Augsburg Approval Engineer: Andrii Pishchanskyi **Olaf Drews Head of Section** 

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Revision: 2016-12



www.dnvgl.com

Page 1 of 4

Job Id: **262.1-029480-1** Certificate No: **TAP00001MJ** 

Revision No: 1

# **PRODUCT DESCRIPTION**

#### **Dimensions of plate material:**

• Sizes: 1500 x 1500 mm

 Thicknesses: 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm
 Tolerances: Thickness acc. DIN 28091-1 Length ± 50 mm, width ± 50 mm

# KLINGER®top-chem 2000

Asbestos free and fire safe (API 607) flat gasket material from PTFE, filled with SiC (Silicon Carbide).

### Values for 2.0 mm thickness1:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2		2.5	g/cm <sup>3</sup>
Compressibility	ASTM F36M		4	%
Recovery	ASTM F36M		50	%
Tightness	DIN 28090-2		0.08	mg/s*m
Klinger cold compression	Klinger	50 MPa / 23°C	5	%
Klinger hot compression	Klinger	50 MPa / 260°C	11	%

#### KLINGER®top-chem 2003

Asbestos free flat gasket material from PTFE, filled with hollow glass-microspheres.

#### Values for 2.0 mm thickness1:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2		1.7	g/cm³
Compressibility	ASTM F36M		18	%
Recovery	ASTM F36M		35	%
Tightness	DIN 28090-2		0.01	mg/s*m
Klinger cold compression	Klinger	25 MPa / 23°C	10	%
Klinger hot compression	Klinger	25 MPa / 260°C	39	%

### KLINGER®top-chem 2005

Asbestos free gasket material from PTFE, filled with inorganic fillers.

# Values for 2.0 mm thickness¹:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2		2.2	g/cm <sup>3</sup>
Compressibility	ASTM F36M		4	%
Recovery	ASTM F36M		40	%
Tightness	DIN 28090-2		0.02	mg/s*m
Klinger cold compression	Klinger	50 MPa / 23°C	5	%
Klinger hot compression	Klinger	50 MPa / 260°C	35	%

Form code: TA 251 Revision: 2016-12 www.dnvgl.com Page 2 of 4

Job Id: **262.1-029480-1**Certificate No: **TAP00001MJ** 

Revision No: 1

### KLINGER®top-chem 2006

Asbestos free flat gasket material from PTFE, filled with Barium sulphate.

#### Values for 2.0 mm thickness<sup>1</sup>:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2		3.0	g/cm³
Compressibility	ASTM F36M		4	%
Recovery	ASTM F36M		40	%
Tightness	DIN 28090-2		0.01	mg/s*m
Klinger cold compression	Klinger	50 MPa / 23°C	12	%
Klinger hot compression	Klinger	50 MPa / 260°C	41	%

Note<sup>1</sup>: Reference "Declaration of conformity acc. to DIN EN ISO 17050-1" issued by KLINGER Dichtungstechnik.

### **APPLICATION**

The above listed gasket material sheet type may be used under consideration of the mechanical and technical characteristics as well as physical and chemical properties for the following applications:

- On board ships and other structures classed by DNV GL as follows: Ship's piping systems as specified in DNV GL Rules Pt.4, Ch.6 Piping systems, cargo lines on oil and chemical tankers including cargo oil line carrying propylene oxide and mixtures of ethylene / propylene oxide.
- The selection of the gaskets for the corresponding application and appropriate installation has
  to be in accordance with the instructions of the manufacturer.

### TYPE APPROVAL DOCUMENTATION

## **MARKING OF PRODUCT**

For traceability of products, marking shall be legible and indelible. Products are to be marked at least as follows:

- Manufacturer's name / label
- Product type / name
- Safety Information (MSDS Material Safety Data Sheet)

<u>Marking sample:</u> **KLINGER**®top-chem 2000 FOR SERVICE DATA SEE MSDS

Form code: TA 251 Revision: 2016-12 www.dnvgl.com Page 3 of 4

Job Id: **262.1-029480-1**Certificate No: **TAP00001MJ** 

Revision No: 1

# PERIODICAL ASSESSMENT

A condition for retention of the type approval certificate in its validity period is that periodical assessments are successfully carried out. The objective of the periodical assessment is to verify that the conditions for the type approval have not been altered. Regulations for the periodical assessment of the type approval certificate are to be find in the DNVGL Class Programme CP-0338.

It is further to be noted that the Society shall be informed of any:

- Modifications to the product which are liable to affect its characteristics and functions, as originally specified and tested;
- Shifting of the production site and additional production site.

If such notifications are not made, the validity of the type approval certificate terminates.

#### **END OF CERTIFICATE**

Form code: TA 251 Revision: 2016-12 www.dnvgl.com Page 4 of 4