

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gaskets and Sealings

with type designation(s)
Flat Gasket - novamica®

Issued to
Frenzelit GmbH
Bad Berneck i. Fichtelgebirge, Bayern, Germany

is found to comply with
ASTM F36 Standard Test Method for Compressibility and Recovery of Gasket Materials
DIN 28090-2 Static gaskets for flange connections – Gaskets made from sheets – Part 2: Special test procedures for quality assurance
DIN 52913 Testing of static gaskets for flange connections – Compression creep testing of gaskets made from sheets

Application :

Refer to section Application in the certificate.

Temperature range: Refer to certificate and manufacturer's instruction
Max. working press.: Refer to certificate and manufacturer's instruction
Design: flat material
Sizes: 0.5 mm to 5.0 mm thickness

Issued at **Hamburg** on **2021-11-22**
This Certificate is valid until **2026-11-21** .
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Thilo Pabst**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



PRODUCT DESCRIPTION

Asbestos free flat gasket plate material made of refined phlogopite-mica.
 Partly reinforced by stainless steel (1.4404/ AISI 316L) - wire mesh (novamica® THERMEX).

Scope / Products / Technical data:

- novamica® THERMEX
- novamica® 200
- novamica® 100 REEL

Dimensions of plate material¹:

- Sizes: rolls in diverse width up to 1000 m and length up to 50 m, plates: 1200 mm x 1000 mm
- Thicknesses: 0.5 mm to 5.0 mm

Note1: Available sizes and thicknesses depending from product.

Values for gasket materials of 2.0 mm thickness:

Technical data ²	Standard	Unit	Values per product	
			THERMEX	200
Density	DIN 28090-2	g/cm ³	1.85 ± 0.10	1.80 ± 0.10
Compressibility	ASTM F36J	%	25.0 ± 10.0	25.0 ± 10.0
Recovery	ASTM F36J	%	37.5 ± 7.5	37.5 ± 7.5
Residual Stress at 300°C	DIN 52913	MPa	≥ 30.0	≥ 30.0
Cold compressibility	DIN 28090-2	%	≥ 10.0	≥ 9.0
Hot creep at 300°C	DIN 28090-2	%	≤ 12.0	≤ 12.0

Values for gasket materials of 0.5 mm thickness³:

Technical data ²	Standard	Unit	Values for 100 REEL
Density	DIN 28090-2	g/cm ³	1.60 ± 0.10
Compressibility	ASTM F36J	%	27.5 ± 7.5
Recovery	ASTM F36J	%	31.5 ± 8.5
Residual Stress at 300°C	DIN 52913	MPa	≥ 44.0
Cold compressibility	DIN 28090-2	%	--
Hot creep at 200°C	DIN 28090-2	%	--

Note2: These conditions are not equivalent to maximum service conditions - depending e.g. from temperature, medium, gasket thickness.
 For detailed information, please refer to instruction of manufacturer

Note3: Product novamica® 100 REEL available in 0.5 mm thickness, only.

APPLICATION / LIMITATION

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 and cargo lines on oil tankers.

Excluding cargo lines on chemical and gas tankers, carrying flammable and/or noxious media, propylene oxide and mixtures of ethylene and propylene oxide.
 Excluding pipelines for LNG, flammable gas systems and cryogenic fluids.

- 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

TESTS CARRIED OUT

According to standards referenced in the table “Values for gasket materials of 2.0 mm / 0.5 mm thickness”, on page 2.

MARKING OF PRODUCT

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

Scope	Example
Manufacturer's name / label Product type / name	Marking sample novamica® 200 

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 found in the DNV Class Programme CP-0338.

To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>
 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