

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Gaskets and Sealings**

with type designation(s)

TEMAFAST, TEMAFAST ECONOMY, TEMAPLUS, TEMAFLX, TEMASIL, TEMASIL NG, TEMASIL HT

Issued to

TEMAC, a.s.**Zverinek, Czech Republic**

is found to comply with

DIN 28090**DIN 3535-6****ASTM F36 Standard Test Method for Compressibility and Recovery of Gasket Materials****ASTM F146 Standard Test Methods for Fluid Resistance of Gasket Materials****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:** Plate material**Sizes:** Refer to certificate and manufacturer's instructionIssued at **Hamburg** on **2019-09-25**This Certificate is valid until **2024-09-24** .for **DNV GL**DNV GL local unit: **Prague CMC**Approval Engineer: **Hagen Markus**

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.



PRODUCT DESCRIPTION

All mentioned products of the TEMA-Series from TEMAC, a.s. are "Asbestos Free" flat gaskets.

Dimensions of plate material:

- Standard Sizes: 1500 x 1000 mm, 1500 x 1500 mm, 1500 x 3000 mm
- Standard thicknesses: 0.4 mm to 6.4 mm

TEMAFAST - Organic fibres with NBR rubber binder, colour Red.

Values for 2.0 mm thickness:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.6 – 1.9	g/cm ³
Compressibility	ASTM F36J	--	10 - 25	%
Recovery	ASTM F36J	--	≥50	%
Gas leakage	DIN 3535-6	--	~0.1	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<5	%
		ASTM Fuel B 5h / 23°C	<10	%

TEMAFAST ECONOMY - Organic fibres with NBR/SBR rubber binder, colour Yellow

Values for 2.0 mm thickness:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.6 – 1.9	g/cm ³
Compressibility	ASTM F36J	--	5 - 15	%
Recovery	ASTM F36J	--	≥50	%
Gas leakage	DIN 3535-6	--	~0.1	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<10	%
		ASTM Fuel B 5h / 23°C	<15	%

TEMAPLUS - Aramid fibres, temperature-proof fillers joint with special NBR, colour Green.

Values for 2.0 mm thickness¹:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.7 – 2.0	g/cm ³
Compressibility	ASTM F36J	--	5 - 15	%
Recovery	ASTM F36J	--	≥50	%
Gas leakage	DIN 3535-6	--	~0.03	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<3	%
		ASTM Fuel B 5h / 23°C	<5	%

TEMAFLEX - Aramid fibres with fillers formed by NBR binders, colour Green

Values for 2.0 mm thickness:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.7 – 2.1	g/cm ³
Compressibility	ASTM F36J	--	5 - 15	%
Recovery	ASTM F36J	--	≥45	%
Gas leakage	DIN 3535-6	--	~0.07	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<5	%
		ASTM Fuel B 5h / 23°C	<5	%

TEMASIL - Fibrous/rubber joint with NBR, colour Blue.

Values for 2.0 mm thickness:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.7 – 2.0	g/cm ³
Compressibility	ASTM F36J	--	5 - 15	%
Recovery	ASTM F36J	--	≥50	%
Gas leakage	DIN 3535-6	--	~0.04	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<4	%
		ASTM Fuel B 5h / 23°C	<5	%

TEMASIL NG – Fibrous/rubber joint, formed by a special filler, adjusted NBR mixture, colour Blue.

Values for 2.0 mm thickness:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.7 – 2.0	g/cm ³
Compressibility	ASTM F36J	--	5 - 15	%
Recovery	ASTM F36J	--	≥50	%
Gas leakage	DIN 3535-6	--	~0.06	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<3	%
		ASTM Fuel B 5h / 23°C	<5	%

TEMASIL HT – Mixture of mineral and aramid fibres joint by NBR rubber, colour Light blue

Values for 2.0 mm thickness¹:

Technical data	Standard	Conditions	Value	Unit
Density	DIN 28090-2	--	1.7 – 2.0	g/cm ³
Compressibility	ASTM F36J	--	5 - 15	%
Recovery	ASTM F36J	--	≥50	%
Gas leakage	DIN 3535-6	--	~0.04	mg/s x m
Thickness increase	ASTM F 146	IRM 903 Oil 5h / 150°C	<3	%
		ASTM Fuel B 5h / 23°C	<5	%

APPLICATION

Job Id: **262.1-031927-1**
Certificate No: **TAP00001WR**

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 pipe lines 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

Documentation of tests performed and referenced in the list above are the basis for this type approval.

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

Marking sample:



DIN 28091-2 FA-MZ-1-0
TEMAFAST
ASTM F-104 F712 120M4

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 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