

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Gaskets and Sealings**

with type designation(s)
Fire Safe Gasket "HPG-FS"

issued to

Ningbo Tecson Sealing Technology Co., Ltd
NINGBO, China

is found to comply with

ASTM F36:15(2021) Standard Test Method for Compressibility and Recovery of Gasket Materials
ASTM F37:06(2019) Standard Test Methods for Sealability of Gasket Materials
BS 6364 Annex A Specification for Valves for cryogenic service
API Specification 6FB – Fire Test for End Connectors 1998, with modifications

Application:

Refer to section Application in the certificate.

Temperature range: - 163°C to 150°C
Max. working press.: 300 lb (20 bar)
Design: High pressure Gasket - Fire Safe
Sizes: 1/2" to 24"

Issued at **Hamburg** on **2024-06-10**

This Certificate is valid until **2029-06-09**.

for **DNV**

DNV local unit: **Ningbo FIS**

Approval Engineer: **Thilo Pabst**

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

The HPG-FS (High Pressure Gasket - Fire Safe) is an asbestos free and fire-resistant Gasket with tandem seal design (PTFE + Fire Safe Inconel C Ring).

Optional a HPG-FS flange isolation kit (Intended to overcome potential loss of bolt load in case of fire and for electrical isolation) is supplied with Isolating bolt sleeves (G10 – Glass Reinforced Epoxy)) and a unique washer combination (DCS – Dual Coated Steel) consisting of a steel washer and an isolation washer.

Intended for flanges according ASME B16.5 – 2013.

Material:

Gasket components	HPG-FS
Retainer / body	AISI 316 or higher grades
Primary seal	PTFE with spring (Inconel® 750 or ELGILOY®)
Secondary seal	C – Ring, double coated - Inconel® 750
Steel washer (colour: brown) ¹	AISI 316 or higher grades, DCS (dual coated steel with coating thickness: 45 µm (±10 µm))
Isolation washer (colour: yellow) ¹	
Sleeve ¹	G10 - Glass Reinforced Epoxy

Note1 : Optional isolation kit

Sizes / Pressure class:

Size	150 lb / 10 bar	300 lb / 20 bar
1/2"	X	X
3/4"	X	X
1"	X	X
1 1/4"	X	X
1 1/2"	X	X
2"	X	X
2 1/2"	X	X
3"	X	X
4"	X	X
5"	X	X
6"	X	X
8"	X	X
10"	X	X
12"	X	X
14"	X	X
16"	X	X
18"	X	X
20"	X	X
24"	X	X

Properties:

Technical data	unit	Standard	HPG-FS
Compressibility ²	%	ASTM F36	0.44
Recovery ²	%		75
Leakage rate ² (ambient temperature)	ml/min	ASTM F37	≤ 0.0006
Leakage rate (-196°C) ³	cm³/s	BS 6364 Annex A	passed
Fire resistance ⁴	./.	API 6FB	passed

Note2 : Size 3" (DN80) / 300 lb

Note3 : Size 2" (DN50) / 300 lb

Note4 : Test including isolation kit

APPLICATION

This is a Non-Class Type Approval Certificate (TA-NONCL - for products where a Type Approval is not mandatory) on basis of test according to international standards.

The Gasket HPG-FS may be used under consideration of the mechanical and technical characteristics as well as physical and chemical properties for the following applications:

- On board of ships and other structures classed by DNV as follows:
Ship's piping systems as specified in DNV Rules Pt.4, Ch.6 Piping systems, pressurized items and machinery containing including cryogenic applications.
e.g. the following fluids: non-flammable gases, oil, fuel oil, water, LNG, LPG

The selection of the gaskets for the corresponding application and appropriate installation has to be in accordance with the instructions of the manufacturer.

Piping/Gaskets shall be hydrostatically tested: 1.5 times of the system design pressure (DNV Pt.4 Ch.6 – Piping)

Piping of all cargo handling systems shall be electrically bonded. (DNV Pt.5 Ch.5 – Oil Tanker and Pt.5 Ch. 7 – Liquefied Gas Tanker).

Limitation / Exclusions

- Pipelines on chemical and gas tankers carrying flammable gases (except LNG, LPG), noxious media, propylene oxide and mixtures of ethylene and propylene oxide.

TYPE APPROVAL DOCUMENTATION

TESTS CARRIED OUT

Documentation of tests performed are the basis for this Type Approval as referenced in the list above and DNV Ref.-Nos. 262.1-040791.

MARKING OF PRODUCT

For traceability of products, marking shall be legible and indelible.
 Product marking as following:

Manufacturer's name: TECSON® Gasket Type: HPG-FS Size and Pressure Class: ...'' ...# or LB Flange Standard: ASME B16.5	<u>Marking sample</u> 
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PERIODICAL ASSESSMENT

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with (refer to the Class Programme DNV-CP-0338, Sec. 4).

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

END OF CERTIFICATE