DNV·GL

Certificate No:
TAP000009J

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
HANSA-FLEX TFW (single-walled),
HANSA_FLEX TFW-TFW, TFW-FPCA (double-walled as hose in hose design, including pressure switch for leakage monitoring, Type PS-02N)

Issued to
HANSA-FLEX AG
Boffzen/Höxter, Germany

is found to comply with
DNV GL class programme CP-0184 – Type Approval of flexible hoses of metallic material
DNV GL class programme CP-0183 – Type Approval of flexible hoses of non-metallic material

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature range:	**-20 [°C] to 205 [°C]**
Max. working press.:	**125 [bar] to 16 [bar]**
Sizes:	**DN10 to DN100**

This Certificate is valid until **2020-06-30**.

Issued at **Hamburg** on **2016-04-13**

for **DNV GL**

DNV GL local station: **Magdeburg**

Approval Engineer: **Peter Gierhan**

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.

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Product description

FLAME RESISTANT PTFE ANNULAR CORRUGATED HOSES
Corrugated multilayer PTFE hose with fibreglass covering and wire braid reinforcement.

Materials:
Hoses: PTFE
Braiding: Stainless steel AISI 304 (1.4301) or AISI 304L (1.4306)

Couplings (or equivalent):
Stainless-steel (1.4571, 1.4404, 1.4435, 1.4541, 1.4301, 1.4306, 1.4462)
Carbon-steel (1.0037, 1.0038, 1.0570, 1.0460)
Cutting-steel (1.0715, 1.0718)

Coupling types:
Different hose fittings, with or without welding, pressed in with crimping ferrules.

Technical data
Inner tube: Multilayer PTFE core, Reinforcement: Fiberglass
Coverings: High tensile stainless steel braiding
Ferrule: TFH010 to TFH100, TFH010VA to TFH100VA
Nipple: PN10 to PN80, PN10VA to PN80VA

Application/Limitation

The TFW hoses may be used in piping systems mainly subject to static pressures as follows:
- Fuel oil, lubricating oil system
- Bilge, ballast and seawater systems
- Fresh and seawater cooling systems
- Compressed air and auxiliary steam systems
- Non-essential system

TFW single-walled
Maximum working pressure [bar] at 20 ºC:

ND		Ordinary systems	Fuel oil Systems
Inch	mm		
3/8	10	125	78
½	13	105	78
5/8	16	100	50
¾	20	90	45
1	25	80	45
11/4	32	64	32
11/2	38,5	53	27
2	50,5	35	27
21/2	64,5	25	22
3	76,5	20	10

*) Fuel oil- and other systems where pressure pulsations may occur.

TFW double-walled (hose in hose design)

Type / ND / PN / heavy fuel pipe	Type / ND / PN / monitoring pipe	Max. permissible nominal pressure for double jacket PN (20°C) in bar	Max. permissible nominal pressure for double jacket PN (20°C) in bar Fuel Oil System
TFW / 016 / 100	TFW / 032 / 64	64	50
TFW / 020 / 90	TFW / 040 / 53	53	45
TFW / 025 / 80	TFW / 050 / 35	35	35
TFW / 032 / 64	TFW / 065 / 25	25	25
TFW / 040 / 53	TFW / 065 / 25	25	25
TFW / 050 / 35	TFW / 080 / 20	20	20
TFW / 065 / 25	TFW / 100 / 15	16	16

Nominal width (ND) Product leader inner hose	Hose type Product leader inner hose	Hose type Monitoring hose
DN16 bis DN50	TFW	TFW
DN65	TFW	FPCA (all metal hose)

Pressure reduction factor at elevated temperatures TFW, FPCA	
170°C	0.85
180°C	0.75
205°C	0.50

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure.
The hoses can be used in short lengths (up to 2 meters) for ordinary machinery purposes in the systems mentioned on the front page.

The hoses must only be fitted in places where they are always accessible.
Flexible hoses of these types are not to be mounted at boilers.
The hoses are to be mounted in accordance with the manufacturer's instructions.
This approval does not cover hydraulic and/or pneumatic power and control systems for steering gears.
It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lubrication oil, fuel oil and petroleum base hydraulic oil.
Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.
The selection of the hoses for the corresponding application and the proper assembly are to be in accordance with the instructions of the manufacturer.

Production Place

HANSA-FLEX AG
37691 Boffzen
GERMANY

Type Approval documentation

Tests carried out

Dimensional check, change in length, fire test acc. ISO 15540/15541, impulse and burst

- Fire resistance test reports issued by WTD 71in 1998 and LAPI in 2008
- Test reports Ministero dell' Interno, dated 12 May 1997
- Technical specification D10
- Hose end fittings specification G120
- GL-APC 20499-11 HH, dated: 2011-11-07
- DNV GL-Ref.-No.: 14-097410

Marking of product

For traceability to this type approval the products are to be marked with:
- Manufacturer's name or trade mark
- Type designation

Certificate Retention Survey

For retention of the Type Approval, DNV GL Surveyor shall perform a survey every second year and before the expiry date of this certificate, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:
- Dimensional check.
- Change in length
- Leakage test
- Burst test

END OF CERTIFICATE