Certificate no.:
TAP00002X1

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
NHG20, SY10, SY20, XY10, XY20, SM10, SM20, XM10, XM20

issued to

Techfluid Yantai Limited

Yantai, Shandong, China

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D201 – Electrical installations, Edition July 2021
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application:

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

Type:	Temperature range:	Max. working press.:	Sizes:
NHG20	-30°C to +100°C	300 PSI (20 Bar)	2", 2 1/2", 3", 3 1/2", 4", 5" ,6", 8", 10", 12"
SY10	-30°C to +100°C	150 PSI (10 Bar)	1 1/2", 2", 2 1/2", 3", 3 1/2", 4", 5" and 6"
SY20	-30°C to +100°C	300 PSI (20 Bar)	1 1/2", 2", 3" & 4"
XY10	-30°C to +100°C	150 PSI (10 Bar)	2", 2 1/2", 3", 4", 5" and 6"
XY20	-30°C to +100°C	300 PSI (20 Bar)	2", 2 1/2", 3", 4", 5" and 6"
SM10	-30°C to +100°C	150 PSI (10 Bar)	2", 3", 4", 5" and 6"
SM20	-30°C to +100°C	300 PSI (20 Bar)	2", 3" & 4"
XM10	-30°C to +100°C	150 PSI (10 Bar)	2", 3", 4", 5" and 6"
XM20	-30°C to +100°C	300 PSI (20 Bar)	2", 3", 4", 5" and 6"

Issued at **Høvik** on **2026-02-02**

This Certificate is valid until **2031-02-01**.

for **DNV**

DNV local unit: **Yantai NB & CMC**

Approval Engineer: **Sarah Miller**

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

1. NHG20 Type Hose
   Tube: Black Nitrile Rubber
   Reinforcement: Steel Braided Layers & Anti-static Copper Wire
   Flame-Proof Layers: Rubber Coated Glass Fibre Fabric
   Cover: Red CR Rubber

2. SY Type Hose
   Tube: Black NBR Rubber
   Reinforcement: High Tensile Synthetic Textile & Anti-static Copper Wire
   Cover: Black CR/NR Rubber

3. XY Type Hose
   Tube: Black NBR Rubber
   Reinforcement: High Tensile Synthetic Textile with Embedded Steel Helix Wire & Anti-static Copper Wire
   Cover: Black CR/NR Rubber

4. SM Type Hose
   Tube: Black BR+NR Rubber
   Reinforcement: High Tensile Synthetic Textile
   Cover: Black CR/NR Rubber

5. XM Type Hose
   Tube: Black BR+NR Rubber
   Reinforcement: High Tensile Synthetic Textile with Embedded Steel Helix Wire
   Cover: Black CR/NR Rubber

Fittings (materials vary by size):
Stainless steels (e.g., SS316 / SS316L / SS304) or carbon steels (e.g., ASTM A105 / ASTM A234 / AISI 4130) may be used depending on the assembly type.

The couplings are permanently fitted and of a non-skive type. They are swaged to the hose.

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the assembling location stated in product description.

The hoses may be used as flexible hose, loading hose and jumper hose for the services as explained bellow:

Hose types NHG20/SY/XY may be used as delivery hose for mud, gasoline, diesel, and fuel oil with aromatic content up to 50%, seawater and fresh water.

Hose types SM & XM can be used for barite, cement, bulk material and general applications. All these hoses can be used for feeding of fluids, but type XY & XM can also be used for suction due to their special wire layer.

Maximum Working pressure

Hose Type	*NHG20*	SY10	SY20	*XY10*	*XY20*	SM10	SM20	XM10	XM20
Size (Inch)									
1-1/2	-	10 bar	20 bar	-	-	-	-	-	-
2	20 bar	10 bar	20 bar	10 bar	20 bar	10 bar	20 bar	10 bar	20 bar
2-1/2	20 bar	10 bar	-	10 bar	20 bar	-	-	-	-
3	20 bar	10 bar	20 bar	10 bar	20 bar	10 bar	20 bar	10 bar	20 bar
3-!/2	20 bar	-	-	-	-	-	-	-	--
4	20 bar	10 bar	20 bar	10 bar	20 bar	10 bar	20 bar	10 bar	20 bar
5	20 bar	10 bar	-	10 bar	20 bar	10 bar	-	10 bar	20 bar
6	20 bar	10 bar	-	10 bar	20 bar	10 bar	-	10 bar	20 bar
8	20 bar	-	-	-	-	-	-	-	-
10	20 bar	-	-	-	-	-	-	-	-
12	20 bar	-	-	-	-	-	-	-	-

The hose assemblies must only be fitted in places where they are always accessible. Flexible hoses of these types are not to be used on boiler fronts.

The hoses are to be mounted in accordance with the manufacturer's instructions.

The cover of hoses for gaseous applications shall be pin-pricked.

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:
- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNV-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Materials and material protection chosen for the specific system shall be suitable for the intended medium and environmental conditions.

Type Approval documentation

Tests carried out

Dimensional check test, change in length test, burst test, cold flexibility test, ozone resistance test, impulse test, oil resistance test, fire test, Abrasion test, Vacuum test, Electrical Resistance Test and end
Load Test

Marking of product

For traceability to this Type Approval, the products are at least to be marked with:
- Hose manufacturer's name or trademark;
- Date of manufacture (month/year);
- Designation type reference;
- Nominal diameter;
- Pressure rating;
- Temperature rating.

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.

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

Manufacturing Address:

Hose manufacturing location
Techfluid Yantai Limited No. 628 Pinglidian Road, Laizhou City, Shandong Province, China

Coupling manufacturing location
Techfluid Yantai Limited No. 628 Pinglidian Road, Laizhou City, Shandong Province, China

Hose assembling locations
Techfluid Yantai Limited No. 628 Pinglidian Road, Laizhou City, Shandong Province, China