

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
CZ2k, CZ3K

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-D101 – Marine and machinery systems and equipment, 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:
CZ2k	-30°C to +100°C	140 bar	2", 2 1/2", 3", 3 1/2", 4", 5", 6", 8"
CZ3K	-30°C to +100°C	210 bar	2", 2 1/2", 3", 3 1/2", 4"

Issued at **Høvik** on **2026-02-03**

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

for **DNV**

DNV local unit: **Dalian 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

Two types of non-metallic flexible hoses with permanently attached couplings:

CZ2k: Designed in accordance with Inner tube of NBR rubber fabric layers made of Nylon cushion rubber of NR+SBR Steel Cable Cushion rubber of NR+SBR Steel Cable Cushion rubber of NR+SBR Fabric layers made of nylon Rubber cover of CR

CZ3k: Designed in accordance with Inner tube of NBR rubber fabric layers made of Nylon cushion rubber of NR+SBR Steel Cable Cushion rubber of NR+SBR Steel Cable Cushion rubber of NR+SBR Fabric layers made of nylon Rubber cover of CR

The couplings are permanently fitted and of a non-skive type. They are swaged to the hose. Coupling materials: SS316, SS316L, SS304, ASTM A105, ASTM A234, AISI 4130, Steel Grade 20 (GB/T 699-2015)

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.

Design temperature range

	Hose type
Fluid media	CZ2K and CZ3K
Sea Water and Fresh Water	-30°C to 100°C

Maximum Working pressure

Size Inch	CZ2K	CZ3K
2	140 bar	210 bar
2-1/2	140 bar	210 bar
3	140 bar	210 bar
3-1/2	140 bar	210 bar
4	140 bar	210 bar
5	140 bar	-
6	140 bar	-
8	140 bar	-

The hoses shall not replace/be used where permanent piping is possible/required.

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 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.

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

This certificate is only valid if required periodical assessments are carried out with satisfactory results.

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