

# TYPE APPROVAL CERTIFICATE

Certificate no.:  
**TAP0000281**  
Revision No:  
**1**

## This is to certify:

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

with type designation(s)  
**Tekno/2SN; Teknospir/4SP; Teknospir/4SH assembled with VITILLO Couplings**

issued to  
**VITILLO S.p.A.**  
**Ariano Irpino AV, AV, Italy**

is found to comply with  
**DNV rules for classification – Ships Pt.4 Ch.6 Piping systems**  
**DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses**

## Application:

**Products approved by this certificate are accepted for installation on all vessels classed by DNV.**

**Temperature range:** -40°C up to +100°C  
**Max. working press.:** 500 bar  
**Sizes:** DN 5 - 51

Issued at **Hamburg** on **2026-02-09**

This Certificate is valid until **2031-02-08**.

DNV local unit: **Italy/Malta CMC**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

for **DNV**



Digitally Signed By:  
Sven Klinger  
Location: DNV Hamburg,  
Germany

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 USD 300 000.

## Product description

The type designations of Non-Metallic Hoses Assemblies with permanently fitted couplings manufactured by VITILLO:

**TEKNO 2SN:** Wire braided reinforced hose acc. to EN853/SAE100R2AT.  
**TEKNOSPIR/4SP:** Wire spiralled reinforced hose acc. to EN856.  
**TEKNOSPIR/4SH:** Wire spiralled reinforced hose acc. to EN856.

Type designation	TEKNO/2SN	TEKNOSPIR/4SP	TEKNOSPIR/4SH
Inner tube	Oil resistant synthetic rubber	Oil resistant synthetic rubber	Oil resistant synthetic rubber
Reinforcement	Two braids of high tensile steel wire	Four layers of high tensile spirals	Four layers of high tensile spirals
Cover	Synthetic rubber, weather, oil, flame and abrasion resistant	Synthetic rubber, weather, oil, flame and abrasion resistant	Synthetic rubber, weather, oil, flame and abrasion resistant
Couplings	Carbon steel (11SMnPb37+C UNI4838) Stainless Steel (1.4571 or AISI 316 Ti)	Carbon steel (11SMnPb37+C UNI4838) Stainless Steel (1.4571 or AISI 316 Ti)	Carbon steel (11SMnPb37+C UNI4838) Stainless Steel (1.4571 or AISI 316 Ti)

## Application/Limitation

The flexible hose assemblies are type approved for: hydraulic oil systems, fuel- and lubricating oil systems, fresh- and seawater cooling systems, for bilge- & ballast- water, glycol and water emulsions.

Type approved for fire resistance.

TEKNO/2SN					
DN	Size		Type	Ferrule	Maximum working Pressure (bar)
	inch	dash			
5	3/16"	3	TH2SN03	X/Z-B12T03N	415
6	1/4"	4	TH2SN04	X/Z-B12T04N	400
8	5/16"	5	TH2SN05	X/Z-B12T05N	350
10	3/8"	6	TH2SN06	X/Z-B12T06N	330
12	1/2"	8	TH2SN08	X/Z-B12T08N	275
16	5/8"	10	TH2SN10	X/Z-B12T10N	250
19	3/4"	12	TH2SN12	X/Z-B12T12N	215
25	1"	16	TH2SN16	X/Z-B12T16N	165
31	1"1/4	20	TH2SN20	X/Z-B12T20N	125
38	1"1/2	24	TH2SN24	X/Z-B12T24N	100
51	2"	32	TH2SN32	X/Z-B12T32N	90

TEKNOSPIR/4SP					
Size			Type	Ferrule	Maximum working Pressure (bar)
DN	inch	dash			
6	1/4"	4	TS4SP04	X/Z-B9R04	500
10	3/8"	6	TS4SP06	X/Z-B9R06	460
12	1/2"	8	TS4SP08	X/Z-B9R08	425
16	5/8"	10	TS4SP10	X/Z-B9R10	400
19	3/4"	12	TS4SP12	X/Z-B9R12	380
25	1"	16	TS4SP16	X/Z-B9R16	320
31	1"1/4	20	TS4SP20	X/Z-B9R20	210
38	1"1/2	24	TS4SP24	X/Z-B9R24	185
51	2"	32	TS4SP32	X/Z-B9R32	175

TEKNOSPIR/4SH					
Size			Type	Ferrule	Maximum working Pressure (bar)
DN	inch	dash			
16	5/8"	10	TS4SH10	X/Z-KB4SH10	450
19	3/4"	12	TS4SH12	X/Z-KB4SH12	420
25	1"	16	TS4SH16	X/Z-KB4SH16	385
31	1"1/4	20	TS4SH20	X/Z-KB4SH20	350
38	1"1/2	24	TS4SH24	X/Z-KB4SH24	300
51	2"	32	TS4SH32	X/Z-KB4SH32	250

Couplings, Carbon Steel or Stainless Steel: Made by VITILLO.

Flexible hoses are only to be used in short lengths up to 1.5 m where it is necessary due to vibrations or flexible mounting of the machinery. 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.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.

### Production testing

All hoses assemblies delivered under the DNV type approval schema shall be subject to a pressure test at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to this type approval certificate.

### Tests carried out

Burst test, Impulse test, Change in in length test, Cold flexibility test, Cover adhesion test, Ozone resistance test, Oil resistance test, Fire resistance test.

## Marking of product

For traceability to this Type Approval, each flexible hose is to be marked with:

- Identification of manufacturer
- Type of hose
- Nominal internal diameter of hose
- Reference Standard
- Maximum working pressure
- Batch number
- Quarter and year of production (ink jet)

## 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 DNV Class Program 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