DNV·GL

Certificate No:
TAP0000281

TYPE APPROVAL CERTIFICATE

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, Italy

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

Application :

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

Temperature range:	**-40°C up to +100°C**
Max. working press.:	**see certificate**
Sizes:	**see certificate**

Issued at **Hamburg** on **2020-11-24**

This Certificate is valid until **2025-11-23**.
DNV GL local station: **Italy/Malta CMC**

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

for **DNV GL**
Digitally Signed By: Drews, Olaf
Location: DNV GL SE Hamburg, Germany
Signing Date: 2020-11-24

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.

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 nitrile rubber	Oil resistant synthetic chloroprene rubber	Oil resistant synthetic chloroprene rubber
Reinforcement	Two braids of high tensile steel wire	Four layers of high tensile spirals	Four layers of high tensile spirals
Cover	Chloroprene rubber, weather, oil, flame and abrasion resistant	Chloroprene rubber, weather, oil, flame and abrasion resistant	Chloroprene rubber, weather, oil, flame and abrasion resistant
Couplings	Carbon steel (11SMnPb37+C UNI4838)	Carbon steel (11SMnPb37+C UNI4838)	Carbon steel (11SMnPb37+C UNI4838)

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.

Size			**TEKNO/2SN**		
			Type	**Insert**	**Ferrule**
mm	**inch**	**dash**	**Carbon steel**		
5	3/16"	3	TH2SN03	FDG0304	B12T03N
6	1/4"	4	TH2SN04	FDG0404	B12T04N
8	5/16"	5	TH2SN05	FDG0506	B12T05N
10	3/8"	6	TH2SN06	FDG0606	B12T06N
12	1/2"	8	TH2SN08	FDG0808	B12T08N
16	5/8"	10	TH2SN10	FDG1010	B12T10N
19	3/4"	12	TH2SN12	FDG1212	B12T12N
25	1"	16	TH2SN16	FDG1616	B12T16N
31	1"1/4	20	TH2SN20	FDG2020	B12T20N
38	1"1/2	24	TH2SN24	FDG2424	B12T24N
51	2"	32	TH2SN32	FDG3232SP	B12T32N

Size			TEKNOSPIR/4SP		
			Type	Insert	Ferrule
mm	inch	dash	Carbon steel		
6	1/4"	4	TS4SP04	FDG0404	B9R04
10	3/8"	6	TS4SP06	FDG0606	B9R06
12	1/2"	8	TS4SP08	FDG0808	B9R08
16	5/8"	10	TS4SP10	FDG1010	B9R10
19	3/4"	12	TS4SP12	FDG1212	B9R12
25	1"	16	TS4SP16	FDG1616	B9R16
31	1"1/4	20	TS4SP20	FDG2020	B9R20
38	1"1/2	24	TS4SP24	FDG2424	B9R24

Size			TEKNOSPIR/4SH		
			Type	Insert	Ferrule
mm	inch	dash	Carbon steel		
19	3/4"	12	TS4SH12	KFDG1212	KB4SH12
25	1"	16	TS4SH16	KFDG 1616	KB4SH16
31	1"1/4	20	TS4SH20	KFDG 2020	KB4SH20
38	1"1/2	24	TS4SH24	KFDG 2424	KB4SH24

Couplings, Carbon 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 assembles 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 delivery under the DNV GL 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 find in the DNVGL 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