

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings**

with type designation(s)

1SN, 1SC, 1SN-K Semperpac, 2SN, 2SC, 2SN-K Semperpac, 4SP, 4SH

Issued to

**Semperit Technische Produkte Gesellschaft m.b.H.
Wimpassing, Austria**

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 is accepted for installation on all vessels classed by DNV GL.**

Type:	Temperature range:	Max. working press.:	Sizes:
1SN	-40°C to +100°C	40 bar up to 225 bar	DN6 - DN51
1SC	-40°C to +100°C	88 bar up to 225 bar	DN6 - DN25
1SN-K Semperpac	-40°C to +100°C	100 bar up to 290 bar	DN6 - DN31
2SN	-40°C to +100°C	80 bar up to 400 bar	DN6 - DN51
2SC	-40°C to +100°C	165 bar up to 400 bar	DN6 - DN25
2SN-K Semperpac	-40°C to +100°C	175 bar up to 450 bar	DN6 - DN31
4SP	-40°C to +100°C	165 bar up to 445 bar	DN10 - DN51
4SH	-40°C to +100°C	250 bar up to 420 bar	DN19 - DN51

Issued at **Høvik** on **2017-12-18**This Certificate is valid until **2022-12-17**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Christian Kaemmer**

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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

Design:

Semperit 1SN:	Synthetic rubber hose with one internal steel wire braid according to SAE 100 R1AT or DIN 853 1SN.
Semperit 1SC:	Synthetic rubber hose with one internal steel wire braid according to DIN 857 1SC.
Semperpac 1SN-K:	Synthetic rubber hose with one internal steel wire braid.
Semperit 2SN:	Synthetic rubber hose with two internal steel wire braids according to SAE 100 R2AT or DIN 853 2SN.
Semperit 2SC:	Synthetic rubber hose with two internal steel wire braids according to DIN 857 2SC.
Semperpac 2SN-K:	Synthetic rubber hose with two internal steel wire braids.
Semperit 4SP:	Synthetic rubber hose reinforced with 4 spirally wrapped steel plies according to EN 856 4SP.
Semperit 4SH:	Synthetic rubber hose reinforced with 4 spirally wrapped steel plies according to EN 856 4SH.

Maximum working pressure:

DN Size (mm)	Maximum working pressure (bar)							
	1SN	1SC	1SN-K	2SN	2SC	2SN-K	4SP	4SH
6	225	225	290	400	400	450		
8	215	215	250	350	350	420		
10	180	180	230	330	330	385	445	
12	160	160	200	275	275	350	425	
16	130	130	150	250	250	290	350	
19	105	105	125	215	215	280	350	420
25	88	88	110	165	165	200	320	380
31	63	-	100	125	-	175	210	350
38	50	-	-	90	-	-	185	290
51	40	-	-	80	-	-	165	250

Temperature range: -40°C to + 100°C, max. 120°C intermediate.

Production places of hoses, hose end fittings and hose assemblies:

Semperit Technische Produkte Gesellschaft m.b.H., Triesterbundestrasse 26, A-2632 Wimpassing, Austria

Semperflex Shanghai Ltd., 1255 CAng Gong Road, Shanghai Chemical Industrial Park, CN-Shanghai 201417, P.r. China

Semperflex Optimit s.r.o., Vitkovska c.p. 391/29, CZ-74235 Odry, Czech Republic

Semperflex Asia Corporation Ltd., Sri Trang Building No. 10 Soi 10, Phetkasem Rd., Hatai. TH-Songkhla 90110, Thailand

Coupling design and manufacture: Tieffe S.p.A, Italy. Coupling material: carbon steel and stainless steel.

Job Id: **262.1-015728-2**
Certificate No: **TAP0000164**

Responsibility

Semperit Technische Produkte Gesellschaft m.b.H. takes the responsibility that the design and production of the hoses, hose end fittings and manufacturing of hose assemblies are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

Hose assemblies are approved for use with petroleum base hydraulic fluids, water glycol and water emulsion hydraulic fluids, fuel oil, lubrication oil, compressed air, water and sanitary.

Flexible hoses are only to be used in short lengths where it is necessary for flexible mounting of the machinery. They shall not replace/be used where permanent piping is possible/required.

For compressed air and/or gases above 16 bar the cover is to be pin pricked.

Installation

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.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lube 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.

Type Approval documentation

Tests carried out

Production testing

All hose assemblies 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 the type approval certificate.

Marking of product

For traceability to this Type Approval, the products are to be marked with:

Manufacturer's name and trade mark
Type designation
Hose size
Date code

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.

The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

In connection with the renewal assessment, a surveyor shall witness / review test reports with respect to the following tests on every 3rd size appropriate test reports to be submitted:

- dimensional check, change in length test,
- pressure test with 1.5 times M.A.W.P. and burst test (witnessed by DNV GL surveyor)