

# 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 class programme DNVGL-CP-0183 – Type approval – Flexible hoses****DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems****DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

| Type:                  | Temperature range:          | Max. working press.:         | Sizes:                   |
|------------------------|-----------------------------|------------------------------|--------------------------|
| <b>1SN</b>             | <b>-40 °C up to +100 °C</b> | <b>40 bar up to 225 bar</b>  | <b>DN 6 up to DN 51</b>  |
| <b>1SC</b>             | <b>-40 °C up to +100 °C</b> | <b>88 bar up to 225 bar</b>  | <b>DN 6 up to DN 25</b>  |
| <b>1SN-K Semperpac</b> | <b>-40 °C up to +100 °C</b> | <b>100 bar up to 290 bar</b> | <b>DN 6 up to DN 31</b>  |
| <b>2SN</b>             | <b>-40 °C up to +100 °C</b> | <b>80 bar up to 400 bar</b>  | <b>DN 6 up to DN 51</b>  |
| <b>2SC</b>             | <b>-40 °C up to +100 °C</b> | <b>165 bar up to 400 bar</b> | <b>DN 6 up to DN 25</b>  |
| <b>2SN-K Semperpac</b> | <b>-40 °C up to +100 °C</b> | <b>175 bar up to 450 bar</b> | <b>DN 6 up to DN 31</b>  |
| <b>4SP</b>             | <b>-40 °C up to +100 °C</b> | <b>165 bar up to 445 bar</b> | <b>DN 10 up to DN 51</b> |
| <b>4SH</b>             | <b>-40 °C up to +100 °C</b> | <b>250 bar up to 420 bar</b> | <b>DN 19 up to DN 51</b> |

Issued at **Hamburg** on **2019-06-21**This Certificate is valid until **2024-06-20**.for **DNV GL**DNV GL local station: **Augsburg**Approval Engineer: **Andrii Pishchanskyi**

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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

| Type            | Description                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------|
| 1SN             | Synthetic rubber hose with one internal steel wire braid according to DIN 853 1SN.            |
| 2SN             | Synthetic rubber hose with two internal steel wire braids according to DIN 853 2SN.           |
| 1SN-K SEMPERPAC | Synthetic rubber hose with one internal steel wire braid.                                     |
| 2SN-K SEMPERPAC | Synthetic rubber hose with two internal steel wire braids.                                    |
| 1SC             | Synthetic rubber hose with one internal steel wire braid according to DIN 857 1SC.            |
| 2SC             | Synthetic rubber hose with two internal steel wire braids according to DIN 857 2SC.           |
| 4SP             | Synthetic rubber hose reinforced with 4 spirally wrapped steel plies according to EN 856 4SP. |
| 4SH             | Synthetic rubber hose reinforced with 4 spirally wrapped steel plies according to EN 856 4SH. |

### Hoses

Hoses are produced by Semperit Technische Produkte Gesellschaft m.b.H. at Wimpassing, Austria.

### Hose end fittings

Hose end fittings are made of stainless steel (1.4404 or 1.4571) and produced by PH Industrie-Hydraulik GmbH & Co. KG at Ennepetal, Germany.

The following assembling locations are approved:

- 1 Semperit Technische Produkte Gesellschaft m.b.H.  
Triesterbundesstraße 26  
A-2632 Wimpassing
- 2 Semperflex Shanghai Ltd.  
1255 Cang Gong Road  
Shanghai Chemical Industrial Park  
CN-Shanghai 201417
- 3 Semperflex Optimit s.r.o.  
Vitkovská c.p. 391/29  
CZ-74235 Odry
- 4 Semperflex Asia Corporation Ltd.  
Sri Trang Building No. 10 Soi 10  
Phetkasem Rd.,  
Hatyai,  
TH-Songkhla 90110
- 5 PH Industrie-Hydraulik GmbH & Co. KG  
Wuppermannshof 8  
58256 Ennepetal  
Germany

### 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, fresh water and sanitary.

Maximum working pressure [bar] is as follows:

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

Hoses assemblies are not approved for application under pressure below atmospheric or vacuum.

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

### Installation

Flexible hoses are only to be used where it is necessary due to vibrations or flexible mounting on the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

The hoses must only be fitted in places where they are always accessible.

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

Each hose assembly 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.

### Type Approval documentation

#### Tests carried out

1. Change in length;
2. Cold flexibility test;
3. Resistance against liquid;
4. Cover adhesion test;
5. Ozone resistance test;
6. Fire resistance test;
7. Impulse test;
8. Burst test.

Job Id: **262.1-007783-6**  
Certificate No: **TAP00001V6**

### Marking of product

Each hose assembly shall be permanently marked on the hose end fitting as follows:

| Content                            | Example |
|------------------------------------|---------|
| Manufacturer's name and trade name | PH      |
| Type designation                   | 1SN     |
| Hose size                          | 12      |
| Date code                          | 2Q19    |

### Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to DNVGL-CP-0338, Sec.4.