

Certificate No:
P-15039
 File No:
791.70
 Job Id:
262.1-007783-2

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
1ST, 1SN, 1SC, 1SNK, R1AT, 2ST, 2SN, 2SC, 2SNK, R2AT

Issued to

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

is found to comply with

Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Application :

The hoses may be used for: Petroleum base hydraulic fluids, water glycol and water emulsion hydraulic fluids, fuel oil, lubrication oil, compressed air, water and sanitary.

Type:	Temperature range:	Max. working press.:	Sizes:
1ST, 1SN, 1SC, 1SNK, R1AT	-40°C to 100°C	26to 290bar (dep. type, see cert.)	6 to 51 mm.
2ST, 2SN, 2SC, 2SNK, R2AT	-40°C to 100°C	80 to 450 bar (dep. type, see cert.)	5 to 51 mm.

This Certificate is valid until **2018-12-31**.

Issued at **Høvik** on **2014-09-05**

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Tom Berg-Nielsen**

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Marianne Spæren Marveng
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. If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million. In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

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Product description

Design:

Type 1SN, 1ST, R1AT: Synthetic rubber hose with one internal steel wire braid according to SAE 100 R1AT or DIN 853.

Type 1SC: Synthetic rubber hose with one internal steel wire braid according to DIN 857.

Type 1SNK: Synthetic rubber hose with one internal steel wire braid.

Type 2SN, 2ST, R2AT: Synthetic rubber hose with two internal steel wire braids according to SAE 100 R2AT or DIN 853.

Type 2SC: Synthetic rubber hose with two internal steel wire braids according to DIN 857.

Type 2SNK: Synthetic rubber hose with two internal steel wire braids.

Couplings:

Coupling material: Carbon steel 9SMnPb28K:

Made by Rivalit Hydraulik Waldbökelheim GmbH, D-55596 Waldbökelheim, Germany or by: LARGA SPA, 23875 OSNAGO-LC. Italy

Coupling material: Stainless steel 1.4404/1.4571

Made by PH Industrie-Hydraulik GmbH & Co. KG, Sprockhövel, Germany

Application/Limitation

Maximum working pressure:

DN Size (mm)	Pressure (bar)									
	1ST	1SN	1SC	1SNK	R1AT	2ST	2SN	2SC	2SNK	R2AT
5	-	-	-	-	-	-	415	-	-	-
6	225	225	225	290	190	400	400	400	450	345
8	215	215	215	250	172	350	350	350	420	293
10	180	180	180	230	155	330	330	330	380	276
12	160	160	160	200	138	275	275	275	325	241
16	130	130	130	150	103	250	250	250	290	190
20	105	105	105	125	86	215	215	215	250	155
25	88	88	88	110	69	165	165	165	190	138
32	63	63	-	100	43	125	125	-	-	112
40	50	50	-	-	34	90	90	-	-	86
50	40	40	-	-	26	80	80	-	-	78

Temperature range: -40°C to + 100°C

The hoses may not be used in vacuum systems.

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

Hose assemblies delivered from the certificate holder shall be delivered with the following documentation:

- Pressure test report with reference to the type approval certificate.

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The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the following conditions:

- The assembler is authorised by a written authorization from a certificate holder or any other company being authorized to hold courses within this topic. The certificate/course holder shall keep record of all assembler authorisations. This authorization is valid for 4 years whereafter renewal may take place.
- Hose assemblies are in accordance with an assembly procedure issued by the certificate holder and the assembler has proved their qualifications by burst testing of a selection of hose/coupling combinations.
- One sample of each hose type is to be burst tested as a qualification test and the testing is to be witnessed by DNV, also for the renewal of the authorization.

Hose assemblies delivered from an authorized assembler shall in addition to the pressure test report with reference to the type approval certificate be delivered with a copy of the written authorization stamped by DNV.

Flexible hoses are only to be used 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 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.

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.

Each hose is to be hydraulic pressure tested to 1.5 times the working pressure, and to be delivered with the manufacturer's pressure test certificate.

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

The type approval is based on the following documentation:

- Semperit's test reports dated 12.08.85, Ing. FX/wh. and 19.08.86
- Manufacturers Catalogue: "SEMPERIT Hydraulic Engineering" dated G2001.
- WTD 71 fire test reports 18/04, 19/04, 31/04, 32/04, 38/04, 39/04, 10/04, 11/04, 12/04, 14/04, 15/04, 17/04, 20/04, 21/04, 22/04, 23/04, 25/04, 26/04, 27/04, 28/04, 29/04, 30/04, 33/04, 34/04, 35/04, 36/04, 40/04.
- Rivalit coupling drawings No: 2201-2500, 2202-2500, 2202-1000, 2200-1000, 2200-1600, 2200-1001, 2200-2500, 2200-2501, 2200-5000, 2200-1601.
- Witnessed burst test reports received with DNV Essen's letter dated 2010-03-25

Tests carried out

Change in length, Burst test, Impulse test, Ozone resistance, Cold flexibility and Fire test.

Marking of product

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

- Manufacturer's name or trade mark
- Type designation

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Periodical assessment

For retention of the Type Approval, DNV Surveyor shall perform a survey every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check.
- Change in length
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in Det Norske Veritas' Certification Notes no. 2.9 - 5-791.70, "Type Approval of Flexible Hoses of Non-Metallic Material", or another recognised standard.

The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.

END OF CERTIFICATE