DNV·GL

Certificate No:
TAP00001SH

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
TEFLON RTH1

Issued to
RYCO Hydraulics Pty. Ltd.
Derrimut, VIC, Australia

is found to comply with
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.

Temperature range:	**See page 2**
Max. working press.:	**55 to 105 bar (see page 2)**
Sizes:	**DN6, 10, 12, 16, 19, 25**

Issued at **Høvik** on **2020-02-24**

This Certificate is valid until **2023-12-31**.

for **DNV GL**

DNV GL local station: **Melbourne**

Approval Engineer: **Maheshraja Venkatesan**

Zeinab Sharifi
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.

Job Id: **262.1-015853-10**
Certificate No: **TAP00001SH**

Product description

TEFLON RTH1 – RYCO proprietary flexible rubber hoses with permanently attached couplings in accordance with Type A SAE100R14 from SAE J517 having the following construction:-

Hose inner tube	:	TEFLON (PTFE)
Reinforcement & cover	:	One braid of high tensile AISI 304 stainless steel wire which also acts as a cover
End fittings	:	ONE PIECE CRIMP TT000 series
Material for end fittings	:	Carbon steel - AS1443 grades 12L14, 1010, 1020, 1040 & 1045 Stainless steel - ASTM A276 type 316
Fire protection	:	Fire sleeve FS1072

Hose and fire sleeve manufacturing location:
- Kongsberg Automotive, West Yorkshire, U.K.

End fittings manufacturing location:
- RYCO Hydraulics, Victoria, Australia
- RYCO Hydraulics (DALIAN), P.R.China

Hose assembling location:
- RYCO Hydraulics, Victoria, Australia

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

Hose assemblies covered by this certificate are approved to be used in:
- petroleum based hydraulic fluids (-40°C to +260°C);
- water based Hydraulic fluids, water and air (-40°C to +70°C)

Max. allowable working pressures (MAWP):

RTH1	Hose size			MAWP		End fitting designation
	DN	Inch	Dash	bar	psi	
RTH14	6	¼	-04	105	1500	TT000
RTH16	10	3/8	-06	105	1500	TT000
RTH18	12	½	-08	56	800	TT000
RTH110	16	5/8	-10	56	800	TT000
RTH112	19	¾	-12	56	800	TT000
RTH116	25	1	-16	55	800	TT000

At elevated temperatures the maximum allowable pressure shall be reduced as follows:

Temperature range		Percentage of MAWP reduction
(°C)	(°F)	(%)
-40°C to +100°C	-40°F to +212°F	100
+101°C to +150°C	+214°F to +302°F	93
+151°C to +200°C	+304°F to +392°F	85
+201°C to +250°C	+394°F to +482°F	77
+251°C to +260°C	+484°F to +500°F	70

Hose assemblies for fire safe applications shall always be installed with fire sleeve as specified in this certificate.

Flexible hoses are only to be used in short lengths 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 covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 10 DNVGL-RU-SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Production testing

All hose assemblies delivered under the DNV GL type approval scheme 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.

Type Approval documentation

Tests carried out

Impulse test, fire test, Dimensional check test, change in length test, Burst test, Leakage test, specific gravity test (Type A SAE100R14)

Marking of product

Flexible hoses are to be permanently marked by the manufacturer with the following details:
- Hose manufacturer’s name or trademark;
- Date of manufacture (month/year);
- Designation type reference;
- Nominal diameter;
- Pressure rating;
- Temperature rating.

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 approval are complied with. Reference is made to DNVGL-CP-0338.