



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14791**

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

with type designation(s)
R2K-04,-06,-08,-10,-12,-16

Issued to
INTERTRACO ITALIA SPA
Suzzara MN, Italy

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20

Application
Ship & machinery piping systems onboard ships and mobile offshore units for hydraulic, fresh water, sea water, fuel and lubricate oil, compressed air.

Temperature range: -40 °C to + 100 °C
Max. working press.: 210-420 bar, size dependent
Sizes: DN 6, 10, 12, 16, 19, 25

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

Issued at **Høvik** on **2014-07-08**

DNV local station: **Milan**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

.....
on behalf of **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 proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

Flexible rubber hoses with permanently attached couplings.

Type : R2K

Design :

Inner tube: oil resistant synthetic rubber
 Reinforcement: 2 steel wire braids
 Cover:synthetic rubber

Couplings (fittings): INTERTRACO ITALIA S.P.A., see table

Materials:

Carbon steel fittings S355J2 UNI EN 10277-2, 36SMnPb14 UNI EN 10277-3, 11SMnPb37 UNI EN 10277-3, 11SMnPb30 UNI EN 10277-3, C45 UNI EN 10277-2

Stainless steel fittings X 2CrNiMo 17-12-2 EN 10088-3

Hose manufacturer: BRIDGESTONE CORPORATION

Application

- This certificate is valid for the specific assembly of hose and coupling type as specified above, as a final product, complete and ready for service.
- The hoses may be used in Ship & machinery piping systems onboard ships and mobile offshore units for hydraulic, fresh water, sea water, fuel and lubricate oil, compressed air.
- All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.
- 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.
- The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the conditions as listed in DNV Type approval programme 5-791.70.

Hose code	Hose size DN	O.DIA (mm)	Min. bend radius (mm)	Max w.p.		Burst pressure		Fittings			
				bar	psi	bar	psi				
R2K-04	06 (1/4")	13,4	50	420	6000	1680	24000	B+SN03T	B+SCX0T	K-04	-
R2K-06	10 (3/8")	17,2	70	350	5000	1400	20000	B+SN03T	B+SCX0T	K-06	J-06
R2K-08	12 (1/2")	20,2	90	315	4500	1260	18000	B+SN03T	B+SCX0T	K-08	J-08
R2K-10	16 (5/8")	24,9	100	250	3600	1000	14400	B+SN03T		K-10	J-10
R2K-12	19 (3/4")	28,7	120	250	3600	1000	14400	B+SN03T		K-12	J-12
R2K-16	25 (1")	35,8	190	210	3000	840	12000	B+SN03T		K-16	J-16

CONTINUOUS SERVICE TEMPERATURE
 RANGE: -40 °C / 100 °C, (-40 °F / 212 °F)

Limitation

- **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
- Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalised.
- It must be possible to shut off from the system all flexible hoses used in systems for lubrication oil and petroleum base hydraulic oil.

Type Approval documentation

Tests carried out

Dimensional check, change in length, burst-proof, impulse, oil resistance, ozone resistance, cold flexibility, adhesion, abrasion and flame retardant test.

Marking of product

For traceability to this type approval the products are to be marked:

- Manufacturers name or trademark
- Specification or hose name
- Hose size (inside diameter in inches)
- Date code (quarterly and daily production code)

Delivery conditions

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

Periodical assessment

Periodical assessment after 2 years:

For retention of the Type Approval, DNV-GL Surveyor shall perform an assessment 2 years after issue of the Type Approval Certificate, according to DNV Standard for Certification No. 2.9 – 5-791.70, "Type Approval of Flexible Hoses of Non-Metallic Material" para. 2.8. to verify that the conditions for the type approval are complied with.

Renewal assessment after 4 years:

Application for renewal shall be submitted to DNV not later than 3 months before expiry date of the certificate. Upon receipt of the application a periodical assessment will be carried out to verify the conditions for the type approval is still complied with. Any changes to the design are to be handled as for initial Type Approval, with regards to additional documentation and testing requirements.

End of Certificate