



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14032**

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

with type designation(s)
4SP, 4SH - C25, 4ST, R13 - C35, R15 - 4ST+ - C42, R2C - C25 - C35 - C42, C21, PC25, 4ST+ - PC35 - PC42

Manufactured by
INTERTRACO ITALIA SPA
Suzzara MN, Italy

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Offshore Standards
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Application
May be used for hydraulic, fuel oil, lube oil, cargo oil, compressed air, fresh water, sea water

Type:	Temperature range:	Max. working press.:	Sizes:
4SP	-40 °C to +100 °C	280 - 445 bar	3/8", 1/2", 5/8", 3/4" and 1"
4SH - C25	-40 °C to +100 °C	250 - 420 bar	3/4", 1", 1 1/4", 1 1/2" and 2"
4ST	-40 °C to +100 °C	420 - 350 bar	see certificate
R13 - C35	-40 °C to +121 °C	350 bar all sizes	see certificate
R15 - 4ST+ - C42	-40 °C to + 121 °C	420 all sizes	see certificate
R2C - C25 - C35 - C42	-40 °C to 100 °C/121 °C size dependent	250 - 420 bar size dependent	see certificate
C21	-40 °C to +120 °C	210 bar	2"
PC25	-40 °C to + 100 °C/+120 °C size dependent	250 bar all sizes	5/8", 3/4", 1 1/4", 1 1/2"
4ST+ - PC35 - PC42	-40 °C to + 100 °C/+120 °C size dependent	350 - 420 bar	see certificate

Høvik, 2012-03-19
for **Det Norske Veritas AS**

This Certificate is valid until
2016-06-30

Marianne Spæren
Head of Section

DNV local office:
Milan

Tom Berg-Nielsen
Surveyor

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

EN 856 4SP type : Synthetic rubber inner tube reinforced by 4 steel wire spirals, synthetic rubber cover.
 Intertraco coupling types: X and B+S0420

EN 856 4SH – C25 type: Synthetic rubber tube reinforced by 4 steel wire spirals, synthetic rubber cover.
 Intertraco coupling types: J, X, B+S0420, I+S004I

4ST type: Synthetic rubber inner tube reinforced by 4 steel wire spirals, synthetic rubber cover.
 Intertraco coupling types: K, J, B+S312T, B+S0420

EN 856 R13 – C35 type: SAE J517 100 R13 type. Synthetic rubber inner tube reinforced by 4 or 6 (size dependent) steel wire spirals, synthetic rubber cover.
 Intertraco coupling types: H, K, J, X, HLZ, I+S004I and I+S006I

R15 – 4ST+ - C42 type: SAE J517 100 R15 type. Synthetic rubber inner tube reinforced by 4 or 6 (size dependent) steel wire spirals, synthetic rubber cover
 Intertraco coupling types: K, J, H, X, XLZ, I+S004I, I+S006I, Z+SZ06I

R2C – C25 – C35 – C42 type: Synthetic rubber inner tube reinforced by 2 wire braids or 4 steel wire spirals (size dependent), Synthetic rubber cover.
 Intertraco coupling types: K, J, X, B+SN03T

C21 type: Synthetic rubber inner tube reinforced by 4 steel spirals, synthetic rubber cover.
 Intertraco coupling types: J, X

PC25 type: Synthetic rubber inner tube reinforced by 2 wire braids or 4 steel wire spirals (size dependent)
 Synthetic rubber cover.
 Intertraco coupling types: K, J, X

4ST+ - PC35 – PC42 type: Synthetic rubber inner tube reinforced by 2 wire braids or 4/6 steel wire spirals (size dependent), Synthetic rubber cover
 Intertraco coupling types: K, J, H, X, I+S004I and I+S006I

Hose manufacturer: Bridgestone, Tokyo, Japan
 Coupling manufacturer: Intertraco Italia SpA, Suzzara MN, Italy

Couplings materials: carbon steel and stainless steel.

Application/Limitation

The hoses can be used in the systems mentioned on the front page for the following working pressures:
 4SP

Sizes			Max working pressure
DN	inch	Size	bar
10	3/8"	06	445
12	1/2"	08	415
16	5/8"	10	350
19	3/4"	12	350
25	1"	16	280

4SH – C25

Sizes			Max working pressure
DN	inch	Size	bar
19	3/4"	12	420
25	1"	16	380
31	1 1/4"	20	325
38	1 1/2"	24	290
51	2"	32	250

4ST

Sizes			Max working pressure
DN	inch	Size	bar
12	1/2"	08	420
16	5/8"	10	350
19	3/4"	12	350
25	1"	16	350

R13 – C35

Sizes			Max working pressure
DN	inch	Size	bar
16	5/8"	10	350
19	3/4"	12	350
25	1"	16	350
31	1 1/4"	20	350
38	1 1/2"	24	350
51	2"	32	350

R15 – 4ST+ - C42

Sizes			Max working pressure
DN	inch	Size	bar
10	3/8"	06	420
12	1/2"	08	420
19	3/4"	12	420
25	1"	16	420
31	1 1/4"	20	420
38	1 1/2"	24	420
51	2"	32	420

R2C – C25 – C35 – C42

Sizes			Max working pressure
DN	inch	Size	bar
06	1/4"	04	420
08	5/16"	05	380
10	3/8"	06	350
12	1/2"	08	350
16	5/8"	10	280
19	3/4"	12	250
25	1"	16	250
31	1 1/4"	20	250

C21

Sizes			Max working pressure
DN	inch	Size	bar
51	2"	32	210

PC25

Sizes			Max working pressure
DN	inch	Size	bar
16	5/8"	10	250
19	3/4"	12	250
31	1 1/4"	20	250
38	1 1/2"	24	250

4ST+ - PC35 – PC42

Sizes			Max working pressure
DN	inch	Size	bar
06	1/4"	04	420
10	3/8"	06	350
12	1/2"	08	350
16	5/8"	10	420
19	3/4"	12	350
25	1"	16	420
31	1 1/4"	20	350
38	1 1/2"	24	350

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure.

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

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

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 the certificate holder. The certificate holder shall keep record of all assembler authorisations.

- 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 and the testing is to be witnessed by DNV. This testing is to be performed at least once every 4 years.

Hoses used for continuous operation at temperatures higher than 100 °C will have their lifetime reduced. In such cases more frequent inspections and planned exchange should be a part of the maintenance program.

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

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.

Flexible hoses of these types are not to be used in 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.

Each hose is to be hydraulic pressure tested to 1.5 times the maximum working pressure and to be delivered with 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

Tests carried out

Impulse test, burst test, fire test, oil resistance of inner tube test, ozone resistance of outer cover test, cold flex test, cover adhesion test, change in length test, dimensional check test

Marking of product

For traceability to this type approval the hoses are to be marked with:

- BRIDGESTONE: 4SP, 4SH, 4ST, 4ST+, R13, R15, R2C
- PIRTEK: C21, C25, C35, C42, PC25, PC35, PC42

Certificate Retention Survey

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