



CERTIFICATE NUMBER
16-SQ1576777-PDA

DATE
18 Nov 2016

ABS TECHNICAL OFFICE
CN Shanghai ESD

CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of
TECHFLUID YANTAI LIMITED

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Hose Assemblies**

Model: **1SN / 2SN / 4SP / R13 / R15 Fire-Resistant Type Flexible Hose**

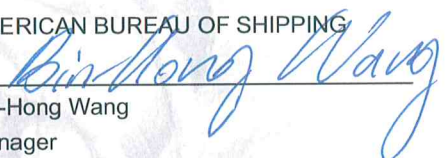
This Product Design Assessment (PDA) Certificate 16-SQ1576777-PDA, dated 18/Nov/2016 remains valid until 17/Nov/2021 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING


Bin-Hong Wang
Manager

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by the terms and conditions as contained in ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

TECHFLUID YANTAI LIMITED

NO. 628 PINGLIDIAN ROAD
LAIZHOU CITY SHANDONG
China 261414

Telephone: +86-535-2626916

Fax: +86-535-2615527

Email: yangpeng@yuelongchina.com

Web: www.techfluid.cn

Tier: 3 - Type Approved, unit certification not required

Product: Non-Metallic Flexible Hose Assemblies

Model: 1SN / 2SN / 4SP / R13 / R15 Fire-Resistant Type Flexible Hose

Intended Service:

Suction & delivery of Hydraulic Oil, Water/Glycol Hydraulic Fluids, Fuel Oil, Lubricating Oil, Seawater, Fresh Water and Compressed Air.

Description:

Flexible hoses of non-metallic material with permanently fitted couplings.
For details, see attachment.

Rating:

Size range: DN 1/4" to 2", design pressure: 40 to 445 bar.
For details, see attachment.

Service Restriction:

Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

Comments:

- 1) Hoses are to be complete with Factory Assembled End Fittings or Factory Supplied End Fittings installed in accordance with Manufacturer's Specifications.
- 2) End Connections are to comply with applicable requirements and limitation of 4-6-2/5.5.4, 4-6-2/5.5.5, 4-6-7/3.5.1 and 4-6-7/5.3.2 of the Steel Vessels Rules .
- 3) Hose Assemblies are to be installed only where flexibility is required, in clearly visible and readily accessible locations, and are not to be subject to torsional deflection under normal conditions. Hose Length is to be limited to that required by flexibility only.
- 4) Not to be used for installations where repeated and/or frequent flexing is expected.
- 5) Marking for Flexible hoses are to be permanently marked by the manufacturer with the following details as per 4-6-2/5.7.6 of the Steel Vessel Rules:
 - Hose manufacturer's name or trademark.
 - Date of manufacture (month/year).
 - Designation type reference.
 - Nominal diameter.
 - Pressure rating
 - Temperature rating.
- 6) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:

Drawing No. 1SN Type, Flexible Hose 1SN, Revision: 0;
Drawing No. 2SN Type, Flexible Hose 2SN, Revision: 0;
Drawing No. 4SP Type, Flexible Hose 4SP, Revision: 0;
Drawing No. R13 Type, Flexible Hose R13, Revision: 0;
Drawing No. R15 Type, Flexible Hose R15, Revision: 0;
Drawing No. NA-1, Test Report for Flexible Hose 1SN-6 (Report No. 1SN-6.3 dated 20 September 2016);
Drawing No. NA-10, Test Report for Flexible Hose R15-38 (Report No. R15-38 dated 20 September 2016);
Drawing No. NA-2, Test Report for Flexible Hose 1SN-51 (Report No. 1SN-51 dated 20 September 2016);
Drawing No. NA-3, Test Report for Flexible Hose 2SN-6 (Report No. 2SN-6.3 dated 20 September 2016);
Drawing No. NA-4, Test Report for Flexible Hose 2SN-51 (Report No. 2SN-51 dated 20 September 2016);
Drawing No. NA-5, Test Report for Flexible Hose 4SP-10 (Report No. 4SP-10 dated 20 September 2016);
Drawing No. NA-6, Test Report for Flexible Hose 4SP-51 (Report No. 4SP-51 dated 20 September 2016);
Drawing No. NA-7, Test Report for Flexible Hose R13-19 (Report No. R13-19 dated 20 September 2016);
Drawing No. NA-8, Test Report for Flexible Hose R13-51 (Report No. R13-51 dated 20 September 2016);

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Tier: 3 - Type Approved, unit certification not required

Drawing No. NA-9, Test Report for Flexible Hose R15-19 (Report No. R15-19 dated 20 September 2016);

Terms of Validity:

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STANDARDS

ABS Rules:

2016 Rules for Condition of Classification 1-1-4/7.7, 1-1-A3 and 1-1-A4, which covers the following:

Steel Vessels 2016: 4-6-2/5.7.

Offshore Support Vessels 2016: 4-6-2/5.7 and 5-2-2/5.7.

Steel Vessels Under 90M 2016: 4-4-1/9.19.

High-Speed Craft 2016: 1-1-4/11.9, 1-1-Appendix 2 and 3, 4-4-1/9.19.

ABS Rules for Building and Classing Mobile Offshore Drilling Units 2016: 1-1-4/9.7, 1-1-A2, 1-1-A3, 4-2-1/11.29.

National:

NA

International:

ISO 15540:2016 & ISO 15541:2016

Government:

NA

EUMED:

NA

OTHERS:

NA