



CERTIFICATE NUMBER

02-HS292690B-3-PDA-DUP

DATE

14 March 2012

ABS TECHNICAL OFFICE

Houston OED - Equipment

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
FIBER GLASS SYSTEMS (SUZHOU) CO. LTD - SUZHOU

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: **Fiberglass (FRP) Pipe, Fittings and Joints**

MODEL: **Green Thread 250 / 250-C**

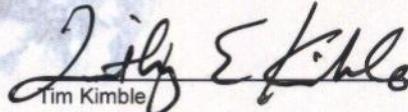
This Product Design Assessment (PDA) Certificate 02-HS292690B-3-PDA-DUP, dated 14/Mar/2012 remains valid until 13/Mar/2017 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

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



Tim Kimble

Engineer

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).

FIBER GLASS SYSTEMS (SUZHOU) CO. LTD

NO. 848 LITANGHE ROAD
XIANGCHENG ECONOMIC DEVELOPMENT ZONE
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China
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Fax: 86-512-8518 0101
Email: karl.gou@nov.com

MA Certificate No. 11-SQ1799213-X1

Product: Fiberglass (FRP) Pipe, Fittings and Joints

Model: Green Thread 250 / 250-C

Intended Service:

Marine & Offshore Application - Piping Systems for Cargo (Flammable Cargoes with flash point < 60 °C); Inert Gas; Flammable Liquids (flash point >60 °C); Seawater; Freshwater; Sanitary/Drains/Scuppers; Sounding/Air/Vents; Miscellaneous (Brine, produced fluids, process piping), in locations requiring IMO Level 3 or lower, fire endurance rating.

Description:

Fiberglass Reinforced Thermosetting Resin Piping Systems, with 0.020" (0.5mm) reinforced resin-rich liner. Pipe and fittings are manufactured as either non-conductive (250) or electrically conductive (250-C) versions.

Ratings:

GREEN THREAD 250 and GREEN THREAD 250-C are rated to 250 psi (18 bar) in sizes from 1" (50mm) through 36" (900mm) diameter. Maximum operating temperature 110 °C.
Fire integrity level: 1 & 1.5" diameter Level-0; >1.5 - 40" diameter Level-3

Service Restrictions:

Unit Certification is not required for this product.

i) Each pipe spool is to be hydrostatically tested in accordance with SVR 4-6-3/9, at the manufacturer's production facility.

ii) Where usage of 250-C is required for electrical conductivity (see SVR 4-6-3/5.15), testing and survey requirements of SVR 4-6-3/7.7 are applicable.

iii) 1" (25mm) and 1.5" (40mm) diameter piping not rated for IMO Level 3 service.

iv) Where plastic pipes are to be utilized for any installation within tanks or other locations which may be subject to a vacuum condition inside the pipe or a head of liquid on the outside of the pipe, external pressure is to be considered. The pipe is to be designed for an external pressure of not less than the sum of the pressure imposed by the maximum potential head of liquid outside the pipe plus full vacuum of 14.5 psi (1 bar) inside the pipe. The maximum external pressure for a pipe is to be determined by dividing the collapse test pressure by a safety factor of 3. This collapse pressure may be verified experimentally or determined by a combination of testing and calculation methods. These details are to be submitted to ABS before installation of the pipe, for ABS approval on a case by case basis.

Comments:

PDA resides with NOV Fiber Glass Systems - LITTLE ROCK.

Notes / Drawings / Documentation:

Supporting Data:

SwRI Project Nos. 01.05234.01.001b, 01.05234.01.001c, 01.05234.01.001f, and 01.05234.01.001g dated April 2002; and SwRI Follow Up Procedure Project No. 01.02500.091 dated April 2009.

Term of Validity:

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STANDARDS

ABS Rules:

2012 Steel Vessel Rules 1-1-4/7.7, 1-1- Appendix 3, 4-6-3/3.1, 3.5,(i), 5.1, 5.3, 5.7, 5.9, 5.11.3, 5.15.3, 5.17, 9, 15, 19; 2012 ABS MODU Rules 4-2-2/7; 2009 Guide for Building and Classing Facilities on Offshore Installations Appendix 1 Section 2/Table 1

National:

NA

International:

IMO Resolution A753 (18) Appendix 2

Government Authority:

Coast Guard Approval Number 164.141/0013/0; Expires 1/27/2013

EUMED:

NA

Others:

NA