



Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 08/MAY/2007 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

FIBER GLASS SYSTEMS

Model Name(s): Green Thread 175 / 175-C

Presented to:

FIBER GLASS SYSTEMS
2700 WEST 65TH STREET
LITTLE ROCK
AR 72209
United States

Intended Service:

Shipboard & Offshore Piping Systems for Cargo (Flammable Cargoes, f.p. < 60°C); Inert Gas; Flammable Liquids (f.p. > 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 in sizes ranging from 2" (50mm) through 36" (900mm) diameter, with 0.20" (0.5mm) reinforced resin-rich liner. Pipe and fittings are manufactured as either non-conductive (175) or electrically conductive (175-C) versions.

Ratings:

GREEN THREAD 175 and GREEN THREAD 175-C are rated to 175 psi (12 bar) in sizes from 2" (50mm) through 36" (900mm) diameter. Maximum operating temperature 110°C.

Service Restrictions:

Unit Certification is required for this product. If the manufacturer or purchaser's request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. Each pipe spool is to be hydrostatically tested in accordance with 4-6-3/9 of the Rules, at the manufacturer's production facility. Where usage of 175-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. When 175/175-C is installed in fire main use on offshore floating drilling and production platforms the requirements of FG 3-8/5.1.1(e) are applicable.

Comments:

Duplicate PDAs have been issued to Fiber Glass Systems (Suzhou) Co. Ltd

Notes / Documentation: This Product Design Assessment (PDA) is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product. 175/175-C Type Approval Rev. 1 - Changes affecting sizes 8" - 12" include: footprint reduction, single piece flange construction (previously used 1" - 6"), extension of single pressure design for fittings/flanges commonality with 250/250-C piping system (previously 1" - 6"), and addition of 11¼° and 22 ½° sweep radius elbows. Addition of odd angle elbows made the same as common angle elbows (same materials, design, winding process, tooling).

Term of Validity: This Design Assessment Certificate number 02-HS292690A/2-PDA, dated 19/Feb/2007 will expire on 18/Feb/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules: 2007 Steel Vessel Rules 1-1-4/7.7, 4-6-3; 2006 MODU Rules 4-2-2/7; 2000 Facilities Guide Appendix 1

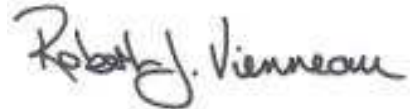
National Standards:

International Standards: IMO Resolution A753 (18) Appendix 2

Government Authority: See USCG approval 164.141/0012/0

EUMED:

Others:



Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.



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For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

FIBER GLASS SYSTEMS (SUZHOU) CO. LTD (A VARCO COMPANY)

Model Name(s): Green Thread 175 / 175-C

Presented to:

FIBER GLASS SYSTEMS (SUZHOU) CO. LTD (A VARCO COMPANY)
LITANGHE ROAD
XIANGCHENG ECONOMIC DEVELOPMENT ZONE SUZHOU
Suzhou
China

Intended Service:

Shipboard & Offshore Piping Systems for Cargo (Flammable Cargoes, f.p. < 60°C); Inert Gas; Flammable Liquids (f.p. > 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 in sizes ranging from 2" (50mm) through 36" (900mm) diameter, with 0.20" (0.5mm) reinforced resin-rich liner. Pipe and fittings are manufactured as either non-conductive (175) or electrically conductive (175-C) versions.

Ratings:

GREEN THREAD 175 and GREEN THREAD 175-C are rated to 175 psi (12 bar) in sizes from 2" (50mm) through 36" (900mm) diameter. Maximum operating temperature 110°C.

Service Restrictions:

Unit Certification is required for this product. Each pipe spool is to be hydrostatically tested in accordance with 4-6-3/9 of the Rules, at the manufacturer's production facility. Where usage of 175-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. When 175/175-C is installed in fire main use on offshore floating drilling and production platforms the requirements of FG 3-8/5.1.1(e) are applicable.

Comments:

Original PDA is with Fiber Glass Systems, Little Rock, Arkansas, USA

Notes / Documentation:

This Product Design Assessment (PDA) is valid only for products intended for use

on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product. 175/175-C Type Approval Rev. 1 - Changes affecting sizes 8" - 12" include: footprint reduction, single piece flange construction (previously used 1" - 6"), extension of single pressure design for fittings/flanges commonality with 250/250-C piping system (previously 1" - 6"), and addition of 11¼° and 22 ½° sweep radius elbows. Addition of odd angle elbows made the same as common angle elbows (same materials, design, winding process, tooling).

Term of Validity:

This Design Assessment Certificate number O2-HS292690A/2-DUP, dated 20/Feb/2007 will expire on 19/Feb/2012 or at an earlier date should there be alterations to the product's design or changes to the referenced ABS Rules and other specifications, which affect the product. Product use on or after 1 January 2008, will be subject to compliance with the ABS Rules or specifications in effect when the vessel, MODU or facility is contracted. The product's acceptability on board ABS-classed vessels or facilities is defined in the service restrictions of this certificate.

ABS Rules:

2007 Steel Vessel Rules 1-1-4/7.7, 4-6-3; 2006 MODU Rules 4-2-2/7; 2000 Facilities Guide Appendix 1

National Standards:**International Standards:**

IMO Resolution A753 (18) Appendix 2

Government Authority:**EUMED:****Others:**


Manager, ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.