



CERTIFICATE NUMBER

DATE

13-SG970223/3-PDA

25 March 2013

ABS TECHNICAL OFFICE

Singapore Engineering Services

CERTIFICATE OF DESIGN ASSESSMENT

This is to Certify that a representative of this Bureau did, at the request of
NOV FGS SINGAPORE (PTE) LTD - SINGAPORE

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: **Seals, Deck and Bulkhead Penetration Sealing System for Plastic Pipes**

MODEL: **Bondstrand Glassfiber Reinforced Epoxy (GRE) Watertight Bulkhead Penetration**

This Product Design Assessment (PDA) Certificate 13-SG970223/3-PDA, dated 25/Mar/2013 remains valid until 24/Mar/2018 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

Kee Wing (Keith) Yeo

Engineer

AB258(01/10)

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 manufacturing process 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 Rule 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010).

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MA Certificate No. 11-SG1996193A

Product: Seals, Deck and Bulkhead Penetration Sealing System for Plastic Pipes**Model:** Bondstrand Glassfiber Reinforced Epoxy (GRE) Watertight Bulkhead Penetration**Intended Service:**

Watertight bulkhead penetration for plastic pipes covered under ABS PDA certificates 01-SG248533/4-PDA and 01-SG248534/2-PDA

Description:

Bondstrand Glassfiber Reinforced Epoxy (GRE) Watertight Bulkhead Penetration

Ratings:

Available in sizes from 1" to 40" (25 mm to 1000 mm)

Operating temperature: 93°C

Internal pressure rating up to 17.2 bar (250 psig).

External pressure rating up to 4 bar (58 psig).

Service Restrictions:

1. Unit Certification is not required for this product.
2. Applications are limited to piping on open decks and within tanks, cofferdams, void spaces, pipe tunnels and locations where low flame spread characteristics of the pipes are required by 4-6-3/5.13 of Steel Vessel Rules, 4-2-2/7.5.7 of MODU Rules and Appendix 1, Section 2.13 of Facilities on Offshore Installations Rules.
3. The installation is to be in accordance with the ABS Rules/Guides, the manufacturer's recommendations, and to the satisfaction of the attending Surveyor.
4. GRE penetration is not to be used for collision bulkhead penetrations. GRE penetration is not to be used for pipe support, or cater to hull expansion/contractions. Based on the location and system using the penetration, evidence or arrangement showing compliance or calculations demonstrating that the penetrations can withstand support loads and bending moments are to be submitted to ABS for review and testing under such loads may also be required.

Comments:

- a) Where plastic pipes pass through "A" or "B" class divisions, arrangements are to be made to ensure that the fire endurance is not impaired. These arrangements are to be tested in accordance with IMO Resolution. A.754 (18), Recommendation on Fire Resistance Tests for "A", "B" and "F" Class Divisions, as amended.
- b) If the bulkhead or deck is also a fire division and destruction by fire of plastic pipes may cause inflow of liquid from a tank, then a metallic shutoff valve operable from above the bulkhead deck is to be fitted at the bulkhead or deck.

Notes / Drawings / 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.

Term of Validity:

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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.

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STANDARDS

ABS Rules:

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. The Rules applicable to this assessment are: 4-6-3/3, 4-6-3/5 and 4-6-3/7 of Steel Vessel Rules 2013; 4-2-2/7.3, 4-2-2/7.5 and 4-2-2/7.7 MODU Rules 2012, Updated to 2013; Appendix 1/2 and Appendix 1/3 of FOI Rules 2012, Updated 2013.

National:

NA

International:

NA

Government Authority:

NA

EUMED:

NA

Others:

NA