



CERTIFICATE NUMBER	20-HS1959617-PDA
EFFECTIVE DATE	28-Feb-2020
EXPIRY DATE	27-Feb-2025
ABS TECHNICAL OFFICE	Houston ESD - Piping

CERTIFICATE OF Product Design Assessment

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

PERMA-PIPE, INC.

located at

6410 WEST HOWARD STREET, NILES, IL, United States, 60714

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 Pipe System, Pre-insulated

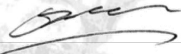
Model FUEL-GARD

This Product Design Assessment (PDA) Certificate remains valid until 27/Feb/2025 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping


Yongjin Lee, Engineer/Consultant

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 ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

PERMA-PIPE

6410 WEST HOWARD STREET

NILES IL

United States 60714

Telephone: 847-966-2235

Fax: 847-470-1204

Email: ron.pescatore@permapipe.com

Web: www.permapipe.com

Tier: 2 - PDA Issued

Product: Pipe System, Pre-insulated**Model:** FUEL-GARD**Intended Service:**

Marine Applications – FUEL-GARD – Maritime Fuel-Liquid, Gas & Vent lines on Vessels/Ships.

Description:

Complete line of fully engineered/factory insulated piping systems to effectively and efficiently transport low temperature cryogenic fluids like LNG.

Pre-fabricated double wall containment pipe for cryogenic applications, Cryogenic pipe construction: Stainless Steel Inner Pipe (1/2"- 24"), with Cryogenic insulation(Cryogel), having an outer pipe of either Stainless Steel or Carbon Steel. Annular Space can be continuously mechanically vented at 30 air changes per hour or pressurized with an inert gas.

Rating:

Minimum Temperature ratings: Fuel-Gard -260°F(-162°C)

Service Restriction:

Unit Certification is not required for this product.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. Customer must specify intended use in order to determine type and standards for carrier pipe, as well as thicknesses, and choice of insulation and jacketing materials.
3. Pipe specification, pipe material and wall thickness specified by customer must be submitted for review for each installation.

Notes/Drawing/Documentation:

Drawing No. ABS Letter, Declaration of Conformity, Revision: -, Pages: 1

Drawing No. Permapipe_P21802_PO_ACK, Purchase Order, Revision: ---, Pages: 1

Drawing No. Permapipe_P21802_PO_ACK, Purchase Order, Revision: -, Pages: 1

Drawing No. Cryogel_X201_Ds_Cryogel, Revision: -, Pages: -

Drawing No. FUEL-GARD Brochure, Fuel Brochure, Revision: -, Pages: 1

Drawing No. Letter and Doc, Revision: -, Pages: 1

Drawing No. Material Data Sheet, Density Pu Foam, Revision: -, Pages: -

Drawing No. Skmbt_C75414073013240, Documents, Revision: -, Pages: 1

Drawing No. Heat Transfer Calculations, Heat Transfer Calculations 10 30 14, Revision: -, Pages: -

Terms of Validity:

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STANDARDS**ABS Rules:**

Rules for Conditions of Classification, Part 1, (2020) 1-1-4/7.7, 1-1-A3 & A4, which covers the following:
2020 Marine Vessel Rules 4-6-2, 5C-8-5; 5C-8-6; 5C-13-16, 5C-13-7

National:

ASME B31.3, Piping Code Edition 2018

International:

NA

Government:

Resolution MSC.370(93); adopted 22 May 2014 - IGC Code.

EUMED:

NA

OTHERS:

NA