



Marine & Offshore
Division

Certificate number: 03415/H0 BV

File number: ACM 135/0301/003

Product code: 7312I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

AMNITEC LIMITED
Merthyr Tydfil - UNITED KINGDOM

for the type of product

LIQUEFIED GAS TRANSFER HOSES

Cryoflex 50 Composite hoses

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- IGC Code

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate is a renewal of certificate N° 03415/G0 BV expiring on 10/11/2014

This certificate will expire on: 10 Nov 2019

For BUREAU VERITAS,

At BV LONDON, on 01 Aug 2014,

Jon Watson



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine & Offshore Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 May 2009

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

Cryoflex™ 50 Composite hoses

1.1 Design

Cryoflex™ 50 hoses are manufactured from multi-layers of polyamide fabric and film and may be further insulated by an additional lagging. The hoses have stainless steel inner and outer wires achieving dual wire electrical continuity.

1.2 Technical data

| Type | Nominal inner Diameter | Maximum working Pressure | Temperature range | Colour |
|-----------------------|------------------------|--------------------------|-------------------|-------------|
| 0940 / Cryogenic duty | 100 mm / 4" | 21 bar | -50 to +50 °C | White/Green |
| | 150 mm / 6" | 21 bar | | |
| | 200 mm / 8" | 15 bar | | |

- The maximum working pressure is not to exceed one fifth of the burst pressure at the service temperature.

- Cryoflex™ 50 hoses are supplied in length up to 15 meters depending on diameters.

- End fittings: ASA 150 or ASA 300 welding neck flanges made of austenitic stainless steel.

1.3 Material specification

| | |
|---------------|-----------------------------|
| Inner wire | Stainless steel |
| Wall material | Polymeric fabrics and films |
| Outer wire | Stainless steel |

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Manufacturer' s brochure

- Drawings N° 472 dated 10/03/1988 and N° 95/467 dated 09/03/1988

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- Certificate of inspection and tests dated 10/12/1991 from the Department of Transport Marine Directorate.

- Satisfactory tests carried out: visual and dimensional checks, hydraulic test, burst test, electrical resistance test and pressure cycle test at ambient temperature with 200 times from 0 to 42/30 bar.

4. APPLICATION / LIMITATION

4.1 For use as transfer cargo hose assembly on board ships having to comply with the IGC Code and relevant requirements of the Society for the purpose of loading and discharge of the following products: Propane, Propylene, Butylene, Butane, Ammonia Anhydrous and Vinyl chloride.

4.2 Hoses are to be compatible with the cargo and suitable for the cargo temperature. Users, in consultation with the manufacturer, will ensure that materials of hoses assemblies are suitable to be resistant to the chemicals to be conveyed.

4.3 The hoses are to be installed according to manufacturer's instructions and Society Rules.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **AMNITEC LIMITED** in compliance with the type and the requirements described in this certificate.

5.2 This type of product is within the category IBV of BUREAU VERITAS Rule Note NR320.

5.3 BV product certificate is required.

5.4 The manufacturer has declared to Bureau Veritas that the hoses detailed in this certificate are produced at the following production sites:

- The hose bulks are made by Compoflex Abercarnid Merthyr Tydfil (United Kingdom).

- The flexible hoses are completely assembled by AMNITEC LIMITED Abercarnid Merthyr Tydfil Mid. Glamorgan (United Kingdom).

5.5 Each cargo hose, complete with end fittings, before being placed in service, is to be hydrostatically tested at ambient temperature to a pressure not less than 1.5 times its specified maximum working pressure nor more than two fifths its bursting pressure. Visual inspection and dimension inspection are to be carried out.

6. MARKING OF PRODUCT

Each hose assembly shall be marked with at least:

- Manufacturer name or trademark
- Hose designation and size
- Max. working pressure / Max. working temperature
- Year of manufacture
- Society's brand as relevant

7. OTHERS

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper method of fitting and general maintenance of their products and of the conditions of this approval.

*** END OF CERTIFICATE ***