



TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00001F5
Revision No:
1

This is to certify:

that the **Bulk Loading Hoses with Permanently Fitted Couplings**

with type designation(s)
Multi-LPG White

issued to

Gutteling B.V.
Rotterdam, Zuid-Holland, Netherlands

is found to comply with

DNV rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application:

Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV.

Temperature range: -50°C to +50°C
Max. working press.: 21 bar
Sizes: 1", 1.5", 2", 2.5", 3", 4", 6", 8", 10" (28 mm to 250 mm)

Issued at **Høvik** on **2024-03-11**

for **DNV**

This Certificate is valid until **2028-12-18**.

DNV local unit: **Netherlands West FIS**

Approval Engineer: **Maheshraja Venkatesan**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Flexible hose assemblies for transfer of LPG with the following constructional features:

Wire reinforced hoses constructed of inner wire of stainless steel AISI 316, inner cover of polyamide fabrics, inner layer of polyamide fabrics and polyester films, outer cover of polyamide and outer wire of stainless steel AISI 316 with permanently fitted couplings.

End connection (to the hose):

according to manufacturer's drawing listed in this certificate.

End connection (to ship):

Slip-on weld flange, lapped flange, weld neck flange and TTMA fixed flange (according to ASME B16.5 or EN1092-1)

Coupling material: Stainless steel AISI 316L

Hoses and couplings are manufactured by Gutteling B.V., Rotterdam, Netherlands

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

The hoses may be used for loading/unloading on LPG ships.

The hoses may be used for temporary filling and discharge only. They are not to be permanently fitted.

The hoses covered by this certificate shall be used in accordance with manufacture's instruction manual.

The scope of approval does not cover the hose handling device(s) (padeye or lifting lugs, collars, etc.)

Hoses covered by this certificate shall not be subject to vacuum condition during operation.

Materials chosen for the specific system shall be suitable for the intended medium and environmental conditions.

Production testing and Certification

Each hose assembly shall be hydrostatically tested at a hydrostatic pressure of 1.5 times the maximum working pressure. Production Testing and Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate), as appropriate.

Type Approval documentation

Manufacturer's drawing:

GUT/HOSE/05-89,90,91,92,93,94,95,96

GUT/STUB/01-00, GUT/MALE NIPPLE/01-00, GUT/FERRULE/01-00, GUT/FERRULE/02-00, GUT/NIPPLE/01-00, GUT/NIPPLE/02-00, GUT/SWL NUT/03-00, GUT/SWL NUT/04-00, GUT/SWL NUT/05-00, GUT/FLANGE/01-00, GUT/FLANGE/03-00, GUT/FLANGE/02-00, GUT/FLANGE/04-00, GUT/SPL/01-00, GUT/SPL/03-00, GUT/FIT/09-00, GUT/FLANGE/05-00, GUT/FLANGE/07-00, GUT/PIPE NIPPLE/01-00, GUT/SPL/02-00

Leakage test, change in length, twisting test, electrical conductivity and dimensional check test report dated 2006-08-03 witnessed by DNV surveyor.

11432421_a, 1432421_b, 11432421_c, 11432421_e, 11432421_g, 11432421_i dated 2003-09-24 witnessed by DNV surveyor.

Gutteling report No. 080420/SV1 including hose description and condition, test and evaluation results.

TNO test report TNO-034-DTM-2009-00733 dated December 2009.

TNO test report: TNO 2016 R10624 dated 2016-05-13

Renewal test report number GSO18000894 dated 2018-06-15 witnessed by DNV surveyor

Renewal burst pressure test report witnessed by DNV dated 2018-11-30

Renewal burst pressure test report(s) reviewed by DNV dated 2024-02-13

Tests carried out

Vacuum test, proof pressure test, impulse test, cold flexibility test, IGC-Code test, oil resistance test, burst test, bend test and change in length test, electrical conductivity

Marking of product

Each end fitting shall bear a permanent identification, showing, as a minimum:

- name of manufacturer;
- hose assembly serial number;
- internal diameter of the hose;

The hose shall be permanently marked with:

- the date of the proof pressure testing,
- its specified MAWP,
- its maximum and minimum service temperature;

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNV-CP-0338.