



Certificate No:
TAP00002A7

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipeline Components

with type designation(s)
Isolation Balloon Type-II

Issued to

Mutsubishi Rubber Co., Ltd.
Osaka, Japan

is found to comply with

DNV GL rules for classification – Ships Pt.5 Ch.7 Liquefied gas tankers
IMO IGC-Code

Application :

Approved for use as a safe means of emergency isolation in the event of a failure of a cargo tank PRV.

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

Issued at **Høvik** on **2021-06-28**

This Certificate is valid until **2026-06-27**.

for **DNV**

DNV local station: **Kobe**

Approval Engineer: **Pål Einar Spilleth / Chi-wan Bang**

.....
Monika Johannessen
Head of Section

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.



Form code: TA 251

Revision: 2021-03

www.dnv.com

Page 1 of 2

Product description

Isolation Balloon Type-II for LNG/LPG Cargo Tanks, used for safe isolation of valves with its specification as follows:

Balloon inner pressure: 0.2 Mpa (max)
Tank pressure: 0.07 Mpa (Max)
Gas temperature: -163 deg. (Min)
Applicable main pipe sizes: 150A~300A
Diameter of branch pipe for inserting: 80A~100A
Angle between branch pipe & main pipe: from 45° to 90°

Application/Limitation

- The equipment is used as a safe means of emergency isolation in the event of a failure of a cargo tank PRV, so that a PRV can be isolated on a temporary basis to reseal or repair the valve before putting the PRV back into service. Such means of emergency isolation should be installed in a manner that does not allow their inadvertent operation.
- A ball valve which shall be placed between the vent pipe and isolation equipment is not part of this approval nor the manufacturer's delivery scope.
- The recommended duration of use is 30 ~ 60 minutes as confirmed by the manufacturer.
- It shall be ensured that when the equipment is in use operation conditions are met properly according to the manufacturer's manual e.g. dry surface.
- A branch pipe is not part of this approval nor the manufacturer's delivery scope. Note when new branch pipes are installed and welded to existing main pipes, its relevant parts such as pipes, flanges, bolts and etc. shall be delivered in accordance with Pt.5 Ch.7 together with required material certificates in Sec.1 Table 8. Also, relevant welding, NDT and testing shall be carried out in accordance with Pt.5 Ch.7 Sec.5 where applicable.
- Each equipment shall be delivered with Manufacturer's PD (product declaration) in accordance with Pt.5 Ch.7 Sec.1 [5.2] Table 7 'Equipment used for safe isolation of valves'. Materials specified to other standards than DNVGL Rules shall fulfil the relevant corresponding rules requirements in Pt.2 as far as applicable.
- All welding is to be carried out by qualified welders and according to approved welding procedures. Relevant NDT shall be performed accordingly.
- The equipment shall not contact the liquid gas level according to the manufacturer's manual.
- Procedures shall be provided and included in the cargo operations manual in accordance with Pt.5 Ch.7 Sec.18 [1.1.2].
- The procedures shall allow only one of the cargo tanks installed PRVs to be isolated.
- Isolation of the PRV shall be carried out under the supervision of the master. This action shall be recorded in the ship's log and a sign posted in the cargo control room, if provided, and at the PRV.

Type Approval documentation

Tests carried out

Test carried out on 2021-02-22, witnessed by DNV Kobe Station. Report No.: E2020034-1C & HC21001-2.

Marking of product

Each equipment shall be permanently marked according to Pt.5 Ch.7 Sec.6 [9].

Periodical assessment

For retention of the Type Approval, a DNV GL 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 DNVGL-CP-0338.

END OF CERTIFICATE