DNV·GL

Certificate No:
TAP00001DY

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Seamless Gas Bottle

with type designation(s)
ISO108-CrMo-02

Issued to
Tianjin Tianhai High Pressure Container Co., Ltd.
Tianjin City, China

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment

Application :

Gas cylinder(s) approved by this certificate is/are accepted for the use in fixed fire extinguishing systems on all vessels classed by DNV GL.
Loading pressure: 150bar
Operating media: gases used in fire extinguishing systems
Test pressure: 250bar
Filling ratio

Issued at **Hamburg** on **2018-07-10**
This Certificate is valid until **2023-07-09**.
DNV GL local station: **Tianjin**

Approval Engineer: **Stefan Wiemer**

for **DNV GL**

Harald Pauli
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.

© DNV GL 2014. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

Product description

Seamless steel gas cylinders for the use in fixed fire extinguishing systems. The outer diameter is 108mm with a length of 265mm, 265mm, 375mm, 395mm or 430mm. This corresponds to a volumetric capacity of 1.6L, 1.62L, 2.5L, 2.7L or 3L.

For details of the cylinders (e. g. design data, materials or dimensions) see Approved Drawing (listed below in "Type Approval documentation".

Application/Limitation

The gas cylinders are approved for fixed fire extinguishing systems according to DNV GL rules ship Pt.4 Ch.7 Sec.1 [5] (edition January 2018) and have been designed according to ISO 9809-1. The use in other systems, e. g. as an accumulator in fluid power applications, is outside the range of this type approval and shall be subject to special consideration in each individual case.

The cylinders are graded as DNV GL pressure equipment class I (Pt.4 Ch.7 Sec.1 table 2). The design pressure is 150bar, test pressure 250bar, design temperature -50°C to +65°C, the corrosion allowance 0 mm (ISO 9809-1 [7]). Therefore the cylinders shall not be used in systems requiring a corrosion allowance.

The material of the cylinders is 30CrMo (chemical composition and mechanical properties see Approved Drawings), it shall be delivered with material certificates according to Pt.4 Ch.7 Sec.1 Table 5.

The manufacturer of the steel gas cylinder shall hold a valid certificate according to DNV GL CP-0261 "Pressure equipment", the prematerial (seamless steel pipe) shall be delivered by a manufacturer holding a valid certificate according to DNV GL CP-0252 "Steel pipes and steel pipe fittings".

Manufacturing, workmanship and testing of cylinders shall be done according to ISO 9809-1 [8], [10] and [11].

Each cylinder manufactured to this type approval is to be

- constructionally checked and hydraulic pressure tested to 250bar, and
- certified by DNV GL and delivered with DNV GL product certificate.

Type Approval documentation

Tests carried out

Prototype tests according to ISO 9809-1, test report Tianjin Tianhai High Pressure Container CO., Ltd, 10-2009, witnessed by GL

Place of Production

Tianjin Tianhai High Pressure Container Co., Ltd.
No. 268, Jinbin Road, Tianjin Port Free Trade Zone
Tianjin 300461, P. R. China

Marking of product

For traceability to this type approval the steel gas cylinders shall be marked according to ISO 9809-1 [13].

Periodical assessment

The objective of the periodical assessment is to verify that the conditions for the type approval (TA) have not been altered.

The main scope of the periodical assessment will normally include:

- verification of the TA applicant's production and quality system w.r.t. ensuring continued consistent production of the TA products at the TA applicant's own premises and at other companies that are given the responsibility for manufacturing of the products,
- review of TA documentation and that this is still used as basis for the production,
- review of possible changes in the design, the materials and the performance of the product, and
- verification of the product marking.

For retention of the TA certificate in its validity period the periodical assessments will be carried out bi-yearly.

Unscheduled assessments for retention of the certificate may be carried out when there is reason to believe that the type approval applicant has not adhered to the obligations stipulated in the type approval certificate.

End of Certificate