

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Seamless Gas Bottle**

with type designation(s)
Ø267-40L, 68L, 75L, 80L, 82.5L

Issued to

Zhejiang Winner Fire Fighting Equipment Co., Ltd
Jiaxing, China

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment
ISO 9809-1 – Gas cylinders – Refillable seamless steel gas cylinders

Application :

seamless gas bottles(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Loading pressure: 166 bar

Operating media: gases in fixed fire extinguishing systems, e.g. CO2

Test pressure: 250 bar

Filling ratio -

Issued at **Hamburg** on **2020-08-27**

This Certificate is valid until **2025-08-26**.

for **DNV GL**

DNV GL local station: **Shanghai**

Approval Engineer: **Stefan Wiemer**

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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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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

Seamless steel gas cylinders for the use in fixed fire extinguishing systems. Product types:

Material	Volume (Liter)	External diameter (mm)	Length (mm)	Min. shell thickness (mm)
37Mn	Min. ~32.5	267	801	6.3
	40	267	945	6.3
	68	267	1500	6.3
	75	267	1640	6.3
	80	267	1740	6.3
	82.5	267	1790	6.3
	Max. ~106.1	267	2250	6.3

For details of the cylinders (e. g. design data, materials or dimensions with tolerances) 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 July 2019) and have been designed according to ISO 9809-1:2010. The use in other systems or with other media 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 working pressure is 166bar, 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 37Mn (chemical composition and mechanical properties see Approved Drawing), 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

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