

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Seamless Gas Bottle

with type designation(s)
37Mn/34Mn2V- 267-67.5, 80, 82.5

Issued to

Zhejiang Jindun Pressure Vessel Co., Ltd
Shangyu, China

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015

Application :

Cylinders may be used in fire extinguishing systems

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

Loading pressure: 166.7 bar

Operating media: Co2

Test pressure: 250 bar

Filling ratio 0.67 Kg/Litre

This Certificate is valid until **2020-12-31**.

Issued at **Høvik** on **2016-03-27**

DNV GL local station: **Ningbo**

for **DNV GL**

Approval Engineer: **Zeinab Sharifi**

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Marianne Spæren Marveng
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.

Product description

Seamless gas cylinder for storing Carbo Dioxide (CO₂). Designed and manufactured according to ISO 9809-1: 2010

The seamless gas cylinders are made of two different materials with capacity and dimensions as following:

Material	Capacity (L)	Diameter (mm)	Length (mm)	Min. wall thickness (mm)
34Mn2V acc. to GB13447	67.5	267± 2.67	1510	6.5
	80	267± 2.67	1750	6.5
	82.5	267± 2.67	1810	6.5
37 Mn acc. to GB18248	67.5	267± 2.67	1490	5.9
	80	267± 2.67	1730	5.9
	82.5	267± 2.67	1780	5.9

Materials:

- 34Mn2V in accordance with GB13447 and ISO9809-1 clause 6, with minimum guarantee values 600 MPa and 710 MPa for yield strength and tensile strength respectively.
- 37 Mn in accordance with GB18248 and ISO9809-1 clause 6, with minimum guarantee values 660 MPa and 780 MPa for yield strength and tensile strength respectively.

Application/Limitation

The cylinders are not approved to be used in systems that require corrosion allowance.

Filling ratio is not to exceed 0.67 kg/litre.

The material used shall have material certificates according to DNV GL Rules Pt.4 Ch.7 Sec.2.

Maximum sulfur and phosphorus limits shall be acc. to ISO 9809-1 Clause 6.2.2, Table 2.

In connection with certification the gas cylinders, manufacturing, workmanship and testing of cylinders shall be done according to ISO9809-1:2010 clauses 8, 9, 10 and 11

Each cylinder manufactured to this type approval is to be certified by DNV GL and delivered with DNV GL product certificate.

Type Approval documentation

Tests carried out

Chemical composition analysis, Mechanical properties testing, Hydrostatic burst test, Hardness Testing, Cycling test, metallography.

Marking of product

Each cylinder is to be permanently marked on the shoulder or on a reinforced part of the cylinder or on a permanently fixed collar or neck ring, in accordance with ISO 13769.

Periodical assessment

For retention of the Type Approval a DNV GL Surveyor shall perform a survey – every second year and before the expiry date of this certificate – to verify that the conditions for the type approval are complied with