DNV·GL

Certificate No:
TAS000000K

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Portable Tank

with type designation(s)
20' ISO/CSC Tank Container CVA-6K-350

Issued to
Cryogenic Vessel Alternatives, L.L.C.
Baytown TX, United States

is found to comply with
International Convention for Safe Containers, 1972 (CSC)
ISO 1496, Part 3: Tank Containers for Liquids, Gases and Pressurized Dry Bulk
DNV 2.7-4 Freight Containers
International Maritime Dangerous Goods Code (IMDG)
European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR)
Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID)
Transport Canada: 4g Impact Test Requirement for Tank Containers

Application :

UN Portable Tank, Tank Instructions T75

Max. gross mass (kg)	**34000**
Max. payload (kg)	**22250**
Tank cap. (L)	**22194**
MAWP/test pr. (bar)	**24.13 / 33.1**
Eq. shell thk. (mm)	**25.86**

This Certificate is valid until **2019-06-24**.

Issued at **Høvik** on **2015-06-23**

for **DNV GL**

DNV GL local station: **Houston**

Approval Engineer: **Igor Antonijevic**

Inger-Helene Hals
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.

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Job Id: **262.1-019430-1**
Certificate No: **TAS000000K**

Manufactured by

DNV GL id number 1218821

Product description

Max. external dimensions (LxWxH)	6058 x 2438 x 2591 mm
Tare Mass	11750 kg
Nominal shell thickness, (cylinder /head of inner tank)	18.63/21.59 mm (0.7335/0.85 in)
Tank internal diameter	2281 mm (89.8125 in)
ISO Freight container designation	1CC
Size code	22
Type code	K7
Tank material, inner vessel	ASME SA-240 Gr. 201-2 SS
Outer jacket material	ASME SA-240 gr. 304 SS
Pressure Vessel Code	ASME VIII Div. 1

Insulation: Vacuum insulation, multi-layer insulation on inner tank shell.

Application/Limitation

Approved according to 6.7.4 in IMDG and ADR/RID

IMDG/ADR/RID/ design approval refrence number	N-NV/561/06/15
US DOT Approval reference number	SI-0200-04/USA*)
CSC Approval reference number	US/SI-005/03*)
*) issued by Silver/Cims	
Design pressure, inner vessel	24.13 bar
Setting of relief valve	24.13 bar
Metallurgical design temperature for inner tank	-196°C to + 38°C
Design vacuum	no vacuum
Design temperature for framework and outer jacket	-20 °C
Allowable stacking weight for 1,8g	192000 kg
Racking test load value	150 kN
Effectiveness of the insulation system (heat influx)	136 W (for NITROGEN REFRIGERATED LIQUID)

Dangerous goods that can be transported and holding times

UN No.	Class	Gas, Refrigerated liquid	Holding time (from 0.34 to 24.13 bar @30°C)
1038	2.1	ETHYLENE, REFRIGERATED LIQUID	273 days (9127 kg / 20123 lb)
1073	2.2	OXYGEN, REFRIGERATED LIQUID	120 days (18424 kg / 40617 lb)
1951	2.2	ARGON, REFRIGERATED LIQUID	96 days (22020 kg / 48546 lb)
1961	2.1	ETHANE, REFRIGERATED LIQUID	367 days (8708 kg / 19198 lb)
1972	2.1	NATURAL GAS, REFRIGERATED LIQUID	131 days (6698 kg / 14767 lb)
1977	2.2	NITROGEN, REFRIGERATED LIQUID	81 days (11502 kg / 25357 lb)
2201	2.2	NITROUS OXIDE, REFRIGERATED LIQUID	451 days (20850 kg / 45966 lb)
3136	2.2	TRIFLUOROMETHANE, REFRIGERATED LIQUID	513 days (22063 kg / 48641 lb)
2187	2.2	CARBONDIOXIDE, REFRIGERATED LIQUID	45 days (21806 kg / 48073 lb)

DNV GL surveyor has to witness important production and test events and issue Form no. 49.04x/a "Certificate for Tank Container or Portable Tank"

Each tank should be subjected to a hydraulic pressure test to test pressure.

Type Approval documentation

Tests carried out

Prototype tested according to Rules.

Marking of product

Each container to be marked with:

- Data plate for UN tanks according to Ch. 6.7.4.15 requirements in IMDG, ADR and RID. Design approval number according to Application/Limitation above
- Data Plates according to CSC and DOT
- External marking according to IMDG/ADR/RID, DNV and DOT requirements
- Det Norske Veritas' emblem for freight containers
- NV mark and to be hard stamped on frame
- Manufacturer's Serial Number to be welded on frame
- Marking in accordance with other applicable codes

Periodical assessment

For retention of Type Approval, a DNV GL surveyor shall perform a survey every 2nd year and before the expiry date of this certificate to verify that the type approval is complied with.

END OF CERTIFICATE