DNV·GL

Certificate No:
TAS00001M8

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Portable Tank

with type designation(s)
ICC-54-E-100; ICC-54-P-100; ICC-54-E-150; ICC-54-P-150; ICC-53-E-180; ICC-53-P-180; ICC-53-E-210; ICC-53-P-210; ICC-53-E-230; ICC-53-P-230; ICC-53-E-290; ICC-53-P-290; ICC-53-E-350; ICC-53-P-350; ICC-52-E-350; ICC-52-P-350; ICC-54-E-145/PS; ICC-54-P-145/PS; ICC-53-E-260/PS; ICC-53-P-260/PS; ICC-53-E-320/PS; ICC-53-P-320/PS

Issued to
Chart Ferox, a.s.
Decin, Czech Republic

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)
Code of Federal Regulations 49
United Nations Manual of Tests and Criteria, part IV, section 41
UIC Code 592-2 - Large containers for transport on wagons

Application :

UN Portable Tank, Tank Instruction T75
see Table 1 on page 2

Issued at **Høvik** on **2018-08-14**
This Certificate is valid until **2023-06-30**.
DNV GL local station: **Ostrava**

for **DNV GL**

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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Product description

Table 1 – Designs covered by this Type Approval with design specification

Type	Max. gross mass (kg)	Max. payload (kg)	Tank cap. (L)	MAWP/test pr. (bar)	Eq. shell thk. (mm)
ICC-54-E-100; ICC-54-P-100	36000	29000	20450	6.75/14.3	7.7
ICC-54-E-150; ICC-54-P-150	36000	28400	20360	10.15/14.5	10.7
ICC-53-E-180; ICC-53-P-180	36000	28000	20260	12.25/24.7	13.2
ICC-53-E-210; ICC-53-P-210	36000	27240	20170	14.5/20.2	16.1
ICC-53-E-230; ICC-53-P-230	36000	26650	20135	15.8/32.5	17.4
ICC-53-E-290; ICC-53-P-290	36000	26350	20150	20.0/27.3	19.4
ICC-52-E-350; ICC-52-P-350	36000	25900	20030	24.1/32.7	23.2
ICC-53-E-350; ICC-53-P-350	36000	26140	19960	24.1/32.7	18.9/16.4
ICC-54-E-145/PS; ICC-54-P-145/PS	36000	29400	20920	10.0/14.3	6.8
ICC-53-E-260/PS; ICC-53-P-260/PS	36000	28180	20720	18.0/24.7	13.6
ICC-53-E-320/PS; ICC-53-P-320/PS	36000	27300	20630	22.0/30.0	16.4

This Type Approval Certificate replaces certificate S-7966.

20’ CSC/ISO cryogenic tank container:
with electrical pump – type E
without the pump, pressure transfer only– type P
Design approved according to IMDG Code, Edition 2016 Amdt. 38-16.

Max. external dimensions (LxWxH):	6058 x 2438 x 2591 mm
ISO Designation:	1CC
Size code:	22
Type code:	K7
Tank diameter:	2200 mm
Pressure Vessel Code:	ASME VIII Div. 1
Tank material, outer jacket:	ASME SA240M Type 304 ; EN 10028-7, 1.4301 (stainless steel) EN 10028-2, 1.0425 or 1.4509 (carbon steel)

	Tare Mass	Shell thickness, cylinder/head (inner tank)	Tank material, inner vessel
ICC-54-E-100; ICC-54-P-100	7000 kg	5.9/7.5 mm	ASME SA240M Type 304N
ICC-54-E-150; ICC-54-P-150	7600 kg	8.2/9.9 mm	ASME SA240M Type 304N
ICC-53-E-180; ICC-53-P-180	8000 kg	10.1/11.7 mm	ASME SA240M Type 304N
ICC-53-E-210; ICC-53-P-210	8760 kg	12.3/13.7 mm	ASME SA240M Type 304N
ICC-53-E-230; ICC-53-P-230	9350 kg	13.3/14.7 mm	ASME SA240M Type 304N
ICC-53-E-290; ICC-53-P-290	9650 kg	14.8/14.8 mm	ASME SA240M Type 304N
ICC-52-E-350; ICC-52-P-350	10100 kg	17.7/17.7 mm	ASME SA240M Type 304N
ICC-53-E-350; ICC-53-P-350	9860 kg	17.5/17.5;19.4/19.1 mm	ASME SA-612M or P355GH
ICC-54-E-145/PS; ICC-54-P-145/PS	6600 kg	5.2;7.4/6.0 mm	ASME SA240M Type 304N
ICC-53-E-260/PS; ICC-53-P-260/PS	7820 kg	10.4;12.6/8.9 mm	ASME SA240M Type 304N
ICC-53-E-320/PS; ICC-53-P-320/PS	8700 kg	12.5;15.2/10.8 mm	ASME SA240M Type 304N

Insulation: Vacuum insulation (vacuum reading max 10 microns) + Multi-layer insulation on inner tank shell.

Application/Limitation

CSC/IMDG/ADR/RID design approval number: N-NV/422/01/09
DOT design approval number: SI-0200/09/USA[1)]
Numerical code for railway: 76 (Norwegian State Railway)
UIC Category: 20/8½
[1)] issued by SilverCims

Design vacuum: 1 bar
Design temperature for framework and outer jacket: -40°C
Allowable stacking weight for 1.8g: 192000 kg
Racking test load value: 15240 kg
Effectiveness of the insulation system (heat influx): 130 W

non-pressure strengthened

	Design pressure, inner vessel	Setting of relief valve	Metallurgical design temperature for inner tank
ICC-54-E-100; ICC-54-P-100	7.75 bar	6.75 bar	-196°C to +65.6°C
ICC-54-E-150; ICC-54-P-150	11.15 bar	10.15 bar	-196°C to +65.6°C
ICC-53-E-180; ICC-53-P-180	13.25 bar	12.25 bar	-196°C to +65.6°C
ICC-53-E-210; ICC-53-P-210	15.5 bar	14.5 bar	-196°C to +65.6°C
ICC-53-E-230; ICC-53-P-230	16.8 bar	15.8 bar	-196°C to +65.6°C
ICC-53-E-290; ICC-53-P-290	21.0 bar	20.0 bar	-196°C to +65.6°C
ICC-52-E-350; ICC-52-P-350	25.1 bar	24.1 bar	-196°C to +65.6°C
ICC-53-E-350; ICC-53-P-350	25.1 bar	24.1 bar	-40°C to +50°C

Dangerous goods that can be transported

UN No.	Class or division	Proper shipping name (PSN)	Holding times (@30°C)							
			0.345 to 6.75 bar	0.345 to 10.15 bar	0.345 to 12.25 bar	0.345 to 14.5 bar	0.345 to 15.8 bar	0.345 to 20.0 bar	0.345 to 24.1 bar	0.345 to 24.1 bar
1977	2.2	NITROGEN, REFRIGERATED LIQUID	53 days 13697 kg	65 days 12945 kg	71 days 12493 kg	75 days 12038 kg	78 days 11790 kg	85 days 11058 kg	89 days 10221 kg	89 days 10186 kg
1073	2.2	OXYGEN, REFRIGERATED LIQUID	71 day 19915 kg	89 days 19055 kg	96 days 18542 kg	104 days 18041 kg	108 days 17778 kg	119 days 17075 kg	126 days 16302 kg	126 days 16245 kg
1951	2.2	ARGON, REFRIGERATED LIQUID	58 days 24314 kg	71 days 23245 kg	78 days 22606 kg	84 days 21980 kg	87 days 21652 kg	96 days 20766 kg	103 days 19794 kg	102 days 19725 kg
1003	2.2	AIR, REFRIGERATED LIQUID	57 days 15027 kg	70 days 14258 kg	76 days 13798 kg	82 days 13340 kg	84 days 13093 kg	92 days 12389 kg	98 days 11605 kg	97 days 11565
2187	2.2	CARBON DIOXIDE, REFRIGERATED LIQUID	-	-	10-12.25 bar 31 days 21555 kg	10-14.5 bar 60 days 21071 kg	10-15.8 bar 74 days 20824 kg	10-20.0 bar 115 days 20201 kg	10-24.1 bar 147 days 19509 kg 17-24.1 bar 64 days 19509 kg	10-24.1 bar 147 days 19441 kg 17-24.1 bar 64 days 19441 kg
1961	2.1	ETHANE, REFRIGERATED LIQUID	103 days 9556 kg	127 days 9134 kg	139 days 8882 kg	149 days 8636 kg	155 days 8507 kg	170 days 8159 kg	181 days 7777 kg	181 days 7750 kg
1038	2.1	ETHYLENE, REFRIGERATED LIQUID	89 days 9880 kg	109 days 9448 kg	119 days 9191 kg	128 days 8941 kg	133 days 8809 kg	146 days 8457 kg	155 days 8073 kg	155 days 8044 kg
3136	2.2	TRIFLUOROMETHANE, REFRIGERATED LIQUID	150 days 25218 kg	185 days 24057 kg	200 days 23369 kg	215 days 22695 kg	222 days 22340 kg	243 days 21378 kg	257 days 20331 kg	256 days 20260 kg
2201	2.2	NITROUS OXIDE, REFRIGERATED LIQUID	165 days 21921 kg	203 days 21095 kg	221days 20604 kg	237 days 20134 kg	246 days 19893 kg	270 days 19286 kg	288 days 18616 kg	287 days 18551 kg
1972	2.1	NATURAL GAS, REFRIGERATED LIQUID	76 days 7929 kg	94 days 7602 kg	102 days 7407 kg	110 days 7217 kg	114 days 7118 kg	126 days 6859 kg	134 days 6573 kg	133 days 6550 kg
3312	2.1	GAS, REFR. LIQUID, FLAMMABLE; N.O.S.	71 days 7346 kg	88 days 7014 kg	96 days 6816 kg	103 days 6621 kg	107 days 6518	118 days 6238 kg	125 days 5929 kg	125 days 5909 kg

pressure strengthened

	Design pressure, inner vessel	Setting of relief valve	Metallurgical design temperature for inner tank
ICC-54-E-145/PS; ICC-54-P-145/PS	11.0 bar	10.0 bar	-196°C to +50°C
ICC-53-E-260/PS; ICC-53-P-260/PS	19.0 bar	18.0 bar	-196°C to +50°C
ICC-53-E-320/PS; ICC-53-P-320/PS	23.0 bar	22.0 bar	-196°C to +50°C

Dangerous goods that can be transported

UN No.	Class or division	Proper shipping name (PSN)	Holding times (@30°C)		
			0.345 to 10 bar	0.345 to 18 bar	0.345 to 22 bar
1977	2.2	NITROGEN, REFRIGERATED LIQUID	66 days 13331 kg	84 days 11736 kg	90 days 10945 kg
1073	2.2	OXYGEN, REFRIGERATED LIQUID	90 days 19612 kg	117 days 17903 kg	126 days 17143 kg
1951	2.2	ARGON, REFRIGERATED LIQUID	72 days 23924 kg	94 days 21789 kg	102 days 20833 kg
1003	2.2	AIR, REFRIGERATED LIQUID	71 days 14680 kg	91 days 13089 kg	98 days 12332 kg
2187	2.2	CARBON DIOXIDE, REFRIGERATED LIQUID	-	10-18.0 bar 99 days 21077 kg	10-22.0 bar 135 days 20391 kg 17-22.0 bar 48 days 20391 kg
1961	2.1	ETHANE, REFRIGERATED LIQUID	130 days 9401 kg	168 days 8561 kg	181 days 8185 kg
1038	2.1	ETHYLENE, REFRIGERATED LIQUID	112 days 9724 kg	154 days 8870 kg	155 days 8490
3136	2.2	TRIFLUOROMETHANE, REFRIGERATED LIQUID	181 days 24763 kg	240 days 22456 kg	257 days 21424 kg
2201	2.2	NITROUS OXIDE, REFRIGERATED LIQUID	215 days 21706 kg	267 days 20128 kg	287 days 19462 kg
1972	2.1	NATURAL GAS, REFRIGERATED LIQUID	95 days 7823 kg	124 days 7180 kg	133 days 6898 kg
3312	2.1	GAS, REFR. LIQUID, FLAMMABLE; N.O.S.	89 days 7220 kg	116 days 6552 kg	125 days 6250 kg

DNV GL surveyor has to witness important production and test events and issue Form no. CTT101 "Tank Container Certificate" for each container. In addition to this freight container certificate has to be issued (form no. CTC301)

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

Type Approval documentation

Tests carried out

Prototypes tested according to the requirements.

Marking of product

Each container to be marked with:

- Data plate for UN tanks according to Ch. 6.7.4.15 requirements in IMDG Code, ADR and RID. Design approval number according to Application/Limitation above.
- Data plate according to DOT and CSC requirements including Allowable stacking load of 192000 kg.
- External marking according to CSC, ISO, IMDG/ADR/RID and DOT requirements
- Marking according to UIC 592-2 requirements
- DNV GL decal for freight containers
- mark to be hard stamped on frame
- Marking in accordance with other applicable codes

Periodical assessment

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

END OF CERTIFICATE