

TECHNICAL SPECIFICATION

24100 LITRE UN PORTABLE TANK

1.0 Technical Characteristics

1.1 Design & Testing

Tank - in accordance with:	IMDG, CFR49, RID/ADR, ASME VIII DIV 1
- type:	T50 UN Portable Tank
Frame - in accordance with:	ISO Standard 1496/3
- type:	CB Beam Tank Design

	SI	US
1.2 Nominal Capacity (± 1% Tolerance)	24100 λ	6367 US gal

1.3 Frame Dimensions And Mass

MPGM	36000 kg	79365 lbs
Tare Mass (± 3% Tolerance)	9350 kg	20613 lbs
Length	6058 mm	20 ft
Width	2438 mm	8 ft
Height	2591 mm	8 ft 6 in

1.4 Tank Dimensions

Internal Diameter	2377 mm	93.583 in
Tan to Tan	4610 mm	181.496 in
Shell Minimum Thickness	19.6 mm	0.772 in
Head Minimum Thickness	18.6 mm	0.732 in
Corrosion Allowance	0 mm	0.0 in
Dished Ends - approximate 1,9 : 1 ellipsoidal	626 mm	Inside Depth
Reference Mild Steel Thickness	6 mm	

* Note: Head straight flange minimum thickness is 19.6 mm

1.5 Pressure & Temperature Rating

Design Reference Temperature (with Sunshield Tank)	55 °C	131 °F
Maximum Allowable Working Pressure	22.0 bar	319.0 psig
Hydrostatic Test Pressure	30.0 bar	435.0 psig
External Design Pressure	1.0 bar	14.5 psig
Ambient Temperature Range	-40 to +55 °C	-40 to 131 °F

1.6 Material Of Construction

Framework	: Hollow section	EN 10210 S355 J2H / Supraform TM 380
	Plates	EN 10025 S355 K2G3C / Supraform TM 380
	Rolled section	EN 10025 S355 K2G3
Corner Castings		ISO Standard 1161
Shell		SA 612 Normalized
Heads		SA 612 Normalized

1.7 NDE (Non Destructive Examination)

Shell	J.E. = 1.00	Radiography	= full (100%)
Ends	J.E. = 1.00	Radiography	= full (100%)

Nozzle to shell junction welds to be dye penetrant tested.

1.8 Post Weld Heat Treatment

The vessel is post weld heat treated as per the ASME code.



2.0 **Tank Fittings And Accessories**

2.1 **Manhole**

- Quantity One
- Dimensions 500mm ID
- Specification SA 350 LF2; bolted type (20 x M20)
- Gasket PTFE
- Location Rear dish end in the crown section

2.2 **Safety Relief Valve Assembly**

- Supplier Fort Vale
- Quantity One
- Dimensions 3" Internal Super Gas Relief valve, part No 005
- Specification Set pressure +22 bar (+319 psi)
- Gasket Klinger SIL C-4430/PTFE
- Remarks The assembly comprises of a relief valve, a burst disc and manometer. A protective cover is provided over the relief valve and manometer.
- Location Top of tank near the center of the shell.

2.3 **Gas Line**

- Supplier Fort Vale
- Quantity One
- Dimensions DN 50 (2")
- Specification A 2" short profile gas foot valve assembly (part No 802/0010) is fitted, comprising:
Internal - 2" stainless steel straight line internal safety valve
External - 2" stainless steel ball valve
- Gasket PTFE
- Remarks The assembly terminates with a 1³/₄" ACME connector.
- Location Rear dish end in the crown section

2.4 **Liquid Line**

- Supplier Fort Vale
- Quantity One
- Dimensions DN 50 (2")
- Specification A 2" short profile liquid foot valve assembly (part No 802/0010) is fitted, comprising:
Internal - 2" stainless steel straight line internal safety valve
External - 2" stainless steel ball valve
- Remarks The assembly terminates with a 3¹/₄" ACME connector.
- Gasket PTFE
- Location Rear dish end in the crown section

2.5 **Level Gauge Provision**

Provision is made for the future fitting of a level gauge in the rear dished end in the crown section adjacent to the manhole.

2.6 **Pressure Gauge**

A pressure gauge with a 0 - 40 bar graduation is fitted on the rear dished end in the crown section.

2.7 **Thermometer**

A thermometer is fitted in the rear dished end in the crown section.



- 2.8 **Sunshield**
A marine grade aluminium sunshield, 2mm thickness and 40mm minimum from the tank shell, covers the upper third of the tank shell.
- 2.9 **Walkways**
Not required
- 2.10 **Ladder**
Not required
- 2.11 **Earthing Connection**
1-off stainless steel lug 60 x 50 x 2.5mm with a 20mm hole, is located at the rear of the tank frame.
- 2.12 **Document Holder**
1-off clear PVC document holder is provided. The holder is water-resistant and is fitted on the left lower rear of frame.
- 2.13 **Customs Sealing**
Manhole, discharge valves and relief valves are provided with customs sealing devices.
- 2.14 **Decals**
One set per tank as per code requirements.
- 2.15 **Data Plates**
One set of stainless steel data plates per tank as per code requirements. The volume of each tank is determined and the individual tank capacity is used for data plate marking.
- 2.16 **Remote Control**
10m stainless steel cable remote control, including fire safe fuses, are provided.
- 2.17 **Valve Cabinet**
A stainless steel bolted-on valve protection cabinet, complete with stainless steel hinged door, houses the gas and liquid line valves, pressure gauge and thermometer.
- 2.18 **Baffle Supports (Provision for baffles)**
Carbon steel supports are provided internally for future fitting of three surge baffles.
- 3.0 **Finish**
- | | | |
|---------------------|--------------------------------------|--|
| 3.1 Internal | Internal Shell Surface
Weld Seams | Shot blasted to SA 2½
As welded |
| 3.2 External | External Surface
Weld Seams | Shot blasted to SA 2½ prior to painting
As welded |
- 3.3 **Fittings**
All fittings, including valves and pipe sections shall be degreased and then stored in clean sealed plastic bags until fitted to the tank.
- 3.4 **Cleaning**
After shot blasting, the vessel's internal surface is vacuum cleaned with an industrial vacuum machine. After cleaning, the opening points are sealed ready for leak test and nitrogen purging.



3.5 Leak Test and Nitrogen Purge

After cleaning, all valves, blind flanges, caps and connected piping are installed and a leak test is performed at 4 bar using Nitrogen. The vessel will be delivered in a Nitrogen purged condition. Dry nitrogen will be used (O₂ < 1% residual oxygen, 2.0 bar pressure, Nitrogen dew point - 20°C).

3.6 Painting (Hempel Coatings)

The carbon steel frame components are shot blasted to SA 2½ and painted as follows:

First coat	Hempadur Zinc (15360)	50 micron min DFT
Intermediate coat	Hempadur Primer (1530)	70 micron min DFT
Final coat	Hempathane (5521-10000)	<u>50 micron min DFT</u>
	TOTAL	<u>170 micron min DFT</u>

The exterior of the tank to be degreased before application of paint.

First coat	Hempadur Zinc (15360)	50 micron min DFT
Intermediate coat	Hempadur Primer (1530)	70 micron min DFT
Final coat	Hempathane (5521-10000)	<u>50 micron min DFT</u>
	TOTAL	<u>170 micron min DFT</u>

Color: White

4.0 Test and Homologations

1. These tank containers are constructed according to an approved design.
2. Each production unit is subject to testing and non-destructive examination as required by ASME, UIC, and Tank Supplier's own quality requirements. Each unit is inspected by the ASME Authorised Inspector, Lloyd's Register and classification society, Bureau Veritas.
3. The container has been subjected to a stacking test load of 86400kg per corner post and is approved for 9-high stacking (8 x 24000kg).
4. The UN Portable Tank fulfils the performance specification of the following International Organisation's regulations and recommendations and is supplied with their Approvals.

IMDG - T50
RID/ADR - T50
CFR49 - T50

Additional Approvals:

ASME U-Stamp
AAR 600
TIR/Customs
CSC
UIC (34000kg with a super heavy decal)
TC Impact Approved

5.0 Documentation

The following documentation will be provided:

1. Certificate of cleaning (placed in the document holder).
2. Initial Inspection Certificate for each tank.
3. Name plate details.
4. List of transportable products.



6.0 **Products**

- UN 1005 Ammonia, Anhydrous
- UN 1011 Butane
- UN 1075 Petroleum Gas, Liquified.
- UN 1965 Hydrocarbon Gas.
- UN 1978 Propane

7.0 **General**

1. Manhole and flanges SA 350 LF2.
2. Internal piping stainless steel 304 / 304L, 50 NB Sch. 40.
3. Five years back to back guarantee on painting with Hempel Singapore.

DESIGN: Compiled by : Reviewed by: *Russell Harrison*

SALES/CONTRACTS :

CUSTOMER APPROVAL : _____

BY : _____

DATE : _____

