

Bromine ISO Tank Container Handling Instructions

General

The ISO tank containers of type 20T6, IMDG type T22 are designed for the transport of liquid Bromine.

The approved quality of Bromine is:

- Liquid Bromine Br₂,
- Free from acids
- Recommended water content 0.005% or less
- Maximum allowable water content 0.1%

Attention: Water content higher than 0.005% leads to increased corrosion and requires frequent internal inspection.

The general design consists of a 20' ISO frame and a tank made of carbon steel with internal lead-lining.

The tanks are equipped with a manhole of 20" nominal size. The manhole is located on the top of the tank approx. in the centre of the shell.

A working platform is installed in the area of the manhole. The platform is located all around the manhole. Mounting ladders are installed on both longitudinal sides.

Filling, discharge and safety devices are installed on top of the manhole covered and protected by dome cover.

The frame dimensions: 20' x 8' x 8' = 6058 x 2438 x 2438 mm.

The frame is equipped with corner castings according to ISO regulations. Further handling devices are not installed.

Handling of Containers

Attention:

All relevant national and international regulations for the handling and transport of dangerous goods in general as well as special regulations concerning Bromine have to be observed at any time. Endanger of persons and pollution of environment has to be excluded.

For the handling of the tank containers procedures as following are permitted.
Lifting / transfer

- by spreader fixed to all upper corner castings. This is the preferred method.
- by using of traverses and ropes of sufficient strength. The ropes have to be equipped with suitable and approved arresting devices which have to be fixed to the lower corner castings.

Attention:

The handling of the containers by using fork lift or similar device is not allowed.

Transportation

- by truck or freight train using vehicles equipped with approved twist locks which have to be in accordance with the relevant ISO -regulations.
- by vessels observing the regulations of stowage, separation and lashing. Special container vessels should be preferred.

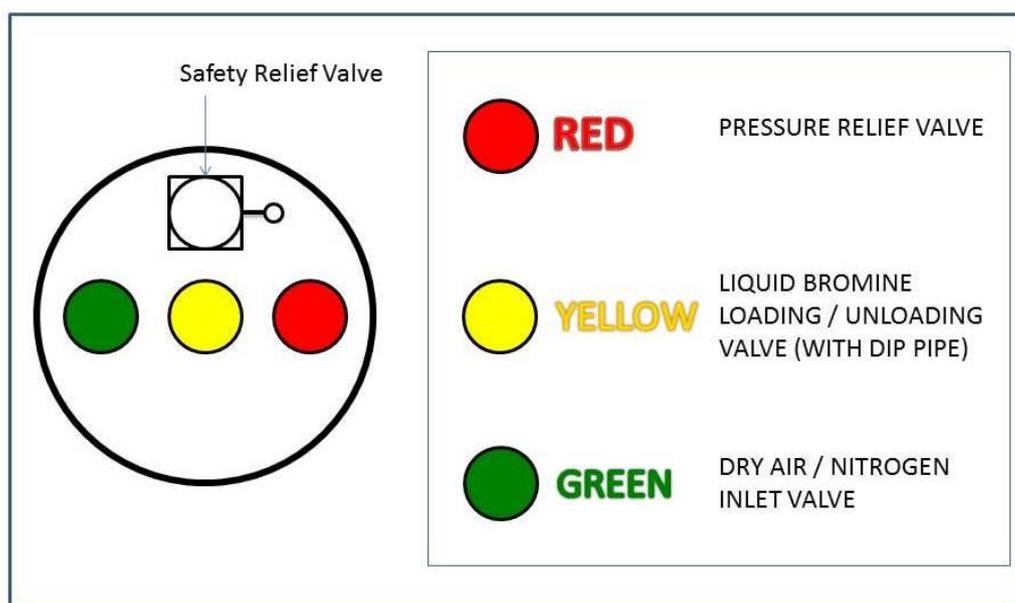
Attention:

In case of transportation by truck or train total weight and dimensions have to be checked and compared with perhaps existing limitations.

Unloading Of Bromine from ISO Containers (Three Valve)

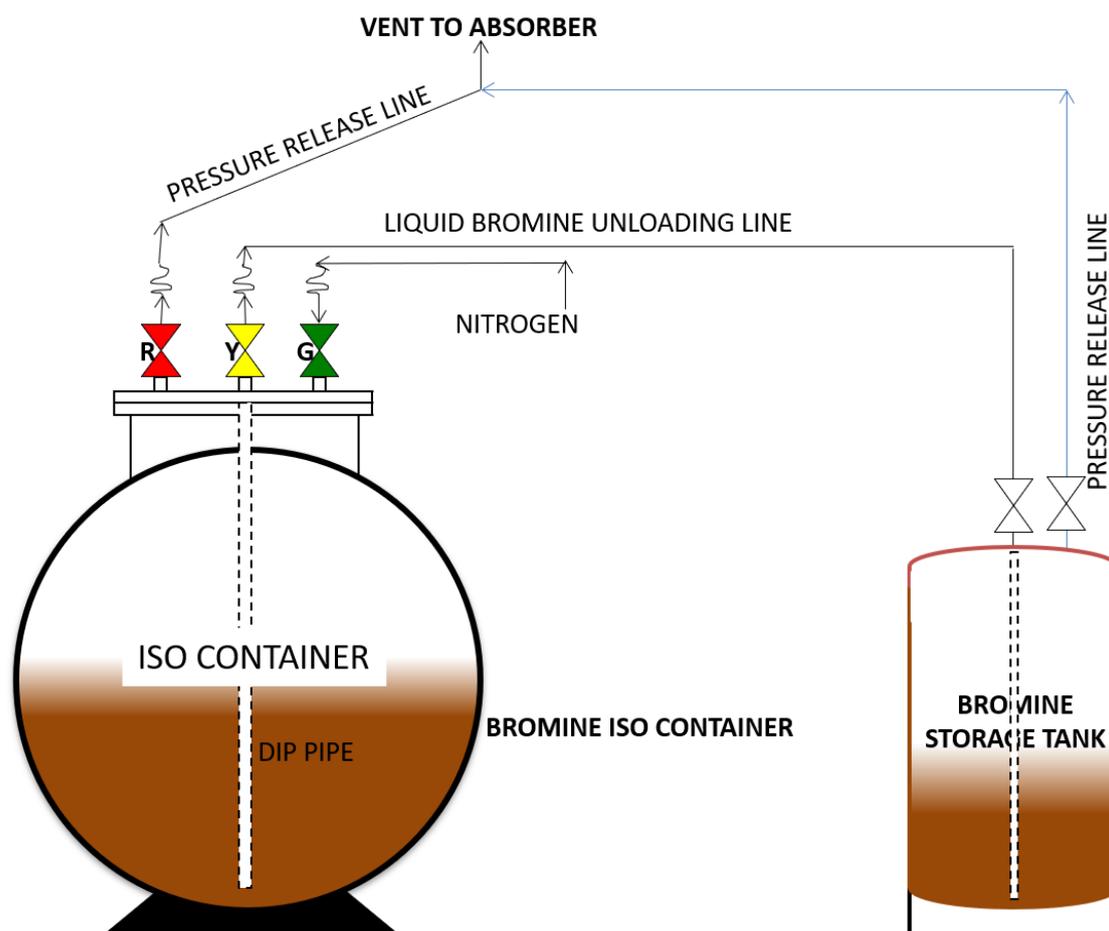
The ISO containers used for transportation of Bromine are of lead lined. So care shall be taken to ensure that no moisture / atmospheric air enters into the container.

Schematic of valve arrangement is as below.



The schematic shows a typical tank truck's unloading set-up. We recommend Teflon lined rubber hoses for the unloading of the trucks.

SIDE VIEW OF RECOMMENDED UNLOADING HOOK-UP



1. Always wear personal protective equipment while unloading a tank truck.
2. Position trailer / ISO Container under unloading racks so no undue stress is placed on unloading hoses.
3. Remove the blind flange from the vapor valve (**RED**) and connect the Teflon gasketed vapor line. Tighten flange securely. Slowly release any pressure into the scrubber system by slowly opening the RED vapor valve, then close it.
4. Make sure the dip-pipe liquid valve (**YELLOW**) is closed.
5. Remove the blind flange from the yellow liquid valve and attach the liquid unloading line using Teflon gaskets and four bolts.
6. Open the yellow liquid valve slowly, checking the connection for leaks.
7. Remove the blind flange from the Pressure connection / breathing (**GREEN**) for Nitrogen inlet and connect the Teflon gasketed Nitrogen line. Tighten flange securely. Slowly open the Nitrogen line and check for leak.

8. Pressurize the container with nitrogen through the green valve with the minimum pressure necessary to remove the bromine. **Pressure should not exceed 43.5 psig / 3.0 barg.**
9. When the pressure inside the container increases, the Bromine will rise and pass through the dip pipe, yellow valve and to the unloading storage tank.
10. When nitrogen start blowing into the storage tank indicates the completion of bromine unloading from the ISO container. If hose is used, the liquid hose will begin to surge indicating the ISO container is nearly empty.
11. Close the green dry air inlet valve and allow the liquid line to surge for ten minutes to empty the line and cut off the nitrogen supply.
12. Close the yellow liquid valve and disconnect the liquid line. **Caution: Be extremely careful disconnecting the liquid line; there may be some bromine left in the hose.**
13. Open the red scrubber vapour line slowly and depressurize the container for ten minutes by letting out the dry air / nitrogen through the scrubbing unit.
14. Disconnect all the lines connected to the container. Replace the gaskets and fix the blind flanges on all the three valves and ensure all bolts are and fasten securely.

Attention: After replacing the gaskets and fixing blind flanges, second check must be done to ensure bolting is done properly.
15. If any bromine has spilled on the container or valves during the operation, wash thoroughly with water to prevent corrosion. Other bromine spillage on ground shall be neutralized with sodium thio sulphate solution or soda ash and dispose the same as per the procedure of local authority.
16. Close the dome cover properly and lock the pin securely. Mark the ISO container EMPTY using erasable / removable sticker.

For more details about bromine, refer Safety Data Sheet (SDS).



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