

Recommendations of the International for tanks equipment

Generals and definitions

These recommendations apply to stationary tanks of all kinds (aboveground and underground, with and without internal over pressure).

Stationary tanks are facilities that serve the purpose of storage and are constructed as non-movable objects.

Underground tanks are stationary tanks, which are completely or partly embedded beneath the surface of the earth.

Aeration and venting devices

1. Tanks should be equipped with aerating and venting devices to prevent dangerous underpressure and overpressure.
2. Venting devices should not have shut-off valves.
3. Venting devices should be compact and resistant to vapour of the stored liquids in regard to the strain that could be expected. Furthermore they should be sufficiently durable and resistant to the effects of fire.
4. Venting devices should be sized to prevent the occurrence of dangerous under and overpressure at high flow rate of pumps and fluctuating temperatures in the tank.
5. The aeration and venting of several tanks through a joint pipe is only allowed if they contain liquid of the same danger class and only such liquid that can not form dangerous mixture with one another.
6. The discharge port of the venting devices should be protected from rainwater.
7. Necessary safety devices should be installed to provide a safe discharge of evaporating vapour/air - mixture during filling processes.

Fittings with flame arrester

Openings or ports of tanks which can act as a source of intrusion of flame into the tank must be equipped with fittings having flame resisting mechanism compatible with the requirements of the operating condition and design.

Liquid Level gauge

1. Each tank must be provided with a device for detecting the level of the liquid stock. This device can be left out for overground tanks if the shell is made of a transparent material (e.g. plastic).
2. Liquid level glasses must be protected from damages and must be partitioned into sections of not more than 2,5 m. If liquid level glasses are not equipped with a safety device to prevent release of liquid when damaged, then they should be fitted with fast-closing shut-off device. The shut-off device should only be opened when checking the liquid level.

Overfill safety device

1. Each tank must be equipped with an overfill safety device, which automatically interrupts the filling process in time before the permissible capacity is reached or trigger off an acoustic alarm.
2. This does not apply to overground vessels (tanks) with volume of not more than 1 m³ if they are being filled with automatic dispensing valve.

Leakage indicator

Leakages on the wall of double shell containers must be indicated with an automatic indicator. Their functionality of it must be verified.

Shut-off valves for Pipelines

1. Each pipe connected below the permissible level of liquid in the tank must be fitted with a shut-off valve.
2. Pipe connections above the permissible level of liquid in the tank must be fitted with a shut-off valve, if it is possible to pump out the contents of the tank through the pipe.
3. The shut-off valve must be installed as close as possible to the tank, must be easily accessible and easy to operate.
4. Tank fittings of underground tanks should only be mounted on the top or in the vertex of the tank. The fittings must be easily accessible.
5. For the process of filling and emptying, each tank must be fitted with a system that allows a safe connection of a stationary or a detachable pipeline.

Filling and emptying mechanism

1. The filling device must have a tight closing cap.
2. Containers for the storage and supply of liquids hazardous to water should only be filled from stationary pipeline and only when the tanks is equipped with an overfill safety device. This does not apply to container standing alone and with a capacity of not more than 1000 l, if they are filled with an automatic dispensing valve. The same applies to mobile containers in a filling unit.
3. There shouldn't be the danger of bursting due to sparks when attaching and detaching pipelines.
4. The filling system for transferring flammable liquids to a storage must be designed in a manner that dangerous electrostatic charges can not develop. The discharge point of the filling pipe must be mounted near the bottom of the tank to avoid spillage of flammable liquid on to the environment.

Access hatches (Entry and inspection ports or manhole)

1. Each tank must be provided with at least an entry or inspection port (manhole).
2. A liquid-tight dome shaft must be mounted above the access hatch of every tank which is completely buried beneath the earth surface.

Markings or Labelling

1. Each tank must be furnished with a manufacturer's label, which contains all tank characteristics.
2. Each tank must be furnished with legible and permanent labels to reflect the kind of substances hazardous to water which are being handled in the plant and at which operating pressure.
3. Filling ports of storage tanks that are mounted next to each other and containing liquids of different danger class or liquids that can form dangerous compounds when they come in contact must be characterised with a storage goods label.

Additional requirements on tanks with internal overpressure and underpressure

1. Tanks with internal overpressure must be equipped with a device to control the pressure.

2. Tanks with internal overpressure must be equipped with a safety device to control excess pressure as long as the permissible operating overpressure could be exceeded.
3. Liquids or their vapour being released through safety relief valves must be safely discharged.
4. In very special cases, other safety devices can be used instead of safety relief valves to control excess pressure (e.g. bursting disc safety device).
5. If the permissible operating pressure of a tank is less than the possible pressure from the pressure generator by 2 bars or more, an automatic device must be installed in the pressure supply line to reduce the pressure, so that the permissible operating pressure will not be exceeded.
6. Tanks in which underpressure could occur but are not designed to resist such underpressure must be fitted with an appropriate device to prevent underpressure.
7. Each pressure pipe connection of a tank must be fitted with a shut-off device.
8. Inspection glass must be resistant to internal overpressure, the effects of the stored flammable liquid as well as their vapour and be protected from damages.