

HYDROCHLORIC ACID - STORAGE

DOC-1300-0003

Introduction

Hydrochloric acid must be stored and disposed of in compliance with relevant laws and regulations.

Handling of hydrochloric acid should be accompanied by collective protective measures (clearly signalled showers and eye baths in the vicinity).

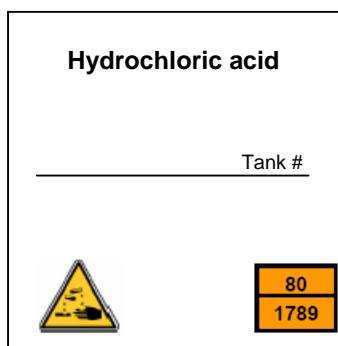
Please consult our safety data sheet.

Storage tank capacity

The tank capacity should be adequate to carry a sufficiently large stock and be able to receive the total amount of volume from the road tanker. If the consumption of hydrochloric acid is less than 50 tonnes per month, the ideal storage capacity should be at least **1,5 x** the volume of the road tanker. This should be suitably adapted if the consumption of hydrochloric acid is higher than 50 tonnes per month.

Storage tank labelling

The storage tank should be labelled with the product name, the safety symbol, the tank identification as well as with the orange ADR plate.



Example: tank label

Storage tank materials

Hydrochloric acid is a corrosive product. In contact with some metals, it releases hydrogen (flammable).

Hydrochloric acid is currently stored in lined steel or certain types of plastic materials:

Lined steel

Vinyl ester, epoxy or ebonite are suitable liners; the condition of the liner should be checked according to supplier specification.

Plastics

Plastic tanks may be used if the supplier specifications are strictly followed.

The maximum allowed pressure and vent line must be checked if compressed air is used during unloading.

- GFRP with a PP or a PVC lining is suitable to a maximum temperature of 60 °C. GFRP makes the construction more rigid, whereas the lining provides resistance to corrosion; the condition of the liner should be checked according to supplier specification.

- Spiral wound extruded HDPE to a maximum temperature of 45 °C or PP to a maximum temperature of 60 °C are adequate for small storage tanks.

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Storage tank equipment

The tank must be fitted with the following:

- filling line of at least DN 50, with a clearly labelled coupling point at a maximum of one meter above ground level,
- vent line and overflow line of at least DN 100 on top of the storage tank, directed to a gas absorption system i.e. scrubber installed inside the bund.

The scrubber should be designed to absorb the gases, generated during unloading. These gases in contact with the washing liquid are absorbed. The acid washing liquid has to be drained and to be neutralised.

- manhole,
- tank fluid level measurement device,
- high-level alarm, to avoid overflow and in the case of unloading with pump to switch off the pump,
- low-level alarm, to avoid cavitation and to switch off the transfer pump to the end-use.
- discharge line.

Note: The size of vent and overflow lines should be larger or equal in size to the filling line.

Bund

The storage tank must be placed on an adequate reinforced concrete foundation to support the tank and must be placed in a bund, containment dyke or be double walled.

Hydrochloric acid corrodes concrete. Epoxy paint coating gives good corrosion protection. At least potentially exposed surfaces i.e. pump base/foundation, etc. should be protected.

Rainwater collected inside the bund may contain hydrochloric acid. Connecting the bund area to the sewer system is not recommended. A valve between the bund and a sewer system is not sufficient to protect the sewer system from possible contamination of hydrochloric acid i.e. valve may be left open by mistake. The safest way of emptying the bund is to use a manually operated pump.

Pipes should be passed over the bund walls and not through them. It is essential that the bund and bund wall is sealed liquid-tight from the top to the bottom.

Caution: Storage tanks of products which are not compatible with hydrochloric acid (e.g., sodium hypochlorite, liquid caustic soda) should not be placed in the same bund.

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Pipes, valves and pumps

Pipes

Plastic pipes are adequate for transporting hydrochloric acid and should be applied in the following order of preference:

- GFRP with a PP or a PVC lining,
- HDPE.

Plastic pipes should be supported over their whole length.

Supplier specifications should be followed.

Valves

Ball valves in PVC, PP or graphite should be used.

Pumps

Pumps made of PVC, PVDF, PTFE, PP or graphite are suitable for hydrochloric acid transfer.

Issues with shaft tightening are avoided by using magnetic driven pumps.

Membrane pumps are suitable for a consistent delivery dose of hydrochloric acid.

Gaskets

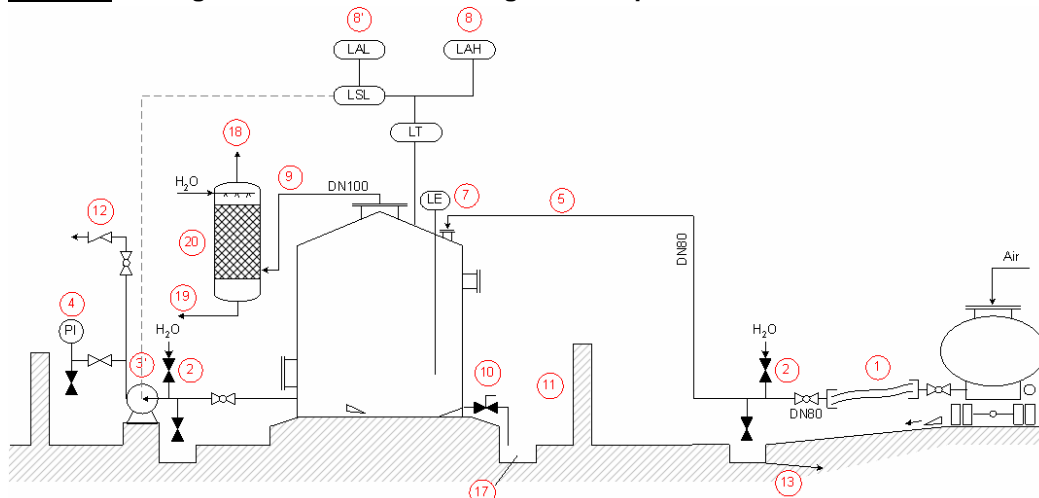
Gaskets made of flexible PVC, modified PTFE or EPDM should be used.

EPDM:	E thylene P ropylene Di Monomer
GFRP:	G lass F ibre R einforced P olyester
HDPE:	H igh- D ensity P oly E thylene
PP:	P oly P ropylene
PTFE:	P oly T etra F luoro E thylene
PVC:	P oly V inyl C hloride

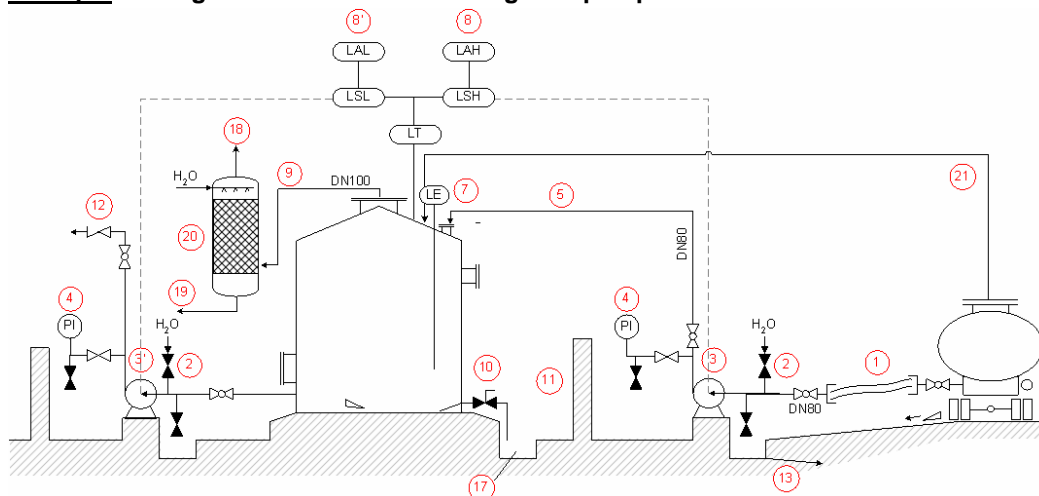
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Example: Storage tank – bottom unloading with compressed air



Example: Storage tank – bottom unloading with pump



1	Flexible hose	10	Drain valve
2	Flushing water	11	Bund
3	Unloading pump	12	To end use
3'	Transfer pump (to the end-use)	13	To waste treatment
4	Pressure gauge	17	Collection sump
5	Filling line	18	Vent-line
7	Level measurement	19	To waste treatment
8	High level alarm	20	Absorption scrubber
8'	Low level alarm	21	Vent line between truck and tank
9	Vent line		

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