Checklist Tank Installations for Chemicals

The checklist below is a summary of the inspection points made when inspecting your storage tank.

The responsibility about the legal compliance of the installation stays entirely with the owner of the installation.

General characteristics / information					
Is it a 'storage tank' (See presentation on www.bacd.be => Code of good practice)				yes	no
Type of tank:	❑ Double-walled	❑ Single-walled with containment basin	❑ Single-walled without containment basin		
	❑ Inside installation	❑ Outside installation			

Was a building permit needed and is it in your possession?	yes	no
Are you in the possession of a conformity certificate with prototype number?	yes	no
Do you have an environment permit for this volume and medium?	yes	no
Do you have a commissioning or last inspection report that is still valid?	yes	no

The following matters are present on/near the tank:		
Identification plate with:		
• Name of manufacturer	yes	no
• Manufacture number	yes	no
• Prototype approval number	yes	no
• Year of construction	yes	no
• Material	yes	no
• Name of the stored product	yes	no
• Water content capacity	yes	no
• Max. filling flow rate	yes	no
Hazard symbols clearly present with P&H sentences	yes	no
UN number indication (if an ADR product)	yes	no

Verification of container / double wall		
Is the container in good condition?	yes	no
Are welds in good condition and show no leaks?	yes	no
Is the piping, flanges, valves and connections soundly and safely executed?	yes	no
Is earthing present and does it have a valid approval report? (if applicable)	yes	no

Verification of the containment basin (with single-walled tank)		
Is the containment basin resistant to the medium (proof of resistance)?	yes	no
Is there a liquid-tightness certificate?	yes	no
Is the content in compliance with legislation in connection with the collection of hazardous substances?	yes	no
Is rainwater removed at regular intervals?	yes	no
Is the containment basin empty and free of all other materials or contaminations?	yes	no
Were any pipe penetrations present executed leak-tight?	yes	no

Verification of accessories		
The tank has an overfill protection system with prototype approval certificate	yes	no
Overfill protection with automatic filling valve is set at = < 98% and works	yes	no
Overfill protection with manual filling valve is set at = < 95% and works	yes	no
Is there an audible and visible alarm near the tank?	yes	no
Leak detection has been tested, is operational and has a prototype approval certificate (Only with double-walled tank)	yes	no
Is a correctly functioning level indication present (mechanical/electronic)?	yes	no
The tank is fitted with a correctly dimensioned vent or an overpressure/underpressure protection		
(As a rule of thumb: min. of 1.3 x the surface area of the cross-section of the filling line)	yes	no
Can an automatic valve be manually opened for releasing the pressure?	yes	no
Is the material of all accessories resistant to the product?	yes	no
Is venting done at a safe location away from the filling point?	yes	no
Is there a vapour return pipe?	yes	no
Is there treatment of the released, harmful vapours?	yes	no
Are the fillers of the filters of the overfill protection regularly controled en replaced?	yes	no

Environmental factors		
Is the foundation slab still in a good condition (no visible signs of damage)?	yes	no
Is there an architectural certificate (For a capacity > 10 m^3)?	yes	no
Is there a stability study with certificate (For containers > 50 m^3)?	yes	no
Has account been taken of the distance rules with respect to other storage tanks/zones?	yes	no
Have measures been taken with piping and pump infrastructure to avoid the siphoning action?	yes	no

Verification of filling point		
The filling point has the correct coupling (for the medium)? (see p. 4)	yes	no
The identification plate is present on the filling point?	yes	no
Is there an indication present of the product name, tank capacity, filling flow rate, UN number, hazard symbols?	yes	no
Is the overfill protection indication visible and audible near the filling point?	yes	no
Has an unloading bay been provided in accordance with legislation?	yes	no
Is there an existing unloading procedure that can be requested?	yes	no
The distance between the filling point and the lorry is max. 6 metres (recommended)	yes	no
Is there an eyewash and/or emergency shower present at max. 20 metres?	yes	no
Is the height of the filling point at max. 1 m and is it easily accessible?	yes	no
Is the level gauge visible to the unloading location (recommended)?	yes	no

BACD
belgian association of chemical distributors

CODE OF GOOD PRACTICE WITH BULK DELIVERIES OF LIQUID CHEMICALS

RESPONSIBLE CARE

Drawn up by the Commissions 'Tranport' and 'Safety, Health and Environment'

Contents:

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Eighth edition : 16/01/2019

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DEFINITIONS

BULK DELIVERY
This means the transfer of a chemical liquid from a transport tank to the customer's corresponding storage tank, using an unloading hose forming the connection between the transport tank and the relevant fixed unloading line of the corresponding storage tank.

PRODUCTS
This concerns all liquid chemical bulk products and primarily those that are categorised as hazardous.

TRANSPORT TANK
This is a tank installation, mounted on an ADR-equipped vehicle, with which the bulk liquid is delivered and unloaded into the customer's storage tank. This does not therefore concern packaging.

OVERFILL PROTECTION
Alarm system that protects the tank against overflow. Some systems are equipped with filters filled with silicagel/ activated coal. These fillers have to be regularly maintained and replaced to avoid blocking of the system and consequently tank cracking and burst.

STORAGE TANK
This is a permanently installed tank, provided with the necessary legally prescribed safety facilities (containment basin, overfill detection etc.) and provided with the legally required indications.

UNLOADING LOCATION
This is a defined zone, constructed in accordance with the legal provisions (containment system), where the lorry should be positioned for unloading.

UNLOADING HOSE
A hose connecting the transport tank with the fixed unloading line.

FIXED UNLOADING LINE
This is a fixed installed line which connects the storage tank with the unloading location, fitted with an adapted connection indicating the product name and all other legal requirements. This fixed unloading line has been installed so that the connection with the transport tank can be made using ideally one unloading hose (ca. 8 metres long) and safely (height, accessibility). If one unloading line is not possible then no more than two interconnected unloading lines should be used. The connection to the coupling is made ideally at an angle of 45°.

COUPLINGS

The connecting pieces that are mounted to both ends of the unloading hose, to connect at one end to the transport tank and at the other end to the fixed unloading line.

OPERATOR RESPONSIBLE
A person who is familiar with the customer's unloading installation and who is able to operate the equipment so that the unloading can be done safely and correctly. This operation may never be carried out by the driver himself.

UNLOADING PROCEDURES FOR LIQUID BULK PRODUCTS

The driver reports to the customer's gatekeeper/reception, makes known his company name, the product(s) that is (are) to be delivered and, if applicable, the customer's order reference.

The driver hands over the delivery note (and any analysis certificates) to the gatekeeper/receptionist, as well as a copy of the weighing slip(s).

If a **sample** is needed, it should be taken by a **qualified person of the site**, respecting all safety measures.

The driver goes to the indicated unloading location while following the safety requirements applicable at the customer and **that have been communicated by the customer**. He waits there for further instructions from the operator responsible. **The operator responsible supervises the unloading operation. Before unloading commences, he checks that the full quantity can indeed be unloaded into the storage tank. Unloading may only be commenced after approval from the operator responsible.**

The driver verifies if the six critical points, mentioned below, are respected. If one of the points is not respected no unloading can be started and the driver has to contact his department head dispatching/client. The non-conformities to the critical points will be noted on the delivery note/CMR.

The six critical points in particular must be in order:
- The presence of an employee/customer during connecting and disconnecting
- Safe access to the connection point
- The unloading location is demarcated during unloading (no public passageway)
- Fixed connection with clear labelling
- Earthing terminal present (in the case of flammable substances)
- Eye or emergency shower present (alternative running water)

When unloading solvents and/or acids and bases in bulk, the following supplementary rules apply :
- The driver first provides for his own **personal protective equipment** (such as helmet, full-fitting safety goggles and/ or face guard, adapted gloves and working clothes, safety shoes/boots).
  With acids and bases, the chemical suit should be used above the working clothes and full-fitting safety goggles are also essential.
- The driver couples the unloading hose to the transport tank and the operator responsible couples the unloading hose to the customer's installation; this must be properly identified.
- The driver and the operator responsible verify that the connection between the transport tank and the fixed unloading line is correct.
- **In the case of unloading flammable products** the transport tank must be earthed before unloading can be started. **The fixed storage tank as well as the fixed piping at the customer must also be provided with an equipotential connection with earth.**
- For unloading and loading chemical liquids, use is made of the standard couplings according to the types recommended in the matrix in the appendix. **In the case of Sodium hypochlorite, for safety reasons, only a coupling with an anticlockwise thread is permitted**, to avoid a potentially dangerous mixture with other products.
  This standard matrix was worked out based on the compatibility of the material with the product, the safety, ease of use, possible leaks and availability.
  It is strongly recommended to avoid adaptors or reducers and to replace the seals regularly.
- For the safety of the driver and the operator responsible, it is strongly recommended to be aware beforehand of the location of the emergency showers in the vicinity of the unloading location, as well as the installation's emergency stop.
- Unloading is done :
  - either by gravity
  - or via the pump of the customer
  - or via the pressure installation of the customer
  - or via the nitrogen installation of the customer
  - or via the pump of the lorry of the supplier
  - or via the lorry's compressor of the supplier (only in the case of acids/bases)
- During the unloading operation, the driver remains with his lorry and the operator responsible maintains supervision of the unloading activity.
- If unloading is done with the compressor, this will be done at a maximum working pressure of 2.5 bar. On completing the unloading operation, the driver will immediately shut off the outlet valve of the transport tank and of the compressed air supply, and subsequently allow the compressed air to escape from the transport tank via the installation provided by the customer. It must be possible to release the remaining pressure in the transport tank before returning to the public.
- The driver subsequently uncouples the unloading hose from his transport tank and the operator responsible does the same for the fixed unloading line. The driver fits the unloading hose with stops before stowing it away.

Dangerous ADR bulk products may only be unloaded into storage tanks. Never into IBCs, drums, open containers etc.

- All irregularities (product refusal, too little delivered, not able to unload all etc.) are noted on the delivery note together with the reason. The driver will also contact his department head dispatching, before leaving from the customer.
- The driver has the customer sign the delivery note for receipt, stating his name. The customer receives a copy of the delivery note.
- Before leaving the customer's installations, the driver notes the data of the empty tank or compartment on the 'transport document for empty, uncleaned tanks' in accordance with the applicable ADR legislation.
- The driver leaves the customer's installations via the indicated route.

Table

Colour code used in the table:
Green: preferred coupling
Yellow: acceptable coupling
Orange: acceptable coupling which is better to avoid because it does not satisfy one (or more) of the aforementioned criteria
Red: unacceptable coupling

Of course, the working group aims for a situation in which only preferred couplings are used.

	TW (VK) DN50 SS	TW (VK) DN80 SS	Guillemin DN80 SS	Guillemin DN50 SS	KNZ M88 PE CCW male	KNZ M110 PE CCW male	KNZ M88 PE CW male	KNZ M110 PE CW male	Camlock	Guillemin PE/PP	Storz
Acids that affect metal											
Other acids											
Alkalis											
Solvents											
Sodium hypochlorite											

Definitions

SS:	Stainless Steel	**PE/PP:**	Polyethylene, polypropylene
CCW:	Anticlockwise	**CW:**	Clockwise
Acids that affect metal:	Hydrochloric acid, sulphuric acid (con. < 70%), Zinc chloride, Iron chloride, Poly aluminium chloride (PAC, etc.	**Other acids:**	Phosphoric acid, nitric acid, sulphuric acid > 70%
Alkalis:	Caustic soda, potassium hydroxide, ammonia solution	**Solvents:**	Hydrocarbons