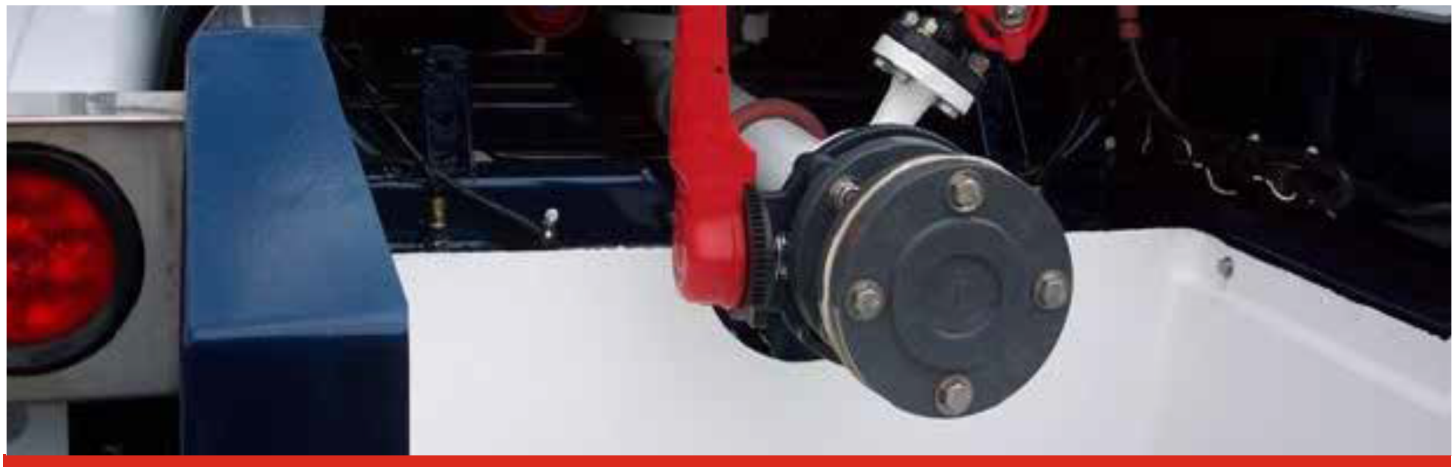
TECHNICAL BULLETIN

SAFE UNLOADING OF BULK CORROSIVE CARGO TANKS



Introduction

Unloading containers of corrosive products can be hazardous – potentially more hazardous than the loading of such containers. For this reason, we recommend that checklists be used to document all aspects of the unloading operation. Checklists are an effective tool to document and check all critical aspects of the unloading process – before, during, and after the unloading operation. The checklist should document that proper unloading and securement procedures have been completed and that necessary corrective actions have been taken to prevent an incident.

The safety aspects of the unloading operation should be uppermost in the mind of the operator performing the task. Before beginning transfer operations, the operator must first verify that the requirements for receiving and spotting the container have been completed properly. After this, steps to unload the container can safely begin.

Cargo tanks may be unloaded by pump, pressure padding, or by gravity, depending on the location of the storage tank and/or other process considerations. An inspection checklist should take into account these different unloading options. It is essential that all site equipment such as pumps, lines, valves, and air systems are compatible with the product to be transferred. Mechanical integrity and materials of construction of “fixed” equipment are typically outside the scope of an unloading checklist; however, visual inspection of all components before and during unloading should be documented.

Inspection Checklist

The inspection checklist should include all critical aspects of the unloading process including, but not limited to:

- Review of shipping papers
- Identification of the product being unloaded
- Vessel seals are intact and match paperwork
- Wear proper personal protective equipment (PPE) that is in good condition
- Suitability and integrity of the receiving tank’s hose fitting (check for wear, cracks, corrosion, proper gasket material, etc.)
- Safety shower/eye wash location and operation
- Sufficient tank capacity for the volume to be received
- Ensure product will be unloaded to the correct tank
- Availability of low-pressure steam for product with high freezing point such as hydroxide solutions – pressure should not exceed 15 psig
- Ensure that the tank’s fume scrubber is connected and operating properly for products with a high-vapor pressure such as hydrochloric acid
- All unloading systems are leak-free
- Drain and sample port valves on delivery trailers and receiving equipment are closed before unloading begins
- Unloading connection is securely attached before product valves are opened
- Grounding cable attachment, if required by the receiver

Items to consider adding for pump unloading:

- Ensure that the manway is opened on the tank trailer to prevent collapse – OR, if manway must be kept closed, ensure a continuous positive pressure to avoid pulling a vacuum on the cargo tank
- For hydrochloric acid, the manway lid must remain closed, and a pressure pad applied

Items to consider adding for air unloading:

- Secure manway cover
- Unloading pressure must not exceed the pressure relief valve setting (25 psig is the suggested maximum pressure for most transfers)

Creating Your Own Site-Specific Checklist

The following is a generic bulk tank trailer safe delivery checklist that could serve as a guideline as you create your own checklist to address your site-specific characteristics.

Checklists have been found to be useful for ensuring all key tasks are performed and documented. They also help provide consistency between different unloading personnel. Organizations such as the Chlorine Institute also recognize and encourage the use of unloading checklists.

Example Checklist

Product		Carrier	
__NaOH	__HCl	Carrier's Name:	_____
__KOH	__ H_2SO_4	Driver's Name:	_____
__NaOCl			

ITEM	DESCRIPTION	DONE	NOT DONE	NA
1	Complete safety orientation for driver			
2	Set safety perimeter – Minimum of 25 feet from hose and all hose connections			
3	Review Bill of Lading information with driver:			
	• Product Name and Grade			
	• UN Number (shipping papers and cargo tank placards match)			
	• Cargo Tank Number (shipping papers should match container)			
	• Seal Numbers (numbers included within shipping papers match those on cargo tank)			
	• Product Quality			
	• Product Quantity (volume, weight, other)			
4	Tank Starting Level (volume, weight, other)			
5	Calculated Tank End Level (volume, weight, other)			
6	Confirm tank will hold full load – value of line #5 shall fall below the installed overflow on tank or less than 90% of tank volume (line #4).			
7	Locate and test safety shower/eyewash with driver			
8	Provide communication device if driver unloads alone			
9	Validate unloading connection point with driver			
10	Ensure brakes are set and wheels are chocked			
11	Wear proper PPE per function requirement			
12	For Air Pad unloading only: connect airline to cargo tank and check air pressure (25 psig max) **– DO NOT pressurize cargo tank yet!**			
13	Inspect unloading hose for integrity and cleanliness			
14	Unlock the storage tank receiving line			
15	Remove cap/plug/blind on storage tank inlet line			
16	Inspect inlet line connection for cracks, corrosion, or wear – inspect and/or replace gasket as needed			
17	Connect unloading hose to storage tank inlet fitting and truck outlet fitting and ensure that camlock ears are strapped or secured. For Hydrochloric Acid, flanges shall be used.			
18	Ensure hose carrier and/or support is available for drivers' use			
19	Place drip buckets under all hose connections			
20	Cover storm drains in unloading area if present			
21	Open storage tank inlet valve			
22	Open cargo tank outlet valves (internal and external)			
23	Check for leaks			
	A) For Air Pad unloading only: pressurize cargo tank to begin transfer of product to tank			
	B) For Pump unloading: open cargo tank dome lid to prevent cargo tank collapse – **OR** –			
	Ensure another system is in place to prevent cargo tank collapse. ***Hydrochloric Acid dome lid must stay closed***			
	Start unloading pump to begin transfer of product to tank			
24	Monitor Level Transmitter or remain within close proximity to tank to observe inventory changes throughout the unloading cycle			
25	Confirm delivery is completed with driver			
26	Prior to disconnection, ensure hose is cleared of product, pressure, and residual liquids (walk the hose down)			
27	Once pressure drops to zero, close all valves including tank inlet and cargo tank internal and external valves			
28	Disconnect air (if used) and product hoses; cap, stow and secure hoses			
29	Secure storage tank inlet line (replace cap/plug/lock)			
30	Remove, decontaminate, and properly stow PPE			
31	Sign carrier's paperwork confirming the delivery was safely completed			

Product Safety Questions? Contact Us

At Olin, safety and environmental protection are top priorities. We provide technical assistance and resources for our customers to ensure the safe and environmentally sound use and handling of our products. Please contact your Olin representative for further information and support.

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