

Vinyl Chloride Monomer (VCM)

VCM Safety & Handling Evaluation Guidelines

Please use these guidelines in conjunction with this product's country-specific Safety Data Sheet (SDS) and the Safe Use conditions as described therein. Current Safety Data Sheets can be requested from Olin at info@olinbc.com.

Purpose

Due to ever-changing technology and capabilities, many procedures unique to each facility should be developed, maintained and followed to ensure safe off-loading, storage, handling, use and disposal of VCM. This document sets forth certain issues to consider when developing or assessing these procedures. The following list is not exhaustive.

Safety Guidelines and Practices

- The most current version of the Safety Data Sheet for VCM is readily accessible, understood and reviewed periodically with employees
- A VCM-specific, documented employee training program is in place and is conducted regularly
- A VCM emergency response (E/R) plan has been developed and drills are conducted at least annually
- The local community emergency response authorities participate in E/R drills
- A risk management plan has been completed
- Incidents and accidents are investigated and corrective actions are reviewed with personnel
- A reactive chemicals program is in place to prevent chemical incidents
- Procedures for off-loading, storing, handling, use and disposal of VCM are written, available and utilized

Other Safety Considerations

- VCM is listed as a carcinogen by NTP, IARC and OSHA
- The lower flammability limit of VCM is 3.8-4%, thus lines are adequately purged with nitrogen below this level to avoid flammable conditions
- To minimize the potential of polymerization, lines, storage tanks and other equipment are cleared of oxygen, typically to less than 1000 ppm
- Series off-loading of VCM is not used due to the potential to over-pressure the rail car, which could result in a release

Safety Equipment

- E/R equipment is regularly inspected and maintained
- An emergency capping kit for VCM rail cars is readily available
- Emergency respirators are carried by or immediately available to personnel
 - Supplied air or air-purifying respirators are utilized for non-emergency operations
- Operable safety showers and eyewash stations are easily accessible
 - Safety showers and eyewash stations are regularly inspected according to local regulations to demonstrate proper operation
 - Safety showers and eyewash stations use tempered water
- A job safety analysis has been performed and is regularly reviewed to determine appropriate personal protective equipment for each task
 - Personal protective equipment (PPE) is supplied and used as required
- Windssocks are clearly visible from the unloading, storage and use areas
- A deluge system or fire monitors are installed and active in the unloading, storage and use areas
- Lighting is adequate for the tasks at hand
- Warning signs and/or information signs are clearly visible

Rail Car

- A security inspection of inbound railcars is conducted
- Railcars are protected appropriately with derails and/or locked switches
 - Brakes are set and wheels chocked for rail car in off-loading spot
 - Caution signs/lights are utilized and placed at an appropriate distance from the tank car
- The operating platform area allows easy access and sufficient escape routes
 - Fall protection is utilized
- The rail car is grounded during off-loading
 - The off-loading hose is grounded to the grounding clip on the rail car
- Off-loading facility is staffed or monitored during off-loading
 - Emergency remote shut-off system is accessible
- Proper operation of the back-flow prevention system, from process and cross ties, is confirmed

Unloading

- PTFE (polytetrafluoroethylene) tape or non-reactive pipe dope is used on all screwed connections to prevent leaks
 - All pipe dope is tested and approved for reactivity prior to use
 - Fittings, flanges, etc. are checked for leaks prior to each use
 - Any leaks are remediated prior to off-loading
 - Welded pipe is used wherever possible
- Flexible connections are quickly capped or blinded when disconnected to avoid moisture pickup and downstream corrosion
 - The flexible connection and pipe system are inspected before initial use and regularly thereafter
 - The flexible connections are replaced on a regular interval
 - A positive means to isolate both ends of the flexible connection in an emergency is installed
 - There is a pipe nipple replacement program
- A closed loop system is utilized to off-load VCM
 - The rail car is padded with VCM vapors from the VCM storage tank
 - Steam is not used to vaporize VCM for off-loading
 - Series off-loading is not used
- Piping is adequately supported
 - Pipelines are well marked
- The storage tank is protected by a pressure safety valve

Industrial Hygiene

- Personnel monitoring is conducted according to local regulations to confirm compliance to exposure guidelines
- There is a fugitive emissions continuous monitoring program in use in the off-loading, storage and use areas
- An alarm system must be provided, according to local regulations, to alert employees when vinyl chloride concentrations exceed the allowable concentrations for the devices in use. Please refer to Section 8 of the Safety Data Sheet and the federal/state vinyl chloride industrial hygiene standard for more information.



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