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Safety - Dangers

COMMON DANGERS

Tankspan tanks are extremely safe for all modes of transport, and provide secure and robust cargo containment in transit. The greatest risk of cargo spillage or damage to the tank or its fittings occurs during loading and discharge. Here are some common dangers to be avoided.

Flash Spill

Cause

Opening manhole or hose connection when tank is pressurised. May result in 'flash spill' of product and lid or cover being thrown.

Precaution

Examine pressure gauge if fitted and relieve any pressure before opening manlid or hose connection by carefully opening the air-line valve or cap. Take care not to vent off dangerous vapours into the atmosphere.

Asphyxiation/Poisoning

Cause

Entering tank with oxygen depleted or contaminated atmosphere. May cause poisoning or asphyxiation.

Precaution

Check cleaning certificate and last cargo. Check tank atmosphere with appropriate analyser before entry. If necessary, carry out gas-freeing procedure. A second person should be stationed outside the manhole with a lifeline to the person in the tank.

Hose Whiplash

Cause

Disconnection of hose when the tank is pressurised. Could cause injury to operatives.

Precaution

Ensure that tank and hose are de-pressurised before disconnection.

Chemical Reaction/Product Contamination

Cause

Tank and fittings not efficiently cleaned of previous product. Product loaded in uncleaned tank. Incorrect cleaning agent used. May result in contamination of new cargo violent chemical reaction, crusting/ congealing of residues in tank and fittings, or damage to tank lining.

Precaution

Ascertain previous product carried. Check cleanliness of tank outlet valve chamber and other fittings in contact with cargo before loading. Check cleaning agent compatibility before use.

Accidental Cargo Discharge

Cause

Careless opening of outlet valve or disconnection of hose from tank containing cargo or leakage via incorrect fittings or hoses. May result in a chemical reaction, toxic or inflammable fumes or other potential dangers to personnel and equipment

Precaution

Check if cargo is present before opening valves or disconnecting fittings. Check that hoses and fittings are correct for a particular tank.

Overpressure

- Flash Spill
- Asphyxiation/poisoning
- Hose Whiplash
- Chemical Reaction
- Accidental Discharge
- Overpressure
- Excessive Steam Pressure
- Vacuum Collapse
- Hoses Kinked/flattened
- Heat Damage
- Cargo Vapour
- Tank Overheating



Flash Spill



Asphyxiation/poisoning



Hose Whiplash



Chemical Reaction



Accidental cargo Discharge



Overpressure

Cause

Excessive operating pressure. Could result in rupture of hoses or tank or release of cargo through the pressure relief valves, with possible risk of injury and spillage.

Excessive Steam Pressure**Cause**

Excessive pressure introduced into heating system. May damage tank or rupture hose causing failure or escape of cargo.

Vacuum Collapse (Implosion)**Cause**

Vacuum created in tank during pumping out, or as a result of tank cooling after system cleaning, or after discharge of heated cargo. Could result in damage to tank shell.

Hoses Kinked or Flattened**Cause**

Hose unable to pass air or liquid. Could cause over-pressure or vacuum collapse.

Heat Damage To Empty Tank**Cause**

Heating tank prior to cargo loading, exceeding maximum design temperature of shell. Could cause deformation/damage to shell and fittings.

Cargo Vapour Explosion**Cause**

Naked light or electrical spark in presence of cargo vapours during loading/discharge or in presence of cargo leakage. May cause fire or explosion.

Tank Overheating**Cause**

Exceeding operating temperature, may damage tank shell, insulation, and fittings.

Precaution

Note the maximum working pressure marked on the tank and ensure that it is not exceeded.

Precaution

Do not exceed the maximum working pressure of the heating system marked on the tank.

Precaution

Ensure that tank is vented (via manhole or air-line) during cargo discharge or after steam cleaning, or discharge of heated cargo. If a vacuum valve is fitted check that it operates freely. NOTE: Special precautions should be taken when handling hazardous cargo to guard against venting of harmful vapours.

Precaution

Hoses should be inspected before use and correctly laid out before fitting. Wheeled equipment should be prevented from entering area where hoses are crossing the ground.

Precaution

Limit pre-heating temperatures such that the shell or heater tubes do not exceed the maximum product temperature indicated on the data plate. Care should be taken not to overheat small quantities of cargo, especially cargo residue.

Precaution

Strictly observe the 'no naked light' rulings in the vicinity of tanks. Ensure good earth connection has been made to the tank during loading/discharge. Check tools and clothing (especially boots) for spark risk.

Precaution

Do not exceed the maximum operating temperature indicated on the tank. Check that the thermometer is in working order.



Excessive Steam Pressure



Vacuum Collapse



Hose Kinked or Flattened



Heat Damage



Cargo Vapour Explosion



Tank Overheating

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