

# TANK CAR LOADING, UNLOADING AND TRANSLOADING REQUIREMENTS

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# Definition of Terms

- Transportation or Transport is the movement of property and the loading, unloading or storage incidental to that movement
- Transloading is the transfer of HAZMAT from one packaging (bulk, non bulk) to another packaging (bulk, non bulk) for the purpose of continuing the movement of HAZMAT in commerce

# Definition of Terms

- “Loading/Unloading Incidental to the movement” (For bulk packaging) means the filling or emptying of the bulk packaging with a HAZMAT while in the presence of carrier personnel or when performed by carrier personnel. Both terms include transloading.

# Definition of Terms

- Storage incidental to the movement includes:
  - Storage at destination as shown on shipping paper provided the shipping document identifies the shipment as a through shipment and identifies the final destination/s for the HAZMAT; For HAZMAT railcars, Storage on tracks that do not meet the definition of private track or siding even if delivered to destination on the shipping document

# Definition of Terms

Pre-Transportation functions include: the classification of the HAZMAT; selection of the packaging used; filling, and or securing the closures on the packaging; marking and or labeling the packaging; selecting, providing, or affixing placards for the packaging; preparing, or reviewing a HAZMAT shipping paper; certifying a HAZMAT shipment; provide or maintain emergency response information

# Applicable References

- 173.31 “Use of Tank Cars” (General Handling)
  - Examination before shipping 173.31(d)
  - Tank car loading and unloading 173.31(g)
- 174.67 “Tank Car Unloading” (Transloading)
  - Same requirements as 173.31(g)
  - Specific handling requirements/ allowances

# Tank Car handling Similarities

## 173.31

- 173.31(g)(1) -Secure access to the track/s
- 173.31(g)(3) -Apply handbrakes and block wheel/s in both directions
- 173.31(g)(2) -Display of Caution Sign/s

## 174.67

- 174.67(a)(3) -Secure access to the track/s
- 174.67(a)(2) -Apply handbrakes and block wheel/s in both directions
- 174.67(a)(4) -Display of Caution Sign/s

## 173.31(g)(1)

(g) Tank car loading and unloading. When placed for loading or unloading and before unsecuring any closure, a tank car must be protected against movement or coupling as follows:

(1) Each hazmat employee who is responsible for loading or unloading a tank car must secure access to the track to prevent entry by other rail equipment, including motorized service vehicles. *Derails, lined and locked switches, portable bumper blocks, or other equipment that provides an equivalent level of security may be used to satisfy this requirement.*





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# 173.31(g)(2)



(2) Caution signs must be displayed on the track or on the tank cars to warn persons approaching the cars from the open end of the track and must be left up until after all closures are secured and the cars are in proper condition for transportation.

# 173.31(g)(3)



(3) At least one wheel on the tank car must be blocked against movement in both directions, and the hand brakes must be set. If multiple tank cars are coupled together, sufficient hand brakes must be set and wheels blocked to prevent movement in both directions.

# Transloading



# Additional Handling Requirements for Transloading Operations

- 174.67(a)(5) Maintain written safety procedures and make available for HAZMAT employees performing transloading operations (i.e. 29 CFR)
- 174.67(a)(6), (b) Relieve of interior pressure and proper removal of manway covers
- 174.67(d) Use of safety precautions to prevent ignition of vapors during unloading

# Additional Handling Requirements for Transloading Operations

- When unloading (transloading) from the Bottom Outlet Valve (BOV):
- 174.67© Manway cover adjustments
- 174.67(f) Operate valve several times to confirm valve is seated before removing BOV cap
- 174.67(g) Precautions when removing BOV cap to prevent/control possible leakage

174.67(i)



# Additional Handling Requirements for Transloading Operations

- 174.67(i) During the unloading operation (transfer) must have either:
  - HAZMAT employee present with an unobstructed view of the operation
  - or
  - Monitoring system observed by HAZMAT employee (capable of immediate notification of emergency or malfunction)

# Transloading Operation Allowance

- 174.67(j) Tank Cars with protective housings (i.e. DOT 105, 112) do not require attendance when piping is still attached if:
  - All valves are tightly closed
  - Piping is capped/plugged and not connected to hoses/unloading equipment
  - Piping does not extend more than six inches from the protective housing

# Transloading Operation Allowance

- 174.67(k) When the unloader is absent, unloading connections may be left attached to the car if:
  - No transfer of product being performed
  - HAZMAT employee on site to monitor
  - If monitoring system used, same as 174.67(i)
- Tank car/ facility valves are securely closed

# Examination before shipping

- 173.31(d)(1) No person may offer for transportation a tank car containing a hazardous material or a residue of a hazardous material unless that person determines that the tank car is in proper condition and safe for transportation. As a minimum, each person offering a tank car for transportation must perform an external visual inspection that includes:



## 173.31(d)(1)(i)

- (i) Except where insulation or a thermal protection system precludes an inspection, the tank shell and heads for abrasion, corrosion, cracks, dents, distortions, defects in welds, or any other condition that makes the tank car unsafe for transportation;



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# 173.31(d)(1)(ii)

- (ii) The piping, valves, fittings, and gaskets for corrosion, damage, or any other condition that makes the tank car unsafe for transportation;



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# 173.31(d)(1)(iii)

- iii) For missing or loose bolts, nuts, or elements that make the tank car unsafe for transportation;





# 173.31(d)(1)(iv)

- **(iv) All closures on tank cars and determine that the closures and all fastenings securing them are properly tightened in place by the use of a bar, wrench, or other suitable tool;**



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# 173.31(d)(1)(v)

- (v) **Protective housings** for proper securement;



# 173.31(d)(1)(vi)

- (vi) The pressure relief device, including a careful inspection of the rupture disc in non-reclosing pressure relief devices, for corrosion or damage that may alter the intended operation of the device. **The rupture disc is not required to be removed** prior to visual inspection if the tank car contains **the residue, as defined in § 171.8 of this subchapter, of a Class 8, PG II or PG III material with no subsidiary hazard or the residue of a Class 9 elevated temperature material;**



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# 173.31(d)(1)(vii)

- (vii) Each tell-tale indicator after filling and prior to transportation to ensure the integrity of the rupture disc;



# 173.31(d)(1)(viii)



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- (viii) The external thermal protection system, tank-head puncture resistance system, coupler vertical restraint system, and bottom discontinuity protection for conditions that make the tank car unsafe for transportation.



# 173.31(d)(1)(x)

- (x) **The periodic inspection date markings** to ensure that the inspection and test intervals are within the prescribed intervals.

**DOT 111 A 100 W-1**

	STATION STENCIL	QUALIFIED	DUE
TANK QUALIFICATION	TRAM	2004	2014
THICKNESS TEST	TRAM	2004	2014
SERVICE EQUIPMENT	GAHT	2008	2010
SAFETY VALVE 75 LBS	GAHT	2008	2013
XT. HTR. CO. 200 LBS	TRAM	2004	
COATING/LINING	GAHT	2008	2010
TYPE	PLASITE 3070		
DATE APPLIED	10 - 1990		
8.B.2 INSPECTION	TRAM	2004	2014
TUBSILL INSPECTION	TRAM	2004	2014

# 173.31(d)(2)

- **(2) Closures on tank cars are required, in accordance with this subchapter, to be designed and closed so that under conditions normally incident to transportation, including the effects of temperature and vibration, there will be no identifiable release of a hazardous material to the environment.**

## 173.31(d)(2) Continued

- In any action brought to enforce this section, the lack of securement of any closure to a tool-tight condition, detected at any point, will establish a rebuttable presumption that a proper inspection was not performed by the offeror of the car. That presumption may be rebutted by any evidence indicating that the lack of securement resulted from a specific cause not within the control of the offeror.

## §173.29 Empty packagings.

- (a) Except as otherwise provided in this section, an empty packaging containing only the residue of a hazardous material shall be offered for transportation and transported in the same manner as when it previously contained a greater quantity of that hazardous material.

# Spillage on the Car



# How Much is Too Much???



# How Much is Too Much???



# 173.24(b)(4)

(b) Each package used for the shipment of hazardous materials under this subchapter shall be designed, constructed, maintained, filled, its contents so limited, and closed, so that under conditions normally incident to transportation—

(4) There will be **no** hazardous material residue adhering to the outside of the package during transport.



# OVERLOADS

A tank car can be **OVERLOADED** by:

✓ Exceeding the **maximum gross weight** for the journal size, which is the **Load Limit** (LD LMT) + **Light Weight** (Tare)

*or,*

✓ Exceeding the maximum **filling limit** or **filling density** standards in the regulations

*or,*

✓ Both methods !

# Filling Limits (Outage)

173.24b

(a)(1) Except as otherwise provided in this subchapter, liquids and liquefied gases must be so loaded that the outage **is at least five percent for materials poisonous by inhalation, or at least one percent for all other materials,** of the total capacity of a ... tank car ... at the following reference temperatures—

(i) 46 °C (115 °F) for a noninsulated tank;

(ii) 43 °C (110 °F) for a tank car having a thermal protection system, incorporating a metal jacket that provides an overall thermal conductance at 15.5 °C (60 °F) of no more than 10.22 kilojoules per hour per square meter per degree Celsius (0.5 Btu per hour/per square foot/per degree F) temperature differential; or

(iii) 41 °C (105 °F) for an insulated tank.

# Filling Limits (Outage)

(d) A bulk packaging may not be loaded with a hazardous material that:

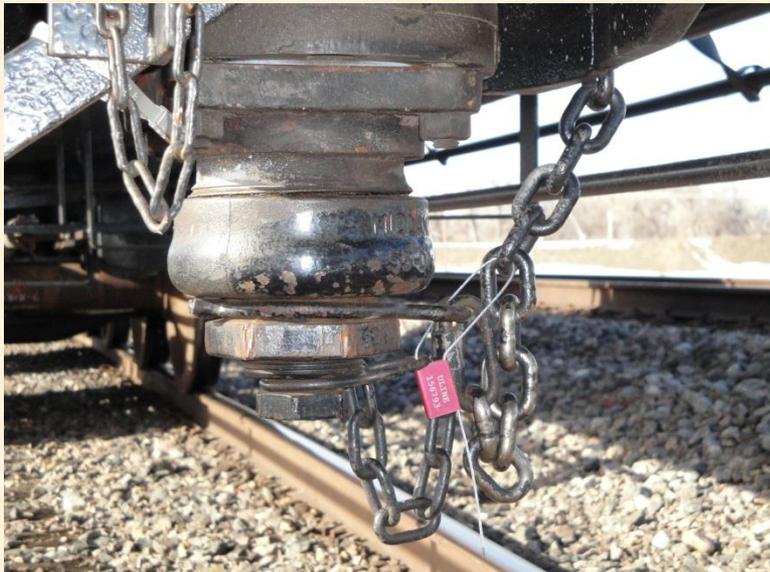
- (2) ...exceeds the maximum weight of lading marked on the specification plate.



# RECOMMENDATIONS



# PHOTOS



# SEALS



# Questions