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gauge. All openings shall be in the top of the tank.

(b) Adequate natural ventilation shall be provided for the voids around the cargo tanks while the vessel is underway. If a power ventilation system is installed, all blowers shall be of nonsparking construction. Power driven ventilation equipment shall not be located in the void spaces surrounding the cargo tanks.

(c) Pressure relief valve settings shall not be less than 3 pounds per square inch gauge for gravity tanks. For pressure vessels, the relief valve setting shall not exceed the design pressure of the tank.

(d) Inert gas displacement may be used for discharging cargo from pressure vessel tanks provided the cargo system is designed for the expected pressure and the discharge pressure does not exceed 50 pounds per square inch gauge or the design pressure of the tank, whichever is less.

(e) No electrical equipment except for approved lighting fixtures shall be installed in enclosed spaces adjacent to the cargo tanks. Lighting fixtures must be approved for use in Class I, Group C, hazardous locations. The installation of electrical equipment on the weather deck shall comply with the requirements of part 111, subpart 111.105 of this chapter.

(f) Copper, silver, mercury and magnesium or other acetylide forming metals and their alloys shall not be used as materials of construction for tanks, pipelines, valves, fittings and other items of equipment that may come in contact with the cargo vapor or liquid.

(g) Precautions shall be taken to prevent the contamination of ethyl ether by strong oxidizing agents.

(h) The requirements of §151.50–40 are also applicable to the shipment of ethyl ether.

[CFGR 70–10, 35 FR 3714, Feb. 25, 1970, as amended by CGD 88–100, 54 FR 40040, Sept. 29, 1989]

§151.50–50 Elemental phosphorus in water.

(a) Tanks shall be designed and tested for a head equivalent to the design lading of phosphorus and its water blanket extended to 8 feet above the tank top. In addition, tank design calculations shall demonstrate that the tank can withstand, without rupture, a single loading to the highest level to which the water blanket may rise, if that exceeds 8 feet. Tanks shall not be less than 5/16-inch thick.

(b) When a water displacement method of discharge is used, pressure vessel type cargo tanks, designed and tested in accordance with Subchapter F of this chapter shall be employed. Such tanks shall be designed for the maximum pressure to which they may be subjected when water pressure is used to discharge the cargo.

(c) Each cargo tank shall be fitted with an approved pressure vacuum relief valve set to discharge at a pressure not exceeding 2 pounds per square inch. When transferring cargo, the vent discharge shall lead overboard above the waterline. When pressure vessel type tanks are used, each tank shall be fitted with a relief valve of suitable size.

(d) Sufficient outage shall be provided to prevent the tank from being liquid full at any time, but in no case shall the outage be less than 1 percent. When pressure vessel type tanks are used, outage need not be provided.

(e) The use of compressed air to discharge cargo is prohibited.

(f) Cargo shall be loaded at a temperature not exceeding 140°F., and then cooled until the water above the cargo has a temperature not exceeding 105°F. prior to the movement of the vessel. Upon presentation of satisfactory proof that procedures followed will provide adequate safety in transportation and handling, the Commandant may authorize movement of the vessel following cooling of the water above the cargo to a temperature exceeding 105°F.

(g) Coils in which steam or hot water is circulated to heat the cargo so that it may be pumped shall be located outside the cargo tanks.

(h) A fixed ballast piping system (including a power driven pump of ample capacity), or other means acceptable to the Commandant shall be installed so that any void space surrounding the tanks may be flooded.

(i) All openings shall be in the top of the tank and shall be fitted with bolted

cover plates and gaskets resistant to the attack of phosphorus pentoxide.

(j) All enclosed compartments containing cargo tanks shall be provided with effective means of ventilation.

(k) Cargo lines shall be traced with steam piping and secured thereto by lagging to prevent solidification of cargo during transfer operations.

(l) During cargo transfer, a water hose shall be connected to a water supply ready for immediate use, and any spillage of phosphorus shall be immediately washed down. This requirement can be met by facilities provided from shore.

(m) At least two fresh air masks or self-contained breathing apparatus shall be stowed on board the vessel at all times for use of personnel entering the tanks or adjacent spaces.

(n) Authorization from the Commandant (G–MSO) shall be obtained to transport lading other than phosphorus in the cargo tanks or to have on board any other cargo when phosphorus is laden in the tanks.

(o) Mechanical ventilation of sufficient capacity to insure a change of air within the cargo tanks every 3 minutes shall be provided during the inspection and maintenance of the cargo tanks.

(p) Cargo tanks shall be electrically bonded to the hull of the barge. A vessel shall be electrically bonded to the shore piping prior to connecting the cargo hose. This electrical bonding shall be maintained until after the cargo hose has been disconnected.

[CGFR 70–10, 35 FR 3714, Feb. 24, 1970, as amended by CGD 82–063b, 48 FR 4781, Feb. 3, 1983]

§151.50–55 Sulfur (molten).

(a) Ventilation (cargo tank):

(1) Cargo tank ventilation shall be provided to maintain the concentration of H_2S below one-half of its lower explosive limit throughout the cargo tank vapor space for all conditions of carriage; i.e., below 1.85 percent by volume.

(2) Where mechanical ventilation systems are used for maintaining low gas concentrations in cargo tanks, an alarm system shall be provided to give warning if the system fails.

(3) Connections shall be provided to enable sampling of the atmosphere over the cargo in each cargo tank for analysis.

(4) The ventilation system shall be designed and arranged to preclude the depositing of sulfur within the system.

(b) Void spaces:

(1) Openings to void spaces adjacent to cargo tanks shall be designed and fitted to prevent the entry of water, sulfur or cargo vapors.

(2) Connections shall be provided to enable sampling and analyzing vapors in void spaces.

(c) Temperature controls shall be provided in accordance with §151.20–10 and applicable sections of Subpart 151.40 of this part. Heat transfer media shall be steam, and alternate media will require specific approval of the Commandant.

[CGFR 70—10, 35 FR 3714, Feb. 25, 1970]

§151.50–60 Benzene.

The person in charge of a Coast Guard inspected barge must ensure that the provisions of part 197, subpart C, of this chapter are applied.

[CGD 88–040, 56 FR 65006, Dec. 13, 1991]

§151.50–70 Cargoes requiring inhibition or stabilization.

When table 151.05 refers to this section, that cargo must be—

(a) Inhibited; or

(b) Stabilized.

[CGD 88–100, 54 FR 40040, Sept. 29, 1989]

§151.50–73 Chemical protective clothing.

When table 151.05 refers to this section, the following apply:

(a) The person in charge of cargo handling operations shall ensure that the following chemical protective clothing constructed of materials resistant to permeation by the cargo being handled is worn by all personnel engaged in an operation listed in paragraph (b) of this section:

(1) Splash protective eyewear.

(2) Long-sleeved gloves.

(3) Boots or shoe covers.

(4) Coveralls or lab aprons.