

Chapter E 515

BULK-STORAGE PLANTS

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E 515.01 Definition. This designation shall include locations where gasoline or other volatile flammable liquids are stored in tanks having an aggregate capacity of one carload or more, and from which such products are distributed (usually by tank truck).

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.02 Hazardous areas. (1) PUMPS, BLEEDERS, WITHDRAWAL FITTINGS, METERS AND SIMILAR DEVICES. (a) Adequately ventilated indoor areas containing pumps, bleeders, withdrawal fittings, meters and similar devices which are located in pipe lines handling flammable liquids under pressure shall be considered as class 1, division 2 locations within a 5 foot distance extending in all directions from the exterior surface of such devices. The class 1, division 2 location shall also extend 25 feet horizontally from any surface of these devices and extend upward to 3 feet above floor or grade level.

Note: See Flammable Liquids Code, NFPA No. 30, for discussion of factors influencing adequacy of ventilation required to prevent formation of hazardous vapor-air mixtures.

(b) Inadequately ventilated indoor areas containing pumps, bleeders, withdrawal fittings, meters and similar devices which are located in pipe lines handling flammable liquids under pressure shall be considered as class I, division 1 location within a 5 foot distance extending in all directions from the exterior surface of such devices. The class I, division 1 location shall also extend 25 feet horizontally from any surface of the devices and extend upward to 3 feet above floor or grade level.

(c) Outdoor areas containing pumps, bleeders, withdrawal fittings, meters and similar devices which are located in pipe lines handling flammable liquids under pressure shall be considered as class I, division 2 locations within a 3 foot distance extending in all directions from the exterior surface of such devices. The class I, division 2 location shall also extend up to 18 inches above grade level within 10 feet horizontally from any surface of the devices.

(2) TRANSFER OF FLAMMABLE LIQUIDS TO INDIVIDUAL CONTAINERS.

(a) In outdoor areas or where positive and reliable mechanical ventilation is provided in indoor areas in which flammable liquids are transferred to individual containers, such areas shall be considered to be a class I, division 1 location within 3 feet of the vent or fill opening extending in all directions and a class I, division 2 location

within the area extending between a 3 foot and 5 foot radius from the vent or fill opening extending in all directions, and including the area within a horizontal radius of 10 feet from the vent or fill opening and extending to a height of 18 inches above floor or grade levels.

Note: See Flammable Liquids Code, NFPA No. 30, for discussion of factors influencing adequacy and reliability of mechanical ventilation required to prevent formation of hazardous vapor-air mixtures.

(b) When positive and reliable mechanical ventilation is not provided in indoor areas in which flammable liquids are transferred to individual containers, such areas shall be considered to a class I, division 1 location.

(3) **LOADING AND UNLOADING OF TANK VEHICLES AND TANK CARS IN OUTSIDE LOCATIONS.** (a) The area extending 3 feet in all directions from the dome when loading through an open dome or from the vent when loading through a closed dome with atmospheric venting shall be considered a class I, division 1 location.

(b) The area extending between a 3 foot and 5 foot radius from the dome when loading through an open dome or from the vent when loading through a closed dome with atmospheric venting shall be considered a class I, division 2 location.

(c) The area extending within 3 feet in all directions from a fixed connection used in bottom loading or unloading, loading through a closed dome with atmospheric venting, or loading through a closed dome with a vapor recovery system, shall be considered a class I, division 2 location. In the case of bottom loading or unloading this classification shall also be applied to the area within a 10 foot radius from point of connection and extending 18 inches above grade.

Note: In deciding upon extent of hazardous area, consideration should be given to the total area within which loading and unloading operation may occur such as racks, platforms, driveways, etc.

(4) **ABOVEGROUND TANKS.** (a) The area above the roof and within the shell of a floating roof type tank shall be considered a class I, division 1 location.

(b) For all types of aboveground tanks the area within 10 feet from the shell, ends and roof of other than a floating roof shall be considered a class I, division 2 location. Where dikes are provided the area inside the dike within 25 feet of the tank and extending upward to the top of the dike shall be considered to be a class I division 2 location.

(c) The area within 5 feet of a vent opening and extending in all directions shall be considered a class I, division 1 location.

(d) The area between 5 and 10 feet of a vent opening and extending in all directions shall be considered a class I, division 2 location.

(e) Open conductors shall not pass over aboveground flammable liquids storage tanks. Such conductors operating at more than 300 volts to ground shall be kept at least 15 feet horizontally from such tanks. When the voltage is 300 or below a horizontal clearance of not less than 8 feet shall be maintained.

Note: For underground tanks see chapter E 514.

(5) **PITS.** (a) Any pit or depression, any part of which lies within a division 1 or division 2 location as defined herein, shall be considered a class I, division 1 location unless provided with positive and reliable mechanical ventilation.

(b) Any such areas when provided with positive and reliable mechanical ventilation shall be considered a class I, division 2 location.

Note: See Flammable Liquids Code, NFPA No. 30, for discussion of factors pertaining to positive and reliable mechanical ventilation required to prevent formulation of hazardous vapor-air mixtures.

(c) Any pit or depression not within a division 1 or division 2 location as defined herein, but which contains piping, valves or fittings shall be classified as a class I, division 2 location.

(6) **STORAGE AND REPAIR GARAGES FOR TANK VEHICLES.** Storage and repair garages for tank vehicles shall be considered to be a class I, division 2 location up to 18 inches above floor or grade level unless in the judgment of the authority enforcing this code conditions warrant more severe classification or a greater extent of the hazardous area.

(7) **LOCATIONS OUTSIDE THE LIMITS OF HAZARDOUS AREAS.** Office buildings, boiler rooms and other similar locations which are outside the limits of hazardous areas as defined herein, and which are not used for handling or storage of volatile flammable liquids or containers for such liquids, shall not be considered to be hazardous locations.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.03 Wiring and equipment within hazardous areas. All electrical wiring and equipment within the hazardous areas defined in section E 515.02 shall conform to applicable provisions of chapter E 501.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.04 Wiring and equipment above hazardous areas. All fixed wiring above hazardous areas shall be in metallic raceways or shall be type ALS cable. Fixed equipment which may produce arcs, sparks or particles of hot metal, such as lamps and lampholders for fixed lighting, cutouts, switches, receptacles, motors, or other equipment having make and break or sliding contacts, shall be of totally-enclosed type or shall be provided with suitable guards or screens to prevent escape of sparks or hot metal particles. Portable lamps or utilization equipment, and their flexible cords shall conform to the provisions of chapter E 501 for the class of location above which they are connected or used.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.05 Underground wiring. (1) Underground wiring shall be installed in rigid metal conduit, or, where buried under not less than 2 feet of earth, may be installed in non-metallic conduit or duct, or in the form of cable approved for the purpose. Where cable is used, it shall be enclosed in rigid metal conduit from the point of lowest buried cable level to the point of connection to the aboveground raceway.

(2) Conductor insulation shall conform to section E 501.13 of chapter E 501.

(3) Where cable with non-metallic sheath or non-metallic conduit is used, an additional grounding conductor shall be included to provide for metallic continuity of the raceway system and for grounding of non-current-carrying metallic parts of equipment.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.06 Sealing. Approved seals shall be provided in conformance with section E 501.05 and subsections E 501.05 (1) (c) and E 501.05 (2) (b) shall apply to horizontal as well as to vertical boundaries of the defined hazardous areas. Buried raceways under defined hazardous areas shall be considered to be within such areas.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.07 Gasoline dispensing. Where gasoline dispensing is carried on in conjunction with bulk station operations, applicable provisions of chapter E 514 shall apply.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.

E 515.08 Grounding. All metallic raceways, and all non-current-carrying metallic portions of electrical equipment shall be grounded as provided in chapter E 250.

History: Cr. Register, April, 1964, No. 100, eff. 5-1-64.