



ADMINISTRATIVE RULES OF MONTANA



4.12.719 SYSTEMS UTILIZING STATIONARY, PIER-MOUNTED OR SKID-MOUNTED ABOVEGROUND OR UNDERGROUND NON-REFRIGERATED STORAGE

- (1) Design, working pressure and classification of containers:
 - (a) containers shall be constructed in accordance with ARM 4.12.704 with a minimum design pressure of 250 psig;
 - (b) U-68 and U-69 ASME Code containers with a design pressure of 200 psig are acceptable if recertified to 250 psig and equipped with safety relief valves set at 250 psig as stated in ARM 4.12.710(2) .
- (2) Installation of storage containers:
 - (a) Aboveground installation of anhydrous ammonia containers shall be installed on reinforced concrete footings or foundations or structural steel supports mounted on reinforced concrete foundations or sufficient equivalent prepared on gravel pad. The reinforced concrete foundations or footings must extend below the established frost line and shall be of sufficient width and thickness to support the total weight of the containers and contents adequately. The foundations shall maintain the lowest point of the tank at not less than 24 inches above the ground. I-beams shall support the weight of the tank and product.
 - (b) Skid-mounted anhydrous ammonia storage tanks must be installed on permanent concrete footing or adequate floating reinforced concrete slabs. Skid-mounted units shall include all piping and pumps or compressors as one unit. If the design of such a unit precludes a minimum of 24 inches ground-to-tank clearance, bottom-side inlet, outlet valves and piping are prohibited.
 - (c) Horizontal aboveground containers shall be mounted on foundations in such a manner as to permit expansion and contraction. Every container shall be supported so as to prevent the concentration of excessive loads on the supporting portion of the shell. Means of preventing corrosion shall be provided on that portion of the container in contact with the foundations or saddles.
 - (d) Secure anchorage or adequate pier height shall be provided against container flotation wherever high flood water might occur.
 - (e) Distance between aboveground containers over 2000 gallons capacity shall be at least five feet.
 - (f) Container buried underground shall be placed so that the top of the container is at least one foot below the surface of the ground. Should ground conditions make compliance with this requirement impracticable, precautions, such as guard rails, shall be taken to prevent

physical damage to the container. It will not be necessary to cover the portion of the container to which a manhole and other connections are affixed. When necessary to prevent flotation, containers shall be securely anchored or weighted.

- (g) Underground containers shall be set on firm foundations (firm earth may be used) and surrounded with soft earth or sand well tamped in place. As a further means of resisting corrosion, the container, prior to being placed underground, shall be given a protective coating equivalent to hot dip galvanizing or two preliminary coatings of red lead followed by a heavy coating of coal tar or asphalt. The coated container shall be lowered into place in such a manner as to prevent abrasion or other damage to the coating.
- (3) Container valves and accessories:
- (a) all containers shall be equipped with a fixed liquid level gauge;
 - (b) all containers shall be equipped with a vapor pressure indicating gauge having a dial graduated from 0-400 psig;
 - (c) the filling connection shall be fitted with an approved combination back-pressure check valve, excess-flow valve, or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess-flow valve;
 - (d) all containers shall be equipped with an approved vapor return valve;
 - (e) all vapor and liquid connections, except safety relief valves and those specifically exempt in this section, shall be equipped with approved excess-flow valves or fitted with approved remote controlled quick-closing internal valves which shall remain closed, except during operating periods.
- (4) Every container shall be provided with one or more safety relief valves of the spring-loaded type and shall comply with the following:
- (a) The discharge from safety relief valves shall be directed upward, unobstructed into the open air, and away from the container. Vent pipes shall not be restricted nor smaller in size than the relief valve outlet connection. All relief valve discharges shall have raincaps that will allow the free discharge of the vapor and prevent the entrance of water. Provision shall be made for draining condensation which may accumulate.
 - (b) Vent pipes from two or more safety relief devices located on the same unit or similar lines from two or more different units may be run into a common header, provided the cross-sectional area of the header is at least equal to the sum of the cross-sectional area of the individual vent pipes.
- (5) Underground containers:
- (a) Spring-loaded relief valves installed on underground containers may be reduced to a minimum of 30 percent of the rate of discharge specified in Table A. Containers so protected shall not be uncovered after installation until the liquid anhydrous ammonia has been removed. Containers which may contain liquid anhydrous ammonia before being installed underground and before completely covered with earth are to be considered aboveground containers when determining the rate of discharge requirement of the relief valves.
 - (b) The discharge from vent pipes should be above the possible water level on underground installation where there is a probability that the manhole or housing may become flooded. All manholes or housings shall be provided with ventilated louvers or their equivalent. The

area of such openings shall equal or exceed the combined discharge areas of safety relief valves and vent pipes that discharge their content into the manhole housing.

- (6) Each tank or group of tanks shall be marked on at least two approaching sides with the words "Caution-Ammonia" or "Caution-Anhydrous Ammonia" in sharply contrasting colors with letters not less than four inches high.
- (7) Individual storage container capacity shall be limited only by good engineering practice (according to the code) .
- (8) Protection of tank accessories and grounding:
 - (a) Valves and other appurtenances shall be protected against tampering and physical damage. Such appurtenances shall also be protected during the transit of containers intended for installation underground.
 - (b) All connections to underground containers shall be located within a metal dome, housing, or manhole fitted with a metal removable cover.
 - (c) Storage tanks need not be grounded. Where an electrical system exists, such as for lights or pump motors, the electrical system shall be installed and grounded in a manner as required by the National Electrical Code or local ordinance.
 - (d) Manually controlled valves, which if open would allow anhydrous ammonia to discharge into the atmosphere, shall be kept secured when the installation is unattended.
 - (e) All areas occupied by storage installations shall be kept free of dry grass and weeds.
 - (f) The owner of an abandoned storage system shall be responsible for its maintenance, safe disposal of anhydrous ammonia, and shall keep the storage site free of dry grass and weeds.
- (9) Containers once installed underground shall not later be installed aboveground or underground, unless they successfully withstand hydrostatic pressure tests at the pressure specified for the original hydrostatic test as required by the code under which the container was constructed and show no evidence of serious corrosion. Reinstalled containers must also comply with ARM 4.12.719(3) .

Authorizing statute(s): Sec. 80-10-503, MCA

Implementing statute(s): Sec. 80-10-503

History: NEW, 1986 MAR p. 1820, Eff. 10/31/86.