

WAC 296-24-47507 Cylinder systems. (1) **Application.** This section applies specifically to systems utilizing containers constructed in accordance with DOT specifications. All requirements of WAC 296-24-47505 apply to this section unless otherwise noted in WAC 296-24-47505.

(2) **Marking of containers.** You must mark containers in accordance with DOT regulations. Additional markings not in conflict with DOT regulations may be used.

(3) **Description of a system.** A system must include the container base or bracket, containers, container valves, connectors, manifold valve assembly, regulators, and relief valves.

(4) **Containers and regulating equipment installed outside of buildings or structures.**

(a) You must not bury containers below ground. However, this must not prohibit the installation in a compartment or recess below grade level, such as a niche in a slope or terrace wall which is used for no other purpose, providing that the container and regulating equipment are not in contact with the ground and the compartment or recess is drained and ventilated horizontally to the outside air from its lowest level, with the outlet at least three feet away from any building opening which is below the level of such outlet.

Except as provided in WAC 296-24-47505 (10)(n), you must not locate the discharge from safety relief devices less than 3 feet horizontally away from any building opening which is below the level of such discharge and it must not terminate beneath any building unless such space is well ventilated to the outside and is not enclosed on more than two sides.

(b) You must set containers upon firm foundation or otherwise firmly secured; you must guard the possible effect on the outlet piping of settling against by a flexible connection or special fitting.

(5) **Containers and equipment used inside of buildings or structures.**

(a) When operational requirements make portable use of containers necessary and their location outside of buildings or structures is impracticable, containers and equipment are permitted to be used inside of buildings or structures in accordance with (a)(i) through (xii) of this subsection, and, in addition, such other provisions of this section as are applicable to the particular use or occupancy.

(i) Containers in use means connected for use.

(ii) You must equip systems utilizing containers having a water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) with excess flow valves. Such excess flow valves must be either integral with the container valves or in the connections to the container valve outlets. In either case, you must install an excess flow valve in such a manner that any undue strain beyond the excess flow valve will not cause breakage between the container and the excess flow valve. You must take into account the type of valve protection provided during the installation of excess flow valves.

(iii) Regulators, if used, must be either directly connected to the container valves or to manifolds connected to the container valves. The regulator must be suitable for use with LP-gas. Manifolds and fittings connecting containers to pressure regulator inlets must be designed for at least 250 p.s.i.g. service pressure.

(iv) Valves on containers having a water capacity greater than 50 pounds (nominal 20 pounds LP-gas capacity) must be protected while in use.

(v) You must mark containers in accordance with WAC 296-24-47505 (5)(c) and subsection (2) of this section.

(vi) Pipe or tubing must conform to WAC 296-24-47505(8) except that you must not use aluminum pipe or tubing.

(vii) Hose must be designed for a working pressure of at least 250 p.s.i.g. Hose and hose connections must have their correctness as to design, construction and performance determined by listing by a nationally recognized testing laboratory.

(A) The hose length may exceed the length specified in WAC 296-24-47505 (9)(g)(ii), but must be as short as practicable. Refer to federal regulation 29 C.F.R. 1910.7 for definition of nationally recognized testing laboratory.

(B) Hose must be long enough to permit compliance with spacing provisions of this section without kinking or straining or causing hose to be so close to a burner as to be damaged by heat.

(viii) You must equip portable heaters, including salamanders, with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame extinguishment. You must equip such heaters having inputs above 50,000 B.t.u. manufactured on or after May 17, 1967, and such heaters having inputs above 100,000 B.t.u. manufactured before May 17, 1967, with either:

(A) A pilot which must be lighted and proved before the main burner can be turned on; or

(B) An electric ignition system. The provisions of (a)(viii) of this subsection do not apply to tar kettle burners, torches, melting pots, nor do they apply to portable heaters under 7,500 B.t.u.h. input when used with containers having a maximum water capacity of two and one-half pounds. You must not use container valves, connectors, regulators, manifolds, piping, and tubing as structural supports for heaters.

(ix) You must locate containers, regulating equipment, manifolds, pipe, tubing, and hose so as to minimize exposure to abnormally high temperatures (such as may result from exposure to convection or radiation from heating equipment or installation in confined spaces), physical damage, or tampering by unauthorized persons.

(x) You must locate and use heat producing equipment so as to minimize the possibility of ignition of combustibles.

(xi) Containers having water capacity greater than two and one-half pounds (nominal one pound LP-gas capacity) connected for use, must stand on a firm and substantially level surface and, when necessary, you must secure it in an upright position.

(xii) You must install containers, including the valve protective devices, so as to minimize the probability of impingement of discharge of safety relief devices upon containers.

(b) Containers having a maximum water capacity of two and one-half pounds (nominal one pound LP-gas capacity) are permitted to be used inside of buildings as part of approved self-contained hand torch assemblies or similar appliances.

(c) Containers having a maximum water capacity of twelve pounds (nominal five pounds LP-gas capacity) are permitted to be used temporarily inside of buildings for public exhibition or demonstration purposes, including use for classroom demonstrations.

(d) When buildings frequented by the public are open to the public, containers are permitted to be used for repair or minor renovation as follows:

(i) The maximum water capacity of individual containers must be 50 pounds (nominal 20 pounds LP-gas capacity).

(ii) The number of LP-gas containers must not exceed the number of workers assigned to using the LP-gas.

(iii) You must not leave containers having a water capacity of greater than 2 1/2 pounds (nominal one pound LP-gas capacity) unattended in such buildings.

(e) When buildings frequented by the public are not open to the public, containers are permitted to be used for repair or minor renovations, as follows:

The provisions of (f) of this subsection apply except that you must not leave containers having a water capacity greater than 2 1/2 pounds (nominal one pound LP-gas capacity) unattended in such buildings.

(f) Containers are permitted to be used in buildings or structures under construction or undergoing major renovation when such buildings or structures are not occupied by the public, as follows:

(i) The maximum water capacity of individual containers must be 245 pounds (nominal 100 pounds LP-gas capacity).

(ii) For temporary heating such as curing concrete, drying plaster and similar applications, heaters (other than integral heater-container units) must be located at least 6 feet from any LP-gas container. This must not prohibit the use of heaters specifically designed for attachment to the container or to a supporting standard, provided they are designed and installed so as to prevent direct or radiant heat application from the heater onto the container. You must not direct blower and radiant type heater toward any LP-gas container within 20 feet.

(iii) If two or more heater-container units, of either the integral or nonintegral type, are located in an unpartitioned area on the same floor, you must separate the container or containers of each unit from the container or containers of any other unit by at least twenty feet.

(iv) When heaters are connected to containers for use in an unpartitioned area on the same floor, the total water capacity of containers manifolded together for connection to a heater or heaters must not be greater than 735 pounds (nominal 300 pounds LP-gas capacity). Such manifolds must be separated by at least 20 feet.

(v) On floors on which heaters are not connected for use, containers are permitted to be manifolded together for connection to a heater or heaters on another floor, provided:

(A) The total water capacity of containers connected to any one manifold is not greater than two thousand four hundred fifty pounds (nominal one thousand pounds LP-gas capacity) and;

(B) Where more than one manifold having a total water capacity greater than 735 pounds (nominal three hundred pounds LP-gas capacity) are located in the same unpartitioned area, you must separate them by at least 50 feet.

(vi) Storage of containers awaiting use must be in accordance with WAC 296-24-47513.

(g) Containers are permitted to be used in industrial occupancies for processing, research, or experimental purposes as follows:

(i) The maximum water capacity of individual containers must be 245 pounds (nominal 100 pounds LP-gas capacity).

(ii) Containers connected to a manifold must have a total water capacity not greater than 735 pounds (nominal 300 pounds LP-gas capacity) and not more than one such manifold may be located in the same room unless separated at least 20 feet from a similar unit.

(iii) You must limit the amount of LP-gas in containers for research and experimental use to the smallest practical quantity.

(h) Containers are permitted to be used in industrial occupancies with essentially noncombustible contents where portable equipment for space heating is essential and where a permanent heating installation is not practical, as follows: Containers and heaters must comply with and be used in accordance with (f) of this subsection.

(i) Containers are permitted to be used in buildings for temporary emergency heating purposes, if necessary to prevent damage to the buildings or contents, when the permanent heating system is temporarily out of service, as follows:

(i) Containers and heaters must comply with and be used in accordance with (f) of this subsection.

(ii) You must not leave the temporary heating equipment unattended.

(j) Containers are permitted to be used temporarily in buildings for training purposes related in installation and use of LP-gas systems, as follows:

(i) The maximum water capacity of individual containers must be 245 pounds (nominal 100 pounds LP-gas capacity), but the maximum quantity of LP-gas that may be placed in each container must be 20 pounds.

(ii) If more than one such container is located in the same room, you must separate the containers by at least 20 feet.

(iii) You must remove containers from the building when the training class has terminated.

(6) Container valves and accessories.

(a) You must arrange valves in the assembly of multiple container systems so that replacement of containers can be made without shutting off the flow of gas in the system.

Note: This provision is not to be construed as requiring an automatic changeover device.

(b) You must rigidly attach regulators and low-pressure relief devices to the cylinder valves, cylinders, supporting standards, the building walls or otherwise rigidly secured and you must install or protect them so that the elements (sleet, snow, or ice) will not affect their operation.

(c) You must protect valves and connections to the containers while in transit, in storage, and while being moved into final utilization, as follows:

(i) By setting into the recess of the container to prevent the possibility of their being struck if the container is dropped upon a flat surface, or

(ii) By ventilated cap or collar, fastened to the container capable of withstanding a blow from any direction equivalent to that of a thirty-pound weight dropped four feet. Construction must be such that a blow will not be transmitted to the valve or other connection.

(d) When containers are not connected to the system, you must keep the outlet valves tightly closed or plugged, even though containers are considered empty.

(e) You must provide containers having a water capacity in excess of 50 pounds (approximately 21 pounds LP-gas capacity), recharged at the installation, with excess flow or backflow check valves to prevent the discharge of container contents in case of failure of the filling or equalizing connection.

(7) Safety devices.

(a) You must provide containers with safety devices as required by DOT regulations.

(b) You must equip a final stage regulator of an LP-gas system (excluding any appliance regulator) on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

TABLE H-30

Regulatory delivery pressure	Relief valve start to discharge pressure setting (percent of regulator deliver pressure)	
	Minimum	Maximum
1 p.s.i.g. or less _____	200	300
Above 1 p.s.i.g. but not over 3 p.s.i.g. _____	140	200
Above 3 p.s.i.g. _____	125	200

(c) When a regulator or pressure relief valve is used inside a building for other than purposes specified in WAC 296-24-47505 (6)(a)(i) through (vi), the relief valve and the space above the regulator and relief valve diaphragms must be vented to the outside air with the discharge outlet located not less than three feet horizontally away from any building opening which is below such discharge. These provisions do not apply to individual appliance regulators when protection is otherwise provided nor to subsection (5) of this section and WAC 296-24-47505 (10)(n). In buildings devoted exclusively to gas distribution purposes, the space above the diaphragm need not be vented to the outside.

(8) **Reinstallation of containers.** You must not reinstall containers unless they are requalified in accordance with DOT regulations.

Permissible product. You must not place a product in a container marked with a service pressure less than four-fifths of the maximum vapor pressure of product at 130°F.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 15-24-100, § 296-24-47507, filed 12/1/15, effective 1/5/16. Statutory Authority: RCW 49.17.010, [49.17].040 and [49.17].050. WSR 99-17-094, § 296-24-47507, filed 8/17/99, effective 12/1/99. Statutory Authority: Chapter 49.17 RCW. WSR 94-15-096 (Order 94-07), § 296-24-47507, filed 7/20/94, effective 9/20/94; WSR 88-23-054 (Order 88-25), § 296-24-47507, filed 11/14/88; Order 73-5, § 296-24-47507, filed 5/9/73 and Order 73-4, § 296-24-47507, filed 5/7/73.]