



MARIN COUNTY FIRE DEPARTMENT

MARIN COUNTY, CALIFORNIA

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Marin County Fire Department Prevention Bureau Liquefied Petroleum Gas Standard

This standard has been developed pursuant to Chapter 38 of the 2006 International Fire Code as adopted by ordinance by the County of Marin. It is intended that this standard be used as a guide for establishing a reasonable degree of fire and life safety for the storage, handling and transportation of liquefied petroleum gases.

I. Scope

The standard shall apply to the storage, use, handling and transportation of liquefied petroleum gas and the installation, design and construction of all equipment pertinent to systems for such uses.

II. Allowable Areas

The following quantities are the established limits in which bulk storage of liquefied petroleum gases is prohibited:

- A. The storage of more than 12,000 gallons of LPG is hereby prohibited in all areas without specific approval of the Marin County Fire Department.
- B. The storage of any LPG in any residential setting and in all heavily populated or congested commercial areas as established by the County of Marin is prohibited.

Exceptions to the restrictions:

1. Where natural gas lines are not available to directly connect.
2. Limited quantities only when used in conjunction with home LPG barbecues, recreational vehicles, patio heaters, or similar uses. The maximum quantity is 10 gallons water capacity.

III. Permits

Prior to the Marin County Fire Department authorizing installation of a tank system, the applicant shall apply for and obtain a permit from the County Community Development Agency-Building Division. In the case of LPG tanks serving structures, the applicant shall obtain a permit for the piping between the LPG tank and the structure from the County Community Development Agency-Building Division. A Fire Department Permit is required:

- A. To install, store, or maintain any LPG container. The Fire Code Permit shall not be valid until such time that the applicant has received necessary

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approvals from the County Community Development Agency-Building Division.

Exception: In single-family dwellings, portable containers less than 10 gallons water-capacity and where the maximum quantity used or stored does not exceed 10 gallons water capacity.

B. To operate any tank vehicle used for the transportation of LPG.

Note: where a single container or the aggregate capacity of interconnected containers is over 120 gallons water capacity, the installer shall submit three complete sets of plans and specifications including all of the information regarding compliance with the requirements specified in IV below.

IV. Domestic LPG Installation

A. Location of tanks and regulating equipment.

1. Each individual tank shall be located with respect to the nearest important building or line of adjoining property, which may be built upon, or openings in buildings according to the following:

LOCATION OF LPG-GAS CONTAINERS

Container Capacity (gallons)	Minimum Separation Between Containers and Buildings, Public Ways or Lot Lines of Adjoining Property That Can Be Built Upon		Minimum Separation Between Containers (feet) ^{b, c}
	Mounded or Underground Containers (feet) ^a	Above-ground Containers (feet) ^b	
Less than 125 ^{c, d}	10	5 ^e	None
125 to 250	10	10	None
251 to 500	10	10	3
501 to 2,000	10	25 ^{e, f}	3

a. Minimum distance for underground containers shall be measured from the pressure relief device and the filling or liquid-level gauge vent connection at the container, except that all parts of an underground container shall be 10 feet or more from a building or lot line of adjoining property which can be built upon.

b. For other than installations in which the overhanging structure is 50 feet or more above the relief-valve discharge outlet. In applying the distance between buildings and ASME containers with a water capacity of 125 gallons or more, a minimum of 50 percent of this horizontal distance shall also apply to all portions of the building which project more than 5 feet from the building wall and which are higher than the relief valve discharge outlet. This horizontal distance shall be measured from a point determined by projecting the

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outside edge of such overhanging structure vertically downward to grade or other level upon which the container is installed. Distances to the building wall shall not be less than those prescribed in this table.

- c. When underground multi-container installations are comprised of individual containers having a water capacity of 125 gallons or more, such containers shall be installed so as to provide access at their ends or sides to facilitate working with cranes or hoists.
 - d. At a consumer site, if the aggregate water capacity of a multi-container installation, comprised of individual containers having a water capacity of less than 125 gallons, is 500 gallons or more, the minimum distance shall comply with the appropriate portion of the above table, applying the aggregate capacity rather than the capacity per container. If more than one such installation is made, each installation shall be separated from other installations by at least 25 feet. Minimum distances between containers need not be applied.
 - e. The following shall apply to above-ground containers installed alongside buildings:
 1. Containers of less than a 125-gallon water capacity are allowed next to the building they serve when in compliance with Items 2, 3 and 4.
 2. Department of Transportation (DOT) specification containers shall be located and installed so that the discharge from the container pressure relief device is at least 3 feet horizontally from building openings below the level of such discharge and shall not be beneath buildings unless the space is well ventilated to the outside and is not enclosed for more than 50 percent of its perimeter. The discharge from container pressure relief devices shall be located not less than 5 feet from exterior sources of ignition, openings into direct-vent (sealed combustion system) appliances or mechanical ventilation air intakes.
 3. ASME containers of less than a 125-gallon water capacity shall be located and installed such that the discharge from pressure relief devices shall not terminate in or beneath buildings and shall be located at least 5 feet horizontally from building openings below the level of such discharge and not less than 10 feet from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances, or mechanical ventilation air intakes.
 4. The filling connection and the vent from liquid-level gauges on either DOT or ASME containers filled at the point of installation shall not be less than 10 feet from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances or mechanical ventilation air intakes.
 - f. This distance is allowed to be reduced to not less than 10 feet for a single container of 1,200-gallon water capacity or less, provided such container is at least 25 feet from other LP-gas containers of more than 125-gallon water capacity.
2. Within the limits established by zoning requirements of the County of Marin restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested commercial areas, the aggregate capacity of any one installation shall not exceed 10 gallons water capacity, except that in particular installations, this capacity limit may be altered at the discretion of the Chief after consideration of special features such as topographical conditions, nature of the occupancy and proximity to buildings, capacity of proposed tanks, degree of private fire protection to be provided and facilities of the local fire department/district.

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3. Multiple container installations with a total storage water capacity of more than 180,000 gallons (150,000 gallons LP gas capacity) shall be subdivided into groups containing not more than 180,000 gallons in each group. Such groups shall be separated by a distance of not less than 50 feet, unless the tanks are:
 - a. Mounted in an approved manner, or
 - b. Protected with approved insulation on such areas that may be subject to impingement of ignited gas from pipelines or other leakage, or
 - c. Protected by firewalls of approved construction, or
 - d. Protected by an approved system for application of water, or
 - e. Protected by other approved means

Where one of these forms of protection is provided, the separation shall not be less than 25 feet between such container groups.

4. No storage tank shall be located less than 10 feet from the nearest street line or sidewalk.
5. Filling connections for tanks shall not be located less than 15 feet from any opening into or under any building, where such opening is below the level of the filling connection. Avoid, if possible, any situation where the tank is at higher grade than buildings containing sources of ignition.
6. Regulators shall be located outside of buildings.
7. All tanks or cylinders shall be mounted and earthquake braced on stable non-combustible foundations.

B. Piping

1. All piping between the tank control valve and the regulator shall be Schedule #80 (extra strong) or copper, brass or aluminum tubing suitable for a working pressure of 400 psi. This portion of the system shall be tested to the vapor pressure of the gas or 125 psi, whichever is greater.
2. All piping beyond the regulator shall be suitable for a working pressure of 125 psi and tested on 20 psi.
3. All underground piping shall be factory wrapped or coated with asphalt and where possible shall be buried at least 18" below grade.
4. All piping and regulators shall be rigidly supported.

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5. Aluminum fittings and tubing shall not be permitted where connection must be broken in order to fill the tank or cylinder.
6. Any hose used in the system must be approved for L. P. gas service.

C. Signs

1. All tanks over 60 gallons capacity shall have painted on two sides the word "FLAMMABLE" in letters 3 inches in height for tanks up to 500 gallons, and letters 5 inches in height for tanks greater than 500 gallons. In addition the words "NO SMOKING OR OPEN FLAME PERMITTED WITHIN ____ * _____ FEET" shall appear on the sides of the tank or container.
 - * 25 feet – 6- to 120 gallons
 - * 50 feet – 1201 gallons and up

V. Maintenance

A. Minimum requirements for LPG installations:

1. All combustibles shall be removed from within 15 feet of any tank, vaporizer or transfer connections (includes grass and weeds).
2. Above ground tanks shall be protected from impact from vehicles by means of crash posts, fences or railings.
 - a. Where crash posts are used: crash posts shall be six (6) feet long, two (2) feet of which shall be below grade encased in concrete. Posts shall be four (4) inches in diameter and shall be set 48 inches on center and at least three (3) feet from the tank.
 - b. When a fence is used: It shall be six (6) feet in height and a minimum of three (3) feet from tank. All fenced areas shall be kept locked when unattended and shall have at least two means of emergency access.
3. Hose and piping shall be maintained in good repair.
4. Flammable and No Smoking signs shall be maintained
5. Relief valves shall remain unobstructed.

VI. Abandonment of Liquefied Petroleum Gas Equipment

- A. Whenever the use of liquefied petroleum gas equipment has been discontinued, it shall be abandoned in an approved manner within a period of

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thirty (30) days. All of the following procedures may be used when approved by the Chief:

1. Removal of all liquefied petroleum equipment
2. Burn-off of contents of container
3. Venting contents of container to atmosphere when discharge of gas can be led to a safe point of discharge.
4. All service openings shall be capped or plugged after contents have been removed from container

VII. Dispensing and Overfilling

- A. The dispensing of liquefied petroleum gases shall be performed by a qualified attendant.
- B. It shall be illegal for any person, firm, corporation, association, club or organization to operate a self-service liquefied petroleum gas dispensing operation which is open to the public.

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