CHAPTER 35

FLAMMABLE GASES

SECTION 3501
GENERAL

3501.1 Scope. The storage and use of flammable gases shall be in accordance with this chapter. Compressed gases shall also comply with Chapter 30. Gaseous hydrogen systems at consumer sites shall also comply with NFPA 50A.

Exceptions:

1. Gases used as refrigerants in refrigeration systems (see Section 606).
2. Liquefied petroleum gases and natural gases regulated by Chapter 38.
3. Fuel-gas systems and appliances regulated under the *International Fuel Gas Code*.
4. Hydrogen motor fuel-dispensing facilities designed and constructed in accordance with Chapter 22.

3501.2 Permits. Permits shall be required as set forth in Section 105.6.

SECTION 3502
DEFINITIONS

3502.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FLAMMABLE GAS. A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E 681.

FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

SECTION 3503
GENERAL REQUIREMENTS

3503.1 Quantities not exceeding the maximum allowable quantity per control area. The storage and use of flammable gases in amounts not exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 3501 and 3503.

3503.1.1 Special limitations for indoor storage and use. Flammable gases shall not be stored or used in Group A, B, E, I or R occupancies.

Exceptions:

1. Cylinders not exceeding a capacity of 250 cubic feet (7.08m^3) each at normal temperature and pressure (NTP) used for maintenance purposes, patient care or operation of equipment.
2. Food service operations in accordance with Section 3803.2.1.7.

3503.1.1.1 Medical gases. Medical gas system supply cylinders shall be located in medical gas storage rooms or gas cabinets as set forth in Section 3006.

3503.1.1.2 Aggregate quantity. The aggregate quantities of flammable gases used for maintenance purposes and operation of equipment shall not exceed the maximum allowable quantity per control area indicated in Table 2703.1.1(1).

3503.1.2 Storage containers. Cylinders and pressure vessels for flammable gases shall be designed, constructed, installed, tested and maintained in accordance with Chapter 30.

3503.1.3 Emergency shutoff. Compressed gas systems conveying flammable gases shall be provided with approved emergency shutoff valves that can be activated at each point of use and each source.

3503.1.4 Ignition source control. Ignition sources in areas containing flammable gases shall be controlled in accordance with Section 2703.7.

Static-producing equipment located in flammable gas storage areas shall be grounded.

"No Smoking" signs shall be posted in areas containing flammable gases in accordance with Section 2703.6.

3503.1.5 Liquefied flammable gases and flammable gases in solution. Containers of liquefied flammable gases and flammable gases in solution shall be positioned in the upright position or positioned so that the pressure relief valve is in direct contact with the vapor space of the container.

Exceptions:

1. Containers of flammable gases in solution with a capacity of 1.3 gallons (5 L) or less.
2. Containers of flammable liquefied gases, with a capacity not exceeding 1.3 gallons (5 L), designed to preclude the discharge of liquid from safety relief devices.

3503.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of flammable gases in amounts exceeding the maximum allowable quantity per control area indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

SECTION 3504
STORAGE

3504.1 Indoor storage. Indoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1), shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.

3504.1.1 Explosion control. Buildings or portions thereof containing flammable gases shall be provided with explosion control in accordance with Section 911.

3504.2 Outdoor storage. Outdoor storage of flammable gases in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703 and 2704, and this chapter.

3504.2.1 Outdoor storage areas. Outdoor storage areas for flammable gases shall be located in accordance with Table 3504.2.1.

TABLE 3504.2.1
FLAMMABLE GASES DISTANCE FROM OUTDOOR STORAGE AREAS TO EXPOSURES[a]

AGGREGATE QUANTITY PER STORAGE AREA (cubic feet)	MINIMUM DISTANCE TO BUILDINGS, PUBLIC STREETS, PUBLIC ALLEYS, PUBLIC WAYS OR LOT LINES (feet)	MINIMUM DISTANCE BETWEEN STORAGE AREAS (feet)
0-4,225	5	5
4,226-21,125	10	10
21,126-50,700	15	10
50,701-84,500	20	10
84,501 or greater	25	20

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m^3.

a. The minimum required distances shall be reduced to 5 feet when protective structures having a minimum fire-resistance rating of 2 hours interrupt the line of sight between the container and the exposure. The protective structure shall be at least 5 feet from the exposure. The configuration of the protective structure shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

SECTION 3505
USE

3505.1 General. The use of flammable gases in amounts exceeding the maximum allowable quantity per control area indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be in accordance with Sections 2701, 2703 and 2705, and this chapter.