



Carbon Dioxide Beverage Systems Standard

Standard

2018 International Fire Code, Section 5307, Compressed Gasses not Otherwise Regulated National Fire Protection Association (NFPA) 55
Richland Municipal Code

Practice

The storage, use and handling of Carbon Dioxide (CO₂) shall be in accordance with International Fire Code, Section 5307 and applicable requirements of NFPA 55, Chapter 13.

This standard covers the monitoring and alarm notification requirements as they pertain to the use and storage of Carbon Dioxide (CO₂) gas systems using one or more "K" size cylinders (commonly 8"x 47" to the top of the safety cap), the storage or use of over 100 pounds, or as outlined in NFPA 55, whichever is the most restrictive. These requirements shall apply to new and existing CO₂ beverage systems as well as storage facilities or areas.

Guide

INSTALLATION

CO₂ systems and all their components shall be located in approved locations. The installer shall provide the following information to the Fire Marshal's Office for approval:

1. A detailed drawing on a floor plan showing the location of the CO₂ tank, plumbing, connections, filling point and pressure relief venting point.
2. If mechanical ventilation is used, in accordance with IFC 5307.5.1, a detailed drawing showing the location of the exhaust ventilation shall be provided to the building department, as well as the Fire Marshal's Office.
 - Provide mechanical ventilation system information and calculations.
 - Exhaust shall be taken from a point within 12 inches from the floor.
3. If an emergency alarm gas detection system is used in accordance with IFC 5307.5.2, provide the following to the Fire Marshal's Office:
 - A detailed floorplan showing the location of CO₂ monitoring sensors, strobes and other components.
 - Provide CO₂ monitoring equipment information manual and specification sheets.
 - The threshold for activation of an alarm shall not exceed 5,000 parts per million (ppm).

4. Installation of an emergency alarm gas detection system shall be installed according to manufacturer's specifications if not otherwise specified hereinafter.
5. Use of Automatic Background/Baseline Calibration (ABC) sensors shall be prohibited.
6. If not specified by the manufacturer, one sensor shall be required for up to 2,000 square feet of floor area. Where the protected space exceeds 2,000 square feet of floor area, additional sensors shall be installed so that one sensor is installed for every 2,000 square feet of floor space required to be protected.
7. When CO2 sensors are required to be installed in open areas, an audible/strobe signaling device (80 dBa/100 candela) shall be installed in the best location providing the earliest warning to occupants entering the space where a CO2 system is installed, as determined by the Fire Marshal's Office.
8. Sensors shall be installed no more than eighteen inches (18") from the floor.
9. Sensors shall be installed no more than 10' from a CO2 tank or bib rack.
10. When CO2 sensors are required to be installed in an enclosed space or rooms, an audible/strobe signaling device (80 dBa/100 candela) shall be installed inside the space and an additional audible/strobe signaling device (80 dBa/100 candela) shall be installed outside the enclosed space to indicate an alarm condition exists inside the enclosed space or room.
11. A sensor shall be required in a walk-in, draft beer cooler connected to the CO2 system.
12. Sensors shall be installed in a manner preventing damage to the sensor. An additional sensor may be required at the discretion of the Fire Marshal's Office at any point where the CO2 system is vulnerable to mechanical damage which could cause a leak.

SIGNAGE INSTALLATION GUIDELINES

All AHJ approved CO2 warning signs shall be 48 square inches in size and clearly legible from 15' away, or written in 1" tall adhesive vinyl letters in an all capitalized Arial bold font and highly contrasting in color.

1. Signs shall be posted four inches 4" below all CO2 alarm strobes stating:

**CARBON DIOXIDE GAS FLASHING LIGHT – LEAK DETECTED
EVACUATE / CALL 911**

2. Signs shall be posted outside the entrance to all buildings, enclosures, spaces or remote locations stating:

**CARBON DIOXIDE GAS
DO NOT ENTER WHEN LIGHT IS FLASHING EVACUATE / CALL
911**

Grow cultivation rooms/areas using or storing more than 100 pounds of CO2 shall have the following signs posted on the exterior doors:



TESTING AND MAINTENANCE CO2 SYSTEMS

CO2 alarm systems shall be inspected and serviced annually by an authorized professional service technician to ensure correct operation.

- Testing and maintenance of emergency alarm gas detection system shall be, at a minimum, tested and maintained according to manufacturer's specifications if not otherwise specified hereinafter.
- The CO2 system shall be checked for damage, wearing or missing components.
- The ventilation system (if applicable) shall be tested for correct operation.
- The emergency alarm system (if applicable) shall be tested for correct operation. Test shall include sensor detection of CO2 gas as recommended by the manufacture.
- Gas detection monitoring sensors shall be calibrated annually or as required by the manufacturer.
- Gas detection monitoring sensors shall be replaced every ten (10) years or as required by the manufacturer.
- The system shall be tagged by an authorized inspection company, indicating ALL systems were inspected and are in good working order.
- Records of work done shall be maintained on-site along with the device User Manual for review by the Code official and a copy of the maintenance record shall be provided to the Fire Marshal's Office in a manner prescribed in the Richland Municipal Code.

Any CO2 system found not to be in good working order shall be shut down and taken out-of-service immediately until appropriate corrections are made by professional personnel.

SAVINGS CLAUSE: Nothing outlined in this document shall be less than the minimum recommendations set forth by the device manufacturer. The intent is to provide specific guidance for installation and testing where not outlined by the manufacturer or to fortify the manufacture's recommendations.