



CARBON DIOXIDE (CO₂) SYSTEMS USED IN BEVERAGE DISPENSING APPLICATIONS

These guidelines are to be followed when a Carbon Dioxide (CO₂) system used in beverage dispensing applications is moved, installed, or otherwise added, within the City of Rockwall City Limits.

All Carbon Dioxide system requirements for the purposes of these guidelines and any other guidelines or requirements of the Rockwall Fire Prevention Education and Investigation (FPE&I) Division shall conform to the 2021 International Fire Code, as adopted and amended by the City of Rockwall.

These guidelines do not replace, nor supersede any codes and/or ordinances adopted by the City of Rockwall, or determinations and positions of the Rockwall FPE&I Division.

General Requirements

1. Carbon dioxide systems with more than 100 pounds of carbon dioxide used in beverage dispensing applications shall obtain a permit from the Rockwall FPE&I Division.

Equipment

2. The storage, use, and handling of liquid carbon dioxide shall be in accordance with this guideline as outlined in the International Fire Code Chapter 53 and the applicable requirements of NFPA 55, Chapter 13. Insulated liquid carbon dioxide systems shall have pressure relief devices vented in accordance with NFPA 55.

Protection From Damage

3. Carbon Dioxide systems shall be installed so the storage tanks, cylinders, piping and fittings are protected from damage by occupants or equipment during normal facility operations.

Required Protection

4. Where carbon dioxide systems with more than 100 pounds of carbon dioxide has carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing carbon dioxide storage tanks, cylinders, piping and fittings and other areas where a leak of carbon dioxide can collect shall be provided with either ventilation or a gas detection system as outline below.

a. Ventilation

- i. Installation shall be in accordance with the International Mechanical Code.
- ii. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per square foot [$0.00508 \text{ m}^3/(\text{s} \times \text{m}^2)$] of floor area over the storage area.
- iii. Systems shall operate continuously unless alternative designs are approved.
- iv. A manual shutoff control shall be provided outside of the room in a position adjacent to the access door to the room or in an approved location. The switch shall be a break-glass or other approved type and shall be labeled: "VENTILATION SYSTEM EMERGENCY SHUTOFF."
- v. Exhaust ventilation shall be designed to consider the density of the potential fumes or vapors released. For fumes or vapors that are heavier than air, exhaust shall be taken from a point within 12 inches (305 mm) of the floor. For fumes or vapors that are lighter than air, exhaust shall be taken from a point within 12 inches (305 mm) of the highest point of the room.



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- vi. The location of both the exhaust and inlet air openings shall be designed to provide air movement across all portions of the floor or room to prevent the accumulation of vapors.
- vii. Exhaust air shall not be recirculated to occupied areas if the materials stored are capable of emitting hazardous vapors and contaminants have not been removed. Air contaminated with explosive or flammable vapors, fumes or dusts; flammable, highly toxic or toxic gases; or radioactive materials shall not be recirculated.
- viii. Designed to maintain the room containing carbon dioxide at a negative pressure in relation to the surrounding area.

b. Gas Detection System

- i. Where ventilation is not provided in accordance with IFC Section 5307.3.1, a gas detection system shall be provided in rooms or indoor areas and in below-grade outdoor locations with insulated carbon dioxide systems. Carbon dioxide sensors shall be provided within 12 inches (305 mm) of the floor in the area where the gas is expected to accumulate or other approved locations. The system shall be designed as follows:
 - ii. Activates an audible and visible supervisory alarm at a normally attended location upon detection of a carbon dioxide concentration of 5,000 ppm (9000 mg/m³).
 - iii. Activates an audible and visible alarm within the room or immediate area where the system is installed upon detection of a carbon dioxide concentration of 30,000 ppm (54 000 mg/m³).

Signage

5. Hazard identification signs shall be posted at the entrance to the room and indoor areas where the carbon dioxide enrichment process is located, and at the entrance to the room or indoor area where the carbon dioxide containers are located. The sign shall be not less than 8 inches (200 mm) in width and 6 inches (150 mm) in height and indicate:

CAUTION—CARBON DIOXIDE GAS
VENTILATE THE AREA BEFORE ENTERING.
A HIGH CARBON DIOXIDE (CO₂)
GAS CONCENTRATION IN THIS AREA CAN CAUSE ASPHYXIATION.

Submittal Requirements

6. Please upload the following documents when submitting your permit online:
 - a. Floor plans showing location of all equipment.
 - b. Equipment/Product Data Cutsheets

Inspection Requirements

7. Operational test under normal conditions and alarm conditions.
8. Required Signage: All required signage is in place.
9. Call our office for inspection when installation is completed and prior to release of Certificate of Occupancy.