

**MCKINNEY FIRE DEPARTMENT  
FIRE MARSHAL'S OFFICE**

**CARBON DIOXIDE (CO<sub>2</sub>)  
BEVERAGE DISPENSING**

**SCOPE**

These guidelines are to be followed when a business proposes to install or modify a Carbon Dioxide (CO<sub>2</sub>) Beverage Dispensing System with more than 100 pounds of CO<sub>2</sub>. These can be found in restaurants, convenience stores and other similar locations.

**EXISTING INSTALLATIONS OPERATIONAL PERMIT REQUIREMENTS**

Existing installations with more than 100 pounds of Carbon Dioxide shall be required to obtain an Operational Permit.

Existing installations shall comply with the same provisions for new installations *only when modified or replaced*.

**NEW INSTALLATIONS**

New, and retrofit Carbon Dioxide (CO<sub>2</sub>) installation with a capacity more than 100 pounds are required to obtain a construction permit prior to installation. Installations must comply with the provisions of the 2015 International Fire Code. At a minimum, all equipment must be in compliance with Section 5307 of the 2015 IFC.

New installations with more than 100 pounds of Carbon Dioxide (CO<sub>2</sub>) shall be required to obtain an Operational Permit, and will be issued concurrently with the Construction Permit.

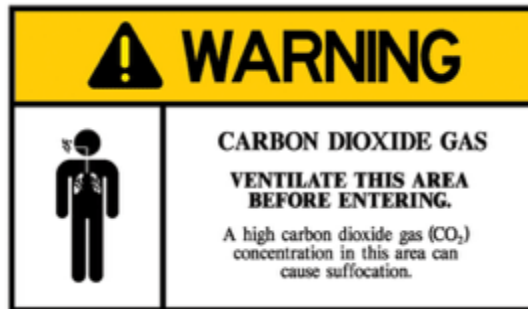
1. All equipment shall be in accordance with the 2015 IFC and applicable provisions of NFPA 55, Chapter 13.
2. Insulated systems shall have pressure relief devices vented in accordance with NFPA 55.
3. The system shall be installed so that all tanks and components are protected from damage.
4. When cylinders, tanks, piping and equipment are located indoors, rooms or areas containing tanks, piping, fittings and other areas where a leak can collect shall be provided with ventilation or an emergency alarm system.
5. Ventilation. Mechanical ventilation shall be in accordance with the 2015 International Mechanical Code and shall comply with all of the following:
  - a. Mechanical ventilation in the room or area shall be at a rate of not less than 1 cubic foot per minute per square foot.
  - b. Exhaust shall be taken from a point within 12 inches of the floor.
  - c. The ventilation system shall be designed to operate at a negative pressure in relation to the surrounding area. Ventilation shall run continuously or be activated by a sensor or detector to maintain an atmosphere of less than 5,000 ppm.
  - d. Permit from the Building Inspections Department will be required.
6. Emergency alarm system. An emergency alarm system shall comply with all of the following:
  - a. Continuous gas detection shall be provided to monitor areas where carbon dioxide (CO<sub>2</sub>) can accumulate.
  - b. Threshold for activation of an alarm shall not exceed 5,000 ppm
  - c. Detection equipment shall be provided to indicate carbon dioxide (CO<sub>2</sub>) levels at each point of use and in each storage.
  - d. Activation of the emergency alarm system shall initiate a local alarm within the room or area in which the system is installed. If the building is equipped with a Fire Alarm Control Panel (FACP), the emergency alarm shall report to the FACP.

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- e. Gas detection equipment shall be installed, calibrated, maintained and replaced in accordance with the manufactures instructions. The manufactures instructions together with calibration and maintenance records shall be posted in the immediate vicinity of the gas detection equipment.
  - f. Notification devices (horn/strobes) shall be installed in each room/area where a detector is located.
7. Piping, tubing and hose materials shall be compatible with carbon dioxide and rated for the temperatures and pressures encountered in the system
  8. A warning sign shall be posted at the entrance to the building, room, enclosure, area where the container is located. The warning sign shall be at least 8 inches wide and 6 inches high and state the following:

CAUTION — CARBON DIOXIDE GAS.  
Ventilate the area before entering.  
A high carbon dioxide (CO<sub>2</sub>) gas concentration in this area can cause suffocation



EXAMPLE

9. Pressure relief devices shall be piped to the outdoors where the discharge will not impinge on the structure, personnel, or means of egress and will not create a hazardous concentration of carbon dioxide.
10. Containers, cylinders, and tanks shall be provided with a pressure gauge and a level gauge or device for indicating the quantity of liquid carbon dioxide. These devices shall be designed for the temperatures and pressures associated with liquid carbon dioxide service. Where containers, cylinders, and tanks are in locations remote from the filling connection, a means to determine when the containers have been filled to their design capacity shall be provided and shall be verifiable from the filling connection.
11. NFPA 704 Diamond shall be posted at the exterior door near the CO<sub>2</sub> tank.

To expedite the plan review and inspection processes, please refer to the information listed below.

### PERMITTING REQUIREMENTS

12. Provide a written description of the operation and any associated systems.
13. Equipment location drawings of the actual configuration to include:
  - a. Location(s) of CO<sub>2</sub> tank(s).
  - b. Site Plan and/or Floor plan of the installation.
  - c. Location(s) of all means of egress (exits).
  - d. Plans shall be dimensioned and scaled.
14. A full equipment listing.
15. Manufacturer documentation for all parts and materials used in the project. This is to include all UL or NRTL listings and evaluations.
16. Drawings shall be submitted for review and approval, PRIOR to installation.
17. Drawings shall be generated by the installing company specific to the installation, and shall not be copied. Drawings shall show plan view and other pertinent information.
18. The submittal package must include all above requirements and be identified in the submittal package.

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19. No CO<sub>2</sub> beverage dispensing systems shall be installed on the site until a Permit has been issued. Any work performed prior to the issuance of this permit may result in a citation being issued for violation of Section 113.3 of the 2015 International Fire Code.

### **GENERAL SUBMITTAL REQUIREMENTS**

20. Each submittal shall have a completed McKinney Fire Department Plan Review Permit Application.
21. Plans approved by the Fire Marshal's Office give authorization for installation. Final approvals are subject to field verification. Any approval issued by the Fire Marshal's Office does not release the contractor or property owner from the responsibility of full compliance with all applicable codes and ordinances.
22. All fire department inspection forms and permits shall be kept on the job site until final inspection.
23. All installations shall comply with the approved plans. Any deviation from the approved plans requires a re-submittal to the Fire Marshal's Office.

All Carbon Dioxide (CO<sub>2</sub>) installations for the purposes of this guideline and any other guidelines or requirements of the Fire Department shall conform to the 2015 International Fire Code, as adopted and amended by City of McKinney.

This guide does not replace, nor supersede any codes and/or ordinances adopted by the City of McKinney, or determinations and positions of the Fire Chief or Fire Marshal.