CLARK COUNTY FIRE DEPARTMENT - FIRE PREVENTION BUREAU
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Permit Submittal Guideline

CARBON DIOXIDE FOR BEVERAGE DISPENSING SYSTEMS

This guide is to assist in the permitting process for obtaining an annual renewable operational permit for liquid carbon dioxide in beverage dispensing applications. Gaseous CO_2 systems that use a single-valve high pressure cylinder are not covered by this guide. An annually renewable operational permit is required per section 105.64 of the IFC.

PERMIT REQUIREMENTS:

A permit is required when permit threshold is exceeded.

FLUID STATE	AMOUNT
LIQUID	100 LBS
GAS	875 CU.FT.

APPLICABLE CODES:

The following codes and standard apply to this permit.

- *International Fire Code*, 2024 edition (IFC)
- *Clark County Fire Code Amendments*, 2024 edition (CCFC)
- *Standard System for the Identification of the Hazards of Materials for Emergency Response, 2022 Edition NFPA 704*
- *Compressed Gases and Cryogenic Fluids Code,* 2023 edition NFPA 55

SUBMITTAL REQUIREMENT CHECKLIST:

The requirements listed in this guide are not intended to be all inclusive, nor do they entail a limit to the extent of the information, etc., which may be necessary to properly evaluate the submitted plans and documents. Reference IFC Section 5307.4.1 and Chapter 13 of NFPA 55, not all items may apply to your project.

Consolidate your PDFs and upload all applicable information that pertains to your permit to the PLAN ROOM.

1. **PROJECT INFORMATION:**
   - Project name, address, and APN (Assessor's Parcel Number).
   - Contractor's/Owner's contact information.

2. **PLAN INFORMATION: Provide Plan showing the following items**
   a. **BUILDING:**
      - Provide a diagram of the building and all areas of the project.

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b. TANK:

- Include make and model of tank including the size of CO_2 in pounds (lbs.)
- Show tank location.
- Provide information on tank restraint.

c. PIPING: Show piping routing and connections on plans to the following locations;

- Clarify pipe type include make/model; ensure it is suitable for gaseous/liquid carbon dioxide service.
- Provide fill box and vent location and routing to tank. (Placing the fill box as close as possible to the bulk tank is recommended.)
- Provide gaseous CO_2 supply line from bulk tank to the "bag in box" soda syrup containers.
- Provide a diagram of the "bag in box" soda syrup supply line routing to the beverage dispenser.

d. SIGNAGE: Provide the location of the required signage on plans and provide examples of each on plans:

- An NFPA 704 hazard identification placard is required on the exterior door.
- **NFPA 704 placards:**

Refrigerated Liquid (in dewers) Placard: Gaseous CO_2 Placard:





- As required by the IFC, a CO_2 warning signage shall be posted outside of the room or enclosure and where the tank is located. It shall be at least 8 inches wide and 6 inches high and state exactly:

CAUTION – CARBON DIOXIDE GAS

VENTILATE THE AREA BEFORE ENTERING.
A HIGH CARBON DIOXIDE (CO_2)
GAS CONCENTRATION
IN THIS AREA
CAN CAUSE ASPHIXIATION

3. NOTIFICATION:

- A CO_2 detection alarm horn and strobe are required at the exterior door (to warn people not to enter) and at the primary monitor at the tank (to warn people inside of an alarm).
- The CO_2 detection alarm strobe must be tinted (colored) and not with a clear lens as not to be confused with fire alarm and audible must be at least 15dB louder than ambient.

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- CO_2 detection alarms are local to the CO_2 system and are not required to be connected to a fire alarm system or monitored by a fire alarm supervising station.

4. **SYSTEM ACTIVATION:** The submittal should include these details verifying that the liquid CO_2 monitoring system will activate as intended.
    - Monitor location (usually at the tank)
    - CO_2 sensor's locations: including tank location, at the carbonator, and any room or compartment where the CO2 filled lines pass through.
    - Correct sensor set points: 5,000ppm for a supervisory alarm at a normally attended location and at 30,000ppm to activate an audible and visual alarm within the room or immediate area and also stop the flow of CO_2 (usually by solenoid).
    - The sensor mounting height at 12 inches above finished floor or per manufacturer's specifications.

5. **MANUFACTURER'S SPECIFICATIONS:** Provide a copy of manufacturer's specification sheets for all components including the tank, supply lines, fill lines, CO_2 monitors, tank strapping, vent line, exterior fill box and CO_2 signage. All equipment shall be listed for its use.

PERMIT DURATION:

Liquid Carbon Dioxide for beverage dispensing are Operational Permits and are limited to a duration of one (1) year and shall be renewed annually. Modifications must be submitted.

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