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Fire Marshal's Office

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Insulated liquid Carbon Dioxide Systems used in beverage dispensing applications.

Insulated liquid carbon dioxide systems with more than 100 pounds (45.4 kg) of carbon dioxide used in beverage dispensing applications shall comply with [Section 5307.3.1](#).

Ventilation.

Where insulated liquid carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing storage tanks, cylinders, piping and equipment, and other areas where a leak of carbon dioxide is expected to accumulate, shall be provided with mechanical ventilation in accordance with [Section 5004.3](#) and designed to maintain the room containing carbon dioxide at a negative pressure in relation to the surrounding area.

Exception: A gas detection system complying with [Section 5307.3.2](#) shall be permitted in lieu of mechanical ventilation.

Gas detection system.

Where ventilation is not provided in accordance with [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:

1. 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).
2. 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).

The following information shall be provided with the Fire Marshal Application for permit:

- Total aggregate quantity of liquid carbon dioxide in pounds or cubic feet at *normal temperature and pressure*.
- Location and total volume of the room where the carbon dioxide enrichment operation will be conducted. Identify whether the room is at grade or below grade.
- Location of containers relative to equipment, building openings and *means of egress*.
- Manufacturer's specifications and pressure rating, including cut sheets, of all piping and tubing to be used.

FEE \$80.00 (Check by Mail or Cash/Credit payable to Town of Greece Clerk)

- A piping and instrumentation diagram that shows piping support and remote fill connections.
- Details of container venting, including but not limited to vent line size, material and termination location.
- Alarm and detection system and equipment, if applicable.
- Seismic support for containers.

Equipment.

Pressure relief, vent piping, fill indicators, fill connections, vent terminations, piping systems and the storage, use and handling of the carbon dioxide shall be in accordance with [Chapter 53](#) and [NFPA 55](#).

System activation.

Activation of the low-level gas detection system alarm shall automatically:

1. Stop the flow of carbon dioxide to the piping system.
2. Activate the mechanical exhaust ventilation system.
3. Activate an audible and visible supervisory alarm signal at an *approved* location within the building.

Activation of the high-level gas detection system alarm shall automatically:

1. Stop the flow of carbon dioxide to the piping system.
2. Activate the mechanical exhaust ventilation system.
3. Activate an audible and visible evacuation alarm both inside and outside of the carbon dioxide enrichment area, and the area in which the carbon dioxide containers are located.

Pressurization and ventilation.

Rooms or indoor areas in which carbon dioxide enrichment is provided shall be maintained at a negative pressure in relation to the surrounding areas in the building. A mechanical ventilation system shall be provided in accordance with the [Mechanical Code of New York State](#) that complies with all of the following:

1. Mechanical ventilation in the room or area shall be at a rate of not less than 1 cfm per square foot [0.00508 m³/(s • m²)].
2. When activated by the gas detection system, the mechanical ventilation system shall remain on until manually reset.
3. The exhaust system intakes shall be taken from points within 12 inches (305 mm) of the floor.
4. The ventilation system shall discharge to the outdoors in an *approved* location.

Signage.

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.

Seismic and structural design.

Carbon dioxide system containers and piping shall comply with the seismic design requirements in [Chapter 16](#) of the Building Code of New York State and shall not exceed the floor loading limitation of the building.

Container refilling.

Carbon dioxide containers located indoors shall not be refilled unless filled from a remote connection located outdoors.

APPROPRIATE SIGNAGE

