Seattle Fire Department
Permit Conditions

7403

CO_2 Systems Used in Beverage Dispensing or CO_2 Used in Enrichment or Extraction Systems (Cannabis Operations)

NOTICE

This permit shall be kept on the premises designated herein at all times and shall be readily available for inspection by the fire code official. (SFC 105.3.5)

1. An operational permit is required for carbon dioxide systems used in beverage dispensing applications or carbon dioxide enrichment systems having more than 100 pounds of carbon dioxide. (SFC 105.6.10)

Beverage Dispensing Systems

2. *Compressed gas* systems shall be suitable for the use intended and shall be designed by persons competent in such design. Compressed gas equipment, machinery and processes shall be listed or approved. (SFC 5305.1)

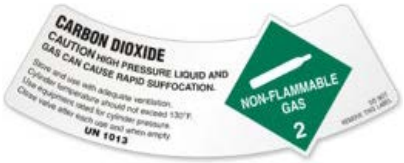
3. Unless otherwise exempted by the *fire code official*, visible hazard identification signs as specified in NFPA 704 for the specific material contained shall be placed on stationary containers and aboveground tanks and at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit and at specific entrances and locations designated by the *fire code official* (SFC 5003.5)

4. A warning sign shall be posted at the entrance to the building, room, enclosure, or confined 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_2) gas concentration in this area can cause suffocation.

5. Stationary compressed gas containers, cylinders and tanks shall be marked with the name of the gas and shall be labeled with visible hazard identification signs in accordance with NFPA 704. Such markings shall be visible from any direction of approach; in English as a primary language or in approved symbols; durable, and the size, color and lettering shall be approved. Such markings shall not be obscured or removed.
(SFC 5303.4, 5303.4.1)

6. Portable containers, cylinders and tanks shall be marked in accordance with Compressed Gas Association (CGA) C-7.
(SFC 5303.4.2)



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7. Piping systems shall be marked in accordance with ANSI A13.1. Markings used for piping systems shall consist of the contents name and include a direction of flow. Markings shall be provided at each valve; at wall, floor and ceiling penetrations, at each change of direction, and at a minimum of every 20 feet or fraction thereof throughout the piping run. (SFC 5303.4.3)

8. Areas used for the storage, use and handling of compressed gas shall be secured against unauthorized entry and safeguarded in an approved manner. (SFC 5303.5.1)

9. 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. (SFC 5307.4)

10. Where 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 mechanical ventilation in accordance with Section 5004.3.1 or a gas detection system in accordance with Section 5307.3.2. (SFC 5307.3)

    Ventilation. Mechanical ventilation shall be in accordance with the *International Mechanical Code* and shall comply with all of the following:

    1. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per square foot [0.00508 m3/(s • m2)] of floor area over the storage area.
    2. Systems shall operate continuously unless alternative designs are approved.
    3. 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.
    4. Exhaust shall be taken from a point within 12 inches (305 mm) of the floor.
    5. The location of both 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.
    6. Exhaust air shall not be recirculated to occupied areas.
    7. System shall be designed to maintain the room containing carbon dioxide at a negative pressure in relation to the surrounding area.

    OR

    Gas detection system. A gas detection system shall comply with all of the following when ventilation is not provided in accordance with SFC 5307.3.1:

    1. Carbon dioxide sensors shall be provided with 12 inches (305 mm) of the floor in the area where the gas is expected to accumulate or other approved locations.
    2. An audible and visible supervisory alarm at a normally attended location shall activate upon detection of a carbon dioxide concentration of 5,000 ppm (9,000 mg/m3).
    3. An audible and visible alarm within the room or immediate area where the system is installed shall activate upon detection of a carbon dioxide concentration of 30,000 ppm (54 000 mg/m3).

11. Compressed gas containers, cylinders and tanks and systems that could be exposed to physical damage shall be protected. Guard posts or other approved means shall be provided to protect compressed gas containers, cylinders, tanks and systems indoors. Vehicle impact protection per SFC 312 shall be provided to protect compressed gas containers, cylinders, tanks and systems outdoors. (SFC 5303.5.2)

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12. Compressed gas containers, cylinders, tanks and systems shall be secured to prevent falling by one of the following methods:
    - Securing to a fixed object with one or more restraints,
    - Securing on a cart or other mobile device designed for movement,
    - Nesting at container filling or servicing facilities or in seller's warehouses not accessible to the public,
    - Securing to or within a rack, framework, cabinet or similar assembly. (SFC 5303.5.3)

13. Compressed gas container, cylinder and tanks shall have protective caps, collars or other protective devices in place except when the containers, cylinders or tanks are in use or being serviced or filled. (SFC 5303.6.1)

14. Combustible waste, vegetation and similar materials shall be kept a minimum of 10 feet from compressed gas containers, cylinders, tanks and systems. (SFC 5303.7.2)

15. Compressed gas containers, cylinders and tanks shall not be placed near elevators, unprotected platform ledges or other areas where falling would result in compressed gas containers, cylinders or tanks being allowed to drop distances exceeding one-half the height of the container, cylinder or tank. (SFC 5303.7.3)

16. Compressed gas containers, cylinders and tanks, whether full or partially full, shall not be exposed to artificially created high temperatures exceeding 125 degrees F or subambient (low) temperatures unless designed for use under the exposed conditions. (SFC 5303.7.4)

17. Compressed gas containers, cylinders and tanks shall not be placed in areas where they are capable of being damaged by falling objects. (SFC 5303.7.5)

18. Compressed gas containers, cylinders, tanks and systems shall not be exposed to corrosive chemicals which could damage containers, cylinders, tanks, valves or valve-protective caps. (SFC 5303.7.8)

19. Service, repair modification or removal of valves, pressure-relief devices or other compressed gas container, cylinder or tank appurtenances shall be performed by trained personnel. (SFC 5303.9)

20. Leaking, damaged or corroded compressed gas containers, cylinders and tanks shall be removed from service. Leaking, damaged or corroded compressed gas cylinders and tanks shall be replaced, or repaired in accordance with the following:
    1) Compressed gas containers, cylinders and tanks which have been removed from service shall be handled in an approved manner.
    2) Compressed gas systems which are determined to be leaking, damaged or corroded shall be repaired to a serviceable condition or removed from service. (SFC 5303.12)

21. To prevent bottom corrosion, containers, cylinders and tanks shall be protected from direct contact with soil or unimproved surfaces. (SFC 5303.13)

22. Compressed gas containers, cylinders and tanks, except those designed for use in a horizontal position, and all compressed gas containers, cylinders and tanks containing nonliquefied gases, shall be stored in an upright position with the valve end up. An upright position shall include conditions where the container, cylinder or tank axis is inclined as much as 45 degrees from the vertical. (SFC 5304.1)

23. Transfer of gases between containers, cylinders and tanks shall be performed by qualified personnel. (SFC 5305.7)

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Enrichment Systems

24. A gas detection system shall be provided in rooms or indoor areas in which the carbon dioxide enrichment process is located, in rooms or indoor areas in which container systems are located, and in other areas where carbon dioxide is expected to accumulate. Carbon dioxide sensors shall be provided within 12 inches of the floor in the area where the gas is expected to accumulate or leaks are most likely to occur. The system shall be designed as follows:

    1. Activates a low-level alarm upon detection of a carbon dioxide concentration of 5,000 ppm. Upon activation the system shall automatically stop the flow of carbon dioxide to the piping system, activate the mechanical exhaust ventilation system and activate an audible and visible supervisory alarm signal at an approved location in the building.

    2. Activates a high-level alarm upon detection of a carbon dioxide concentration of 30,000 ppm. Upon activation the system shall automatically stop the flow of carbon dioxide to the piping system, activate the mechanical exhaust ventilation system, and 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. (SFC 5307.4.3 & 5307.4.3.1)

25. 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 Seattle Mechanical Code and the following:
    1. Mechanical ventilation in the room or area shall be at a rate of not less than 1 cfm per square foot.
    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 of the floor.
    4. The ventilation system shall discharge to the outdoors in an approved location. (SFC 5307.4.4)

26. Hazardous 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 in width and 6 inches in height and indicate:

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

27. Carbon dioxide containers located indoors shall not be refilled unless filled from a remote connection located outdoors. (SFC 5307.4.7)

28. A building permit issued by the Seattle Department of Construction and Inspections (SDCI) is required for any modifications made to the building. If the occupancy of the building using flammable or combustible liquids for plant extraction is other than a Group F-1, a building permit for a change of occupancy is required from SDCI. If the quantity of hazardous materials exceeds the maximum allowable quantities per Chapter 50 of the SFC, the occupancy is required to be a Group H and will require the installation of automatic fire sprinkler system in addition to other safety features depending on the specific hazards within the building.

29. An electrical permit issued by SDCI is required any time electrical wiring is installed, altered, extended, or connected to any electrical equipment.

30. A mechanical permit issued by SDCI is required for the installation of mechanical equipment such as exhaust or fume hood systems.

31. A plumbing permit issued by Public Health-Seattle & King County is required for the installation of gas piping.

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32. A pressure vessel permit issued by SDCI is required for unfired pressure vessels that operate at pressures greater than 250 psi or with a volume greater than 5 cubic feet.

Extraction Systems

33. Mechanical ventilation shall be provided per SFC section 5004.3 The system shall be operational during such time the building or space is occupied. Exhaust ventilation systems shall comply with all of the following:

    1. Installation shall be in accordance with the *International Mechanical Code*.
    2. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per square foot of floor area over the storage area.
    3. Systems shall operate continuously unless alternative designs are *approved*.
    4. 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.
    5. 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.
    6. 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.
    7. 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. (SFC 5004.3 & 5307.2)

34. A gas detection system shall be permitted in lieu of mechanical ventilation listed in #28. The gas detection system is required to comply with SFC section 916 or where approved an oxygen depletion alarm system, which initiates audible and visible alarm signals in the room or area where sensors are installed shall be provided. (SFC 5307.2.1)

35. A building permit issued by the Seattle Department of Construction and Inspections (SDCI) is required for any modifications made to the building. If the occupancy of the building using flammable or combustible liquids for plant extraction is other than a Group F-1, a building permit for a change of occupancy is required from SDCI. If the quantity of hazardous materials exceeds the maximum allowable quantities per Chapter 50 of the SFC, the occupancy is required to be a Group H and will require the installation of automatic fire sprinkler system in addition to other safety features depending on the specific hazards within the building.

36. An electrical permit issued by SDCI is required any time electrical wiring is installed, altered, extended, or connected to any electrical equipment.

37. A mechanical permit issued by SDCI is required for the installation of mechanical equipment such as exhaust or fume hood systems.

38. A plumbing permit issued by Public Health-Seattle & King County is required for the installation of gas piping.

39. A pressure vessel permit issued by SDCI is required for unfired pressure vessels that operate at pressures greater than 250 psi or with a volume greater than 5 cubic feet.