

	Compressed Gas – Storage and Use		510-840
	AUTHORED BY: Life Safety Chief Ty Drage		EFFECTIVE DATE: 10/01/2017
	APPROVED BY: Fire Chief Ron Bateman		REVISION DATE: Scheduled 01/01/2019

This policy is meant to provide basic information for most common conditions and situations. Owners and operators, along with their employees, agents, and assigns, assume all risks arising from or related to the operation or maintenance of a marijuana facility. Front Range Fire Rescue assumes no liability for any such operation or maintenance through the adoption and enforcement of this policy. In any given occupancy, all other Fire Code requirements will be enforced. If a specific Front Range Fire Rescue policy does not exist, then the appropriate policy/procedure from the Denver Fire Department will be used as a guiding document to determine appropriate code requirements. Any costs associated with compliance with any and all fire code interpretations are the responsibility of the applicant.

Scope:

This policy covers requirements for the storage and use of compressed gas within the Front Range Fire Rescue response area, including: flammable gas (except LPG/propane), oxidizers (including oxygen), and inert and/or simple asphyxiants (e.g., CO₂, argon, nitrogen).

Permits:

A permit shall be obtained by the property owner/business operator for storage and/or use of any compressed gas of 1 unit or more, as defined below.

Definition of Permit Amounts for Compressed Gases (IFC Table 105.6.8)

TYPE OF COMPRESSED GAS	AMOUNT (cubic feet at NTP)
Carbon dioxide used in carbon dioxide enrichment systems	875 (100 lbs)
Carbon dioxide used in insulated liquid carbon dioxide beverage dispensing applications	875 (100 lbs)
Corrosive	200
Flammable (except cryogenic fluids and liquified petroleum gas)	200
Highly Toxic	Any Amount
Inert and Simple asphyxiants	6,000
Oxidizing (including oxygen)	504
Pyrophoric	Any Amount
Toxic	Any Amount

A construction permit shall be obtained from Front Range Fire Rescue for any new installation/use. The permit shall be kept on site and available for inspection. An Operational Permit shall be issued upon final approval of the installation, based on fire department inspection. All Operational Permits shall be renewable annually, upon successful inspection and remittance of the appropriate fee per the FRFR Fee Schedule.

In addition to the completed Permit Application, the following information shall be provided for each permit application:

- a. Complete list of each gas and it's intended use
- b. Complete list of the number of cylinders, including volume in cubic feet, for each individual tank or container
- c. Specific location(s) and arrangement(s) for each compressed gas in use or storage
- d. Total cubic feet of each compressed gas, specifying indoor or outdoor and storage or use
- e. To scale site plan showing compressed gas use and/or storage locations. Site plan shall include all buildings, property lines, utility poles, power lines, easements, etc.
- f. Indicate presence or absence of automatic fire suppression system(s)

Construction Permit Plan Submittal:

To obtain permit(s) for new installation/use of compressed gas, the business owner or authorized company representative shall submit a completed Compressed Gas Permit Application form, as specified below, and remit the appropriate fee per the FRFR Fee Schedule. The applicant shall also submit the following information:

- a. Exact address, legal description, and specific location of the work to be performed.
- b. Name and physical address of the person or firm responsible for the preparation of the drawings and specifications. If after review of the construction drawings and specifications, the Fire Code Official determines that the proposal is inadequately designed, the Fire Code Official may require that the construction drawings and specifications bear the seal of a licensed Colorado professional engineer. All associated costs are the responsibility of the applicant.
- c. Digital documents shall be accepted in PDF format only. All electronic submittals shall include all of the information referenced below for printed submittals, but shall only require one (1) copy of each.
- d. If printed documents are submitted, two (2) complete sets of construction documents showing all necessary details for an accurate plan review.
- e. One copy of specifications or notes that clearly describe the type, quality and finish of materials and the method of assembly, erection and installation of equipment to be installed with proper reference to accepted standards.
- f. A to-scale plot plan showing the location of the proposed construction (i.e., tanks) and the location of every adjacent existing building on the property, roads, walks, utilities, and other site improvements, all property lines, streets, alleys, easements, and other public areas.

- g. Bulk tank installations over 2,000 pounds shall require an engineered structural foundation with a separate tank installation permit. Complete sets of structural drawings, specifications and analysis (calculations) shall be provided and shall bear the seal of a Colorado licensed professional engineer. Printed submittals shall require two (2) complete sets.

A Construction Permit shall be issued upon fire department approval of all submitted documents.

Operational Permits:

Operational permits shall only be issued upon approval, issuance, and final inspections of required construction permits.

Operational permits shall be renewable annually upon inspection by Front Range Fire Rescue.

Operational permits shall be posted on site and available for inspection.

To obtain required operational permit(s), the owner or responsible person shall complete and sign the Carbon Dioxide (CO2) Gas Enrichment Systems Permit Application and remit the required annual permit fee. Refer to the Front Range Fire Rescue Fee Schedule for permit fees.

Permit Fee Calculations:

The following tables shall be used to calculate the required permit fee for each compressed gas in use and/or storage. Construction permit fees shall be charged for the installation of any proposed new storage/use of a compressed gas. The initial fee payment shall cover the costs of the plan review, one site inspection, and the first 12 months of the operational permit, if issued. Operational permit fees shall be charged for each separate compressed gas and shall be valid for 12 months from the date issued, pending successful completion of an inspection by Front Range Fire Rescue.

1 to 10 units	\$100 for the first unit, plus \$5 for each additional unit or fraction thereof, up to and including the 10 th unit
11 to 50 units	\$145 for the first 10 units, plus \$2.50 for each additional unit or fraction thereof, up to and including the 50 th unit
51 to 100 units	\$245 for the first 50 units, plus \$1.25 for each additional unit or fraction thereof, up to and including the 100 th unit
101 to 200 units	\$307.50 for the first 100 units, plus \$1.00 for each additional unit or fraction thereof, up to and including the 200 th unit
201 to 500 units	\$407.50 for the first 200 units, plus \$0.75 for each additional unit or fraction thereof, up to and including the 500 th unit
501 or more units	\$632.50 for the first 500 units, plus \$0.50 for each additional unit or fraction thereof

Definition of “Unit” for Permit Cost Determination

For the purposes of establishing permit costs, the definition of a unit for each classification of a hazardous material is as defined in the threshold permit requirement. Where a threshold permit requirement is identified as “any amount,” the definition of a unit is defined as the maximum allowable quantity (MAQ) as published in Chapter 50 of the adopted IFC.

Carbon Dioxide	1 unit = 875 cubic feet
Corrosive	1 unit = 200 cubic feet
Flammable (excluding LPG/Propane)	1 unit = 200 cubic feet
Highly Toxic	1 unit = 10 pounds/gallons or 20 cubic feet Gaseous/4 cubic feet Liquid
Inert and/or Simple Asphyxiant	1 unit = 6,000 cubic feet
Oxidizer (including oxygen)	1 unit = 504 cubic feet
Pyrophoric	1 unit = 1 pound/gallon or 10 cubic feet Gaseous
Toxic	1 unit = 500 pounds/gallons or 810 cubic feet Gaseous/150 cubic feet Liquid

Site Inspection:

Upon issuance of the construction permit for compressed gas, and after final installation of the system, the installation vendor shall notify Front Range Fire Rescue of the need for an inspection. It may be necessary for an inspection by a third party entity prior to approval by Front Range Fire Rescue. The applicant shall be responsible for all costs associated with third party involvement.

Installation of compressed gas piping systems may require a mechanical permit that is issued by the municipality, in addition to any construction permits. Such permit shall be completed and closed by inspection prior to any inspection by Front Range Fire Rescue.

Front Range Fire Rescue will conduct a final inspection and acceptance test prior to closing any outstanding construction permits and/or issuing any operational permits. Upon successful final inspection, an operational permit will be issued to the business/property owner. Compliance with all applicable codes, standards and regulations shall be maintained at all times. The permit shall be posted on site and available for inspection at all times. The permit shall be valid for the business/property owner, site address, time frame, and activity as indicated on the permit.

Fire Safety Requirements and Conditions:

Compliance with all of the following requirements and conditions shall be maintained at all times:

1. Smoking, open flames, and other ignition sources shall be prohibited within 25 feet of compressed gas use/storage locations.
2. "NO SMOKING" and "FLAMMABLE" signs, as appropriate, shall be posted in approved locations and smoking prohibition enforced by the business owner/responsible party.
3. A portable fire extinguisher with a minimum size of 3A-40BC shall be located within 30 feet of compressed gas use/storage locations.
4. Storage areas shall be kept clear of dry vegetation and combustible materials for minimum distance of 10 feet.
5. No storage shall be allowed within 10 feet of a building exit.
6. Cylinders stored outside shall not be placed on the ground or on surfaces where water can accumulate.
7. Storage areas may be covered with canopies of noncombustible construction. Outdoor storage areas shall have a minimum of 25% of the perimeter open to the atmosphere.
8. Where applicable, storage areas shall approved leak detection (e.g., hydrocarbon, CO₂, O₂, etc.)
9. Heated indoor storage areas shall be arranged so that cylinders and other containers cannot be spot-heated or heated above 125 degrees Fahrenheit by the heating appliance.
10. Compressed gas cylinders shall be segregated from any incompatible or combustible materials storage by not less than 20 feet.
11. Permits are required to store, transport, dispense, use or handle compressed gases in excess of quantities specified in Section 105 of the adopted International Fire Code.
12. Compressed gas containers, cylinders, tanks and systems shall be marked in accordance with nationally recognized standards and in accordance with the adopted International Fire Code, NFPA 704, and CGA C-7.
13. Compressed gas containers, cylinders, tanks and systems shall be secured against accidental dislodgement and against access by unauthorized personnel.
14. Compressed gas containers, cylinders, tanks and systems which could be exposed to physical damage shall be protected. Guard posts or other approved means shall be provided to protect from vehicular damage in accordance with Chapter 3 of the adopted International Fire Code.
15. Compressed gas containers, cylinders, tanks and systems shall be secured to prevent falling due to contact, vibration, or seismic activity. Securing shall be accomplished by one of the following methods:
 - a. Securing to a fixed object with one or more restraints
 - b. Securing on a cart or other mobile device designed for the movement of compressed gas
 - c. Nesting in an area not accessible to the public, as long as the nesting does not obstruct the required means of egress
 - d. Securing to or within a rack, framework, cabinet or similar assembly designed for such use
16. Compressed gas containers, cylinders, and tanks designed for valve protection caps or other protection devices shall have the caps or devices attached when not in use. When outlet caps or plugs are installed, they shall be in place when not in use.

17. Incompatible materials in storage, and storage of materials that are incompatible with materials in use, shall be separated when the stored materials are in containers having a capacity of more than five (5) pounds or 0.5 gallons, whichever is less. Separation shall be accomplished in accordance with the adopted International Fire Code.

Permits May Be Revoked Without Refund If:

1. The permit is used for a location or establishment than the one to which it was issued,
2. The permit is used for a condition or activity other than that listed on the permit,
3. Conditions and limitations set forth in the permit are violated,
4. False statements or misrepresentations are discovered in the application for permit, inventory statement, or plans submitted as a condition of the permit,
5. The permit is used by a person(s) or firm other than that listed on the permit,
6. Failure, refusal or neglect to comply with orders or notices duly served in accordance with provisions of the adopted fire code in the time provided therein,
7. The permit was issued in error or in violation of any ordinance, regulation or provision of the fire or building code.
8. The required permit fee(s) are not paid within 30 days of permit issue.

Refer to the Front Range Fire Rescue adopted fee schedule for current permit fee amounts.

Revision History:

08/02/2017 Original documented developed

References:

Denver Fire Department – Compressed Gas

FRONT RANGE FIRE RESCUE COMPRESSED GAS PERMIT APPLICATION

THIS FORM SHALL BE COMPLETED AND SIGNED BY THE BUSINESS OWNER OR A REPRESENTATIVE OF THE PROPERTY OWNER APPLYING FOR THE PERMIT(S). PLEASE SUBMIT COMPLETED FORM TO FRONT RANGE FIRE RESCUE FOR REVIEW, APPROVAL, AND ISSUANCE OF A COPY FOR YOUR USE. REFER TO CURRENT FEE SCHEDULE FOR APPLICABLE FEES.

Business Name: _____

Physical Address: _____

City: _____ State: _____ ZIP: _____

Mailing/Billing Address: _____

City: _____ State: _____ ZIP: _____

Contact Name: _____

Phone: _____ Email: _____

Type of Compressed Gas: _____ Intended Use: _____

Cylinder Size (cubic feet): _____ # of Cylinders: _____ Total Volume: _____

Type of Compressed Gas: _____ Intended Use: _____

Cylinder Size (cubic feet): _____ # of Cylinders: _____ Total Volume: _____

Type of Compressed Gas: _____ Intended Use: _____

Cylinder Size (cubic feet): _____ # of Cylinders: _____ Total Volume: _____

Attach additional pages if needed to provide complete and accurate inventory of all gases.

Provide detailed, to-scale, site plan as directed in Policy.

Indicate location(s) of compressed gas storage on attached to-scale drawing.

I HAVE READ AND UNDERSTAND THE FRONT RANGE FIRE RESCUE POLICIES REGARDING COMPRESSED GAS STORAGE AND USE. I ALSO UNDERSTAND THAT FRONT RANGE FIRE RESCUE WILL CONDUCT A SITE INSPECTION, AND THAT IF I FAIL TO COMPLY WITH THE ADOPTED FIRE CODE, BUILDING CODE OR NFPA STANDARDS, MY PERMIT(S) AND/OR APPROVALS MAY BE REVOKED WITHOUT A REFUND.

PRINTED NAME: _____

SIGNATURE: _____

DATE: _____