

COLORADO SPRINGS FIRE DEPARTMENT

Flammable and Combustible Liquid Tanks

Requirements for installation of flammable and combustible liquid tanks.



TECHNICAL SERVICES
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Division of the Fire Marshal | 375 Printers Parkway | TEL 719-385-5978 • FAX 719-385-7334



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PURPOSE

This document outlines the Colorado Springs Fire Department’s policies, procedures, requirements and local fire code interpretations pertaining to the permitting of flammable and combustible liquid tanks. It is not the intent of this document to reiterate fire code requirements. Fire code requirements can be viewed by visiting www.iccsafe.org. Local amendments to the fire code can be found at www.coloradosprings.gov and searching for “Fire Code Amendments” in the search field.

SCOPE

This document applies to any tanks that will store Class I liquids in excess of 5 gallons inside a building or in excess of 10 gallons outside; or tanks that will store Class II and IIIA liquids in excess of 25 gallons in a building or in excess of 60 gallons outside a building that are located in the City of Colorado Springs.

DEFINITIONS

Combustible Liquid A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).

Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).

Class IIIB. Liquids having closed cup flash points at or above 200°F (93°C).

The category of combustible liquids does not include compressed gases or cryogenic fluids.

Container A vessel of 60 gallons (227 L) or less in capacity used for transporting or storing hazardous materials. Pipes, piping systems, engines and engine fuel tanks are not considered to be containers.

Flammable Liquid A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

Class IA. Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C)

Class IB. Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).

Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

The category of flammable liquids does not include compressed gases or cryogenic fluids.

Flash Point The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as specified in ASTM D 56, ASTM D 93 or ASTM D 3278.

Permitting, Plans, Fees, and Inspections

I. Permitting

A construction permit is required to be issued prior to install any tanks that will store Class I liquids in excess of 5 gallons inside a building or in excess of 10 gallons outside; or tanks that will store Class II and IIIA liquids in excess of 25 gallons in a building or in excess of 60 gallons outside a building that are located in the City of Colorado Springs. This does not include tanks that are fully drained and emptied with inert atmospheres which are stored to be used for future use.

How to Complete the Permit Application

Once it is determined that a permit is required, a permit application must be completed. Visit <https://coloradosprings.gov/fire-department> and search for "Permit Application" to find the permit application. Complete the permit application accurately as follows:

1. Under Part 1, fill in Sections 1, 2, and 3 with required information. If the information is the same across sections, fill in Section 1 and state "Same as Above" under Company Name in Sections 2 and 3
2. Fill in Section 6 with the corresponding relevant information for each tank to be installed.
3. Sign as indicated under Section 8.
4. Under Part 2 (page 2), check the following box:
 - "105.7.8 – Flammable and Combustible Liquids" that is located under the Construction Permits section
5. Attach and/or submit completed permit application along with required plans and documentation to the Division of the Fire Marshal, 375 Printers Parkway, Colorado Springs, CO 80910.

Plans and Required Documentation

The following, as applicable, is required to be submitted for review and acceptance of a flammable or combustible liquid tank permit:

1. Completed permit application
2. Detailed and dimensioned or to scale site plan showing the following:
 - a. Tank(s) location on the site
 - b. Lot Lines of property
3. Schematics showing the following, with dimensions, as applicable:
 - a. Fuel fill piping
 - b. Fuel filling port, if remote
 - c. Fuel vent (normal and emergency) piping and termination locations
 - d. Fuel transfer piping
 - e. Exhaust piping and termination locations for generator or other fuel burning equipment
 - f. Dispensing equipment
 - g. Fire extinguisher locations
 - h. Emergency stop/shutoff switches
 - i. Vehicle protection
4. Product specification sheets for all of the following (include listing information as required):
 - a. Flammable or combustible liquid tanks
 - b. Piping, fittings, and hoses
 - c. Valves
 - d. Vents
 - e. Pumps
 - f. Dispensers
 - g. Nozzles
 - h. Tank level measuring devices
 - i. Other tank appurtenances
5. State of Colorado Tank permit for installation/removal, as applicable
6. Tank filling operation description
7. Tank pressure testing documentation

II. Fees

Plan review and inspection fees are required for flammable and combustible liquid tank permits. Fee amounts are based on the currently approved Division of the Fire Marshal fee schedule.

- The initial plan review fee covers the first two plan reviews and first inspection
- Third and subsequent plan review fees will be imposed in addition to the initial permit fee
- Second and subsequent inspection fees and/or trip fees will be imposed in addition to the initial permit fee should the installation not be ready for or fail inspection the first time
- Overtime fees will be imposed in addition to the initial fee should the inspection be requested after normal business hours
- Trip or inspection fees will be imposed in addition to the initial fee for inspection of additional arrangements

If desired, an expedited plan review fee may be paid to expedite review of the plans and permit application. This fee is in addition

to the initial plan review fee.

Plan review fees must be paid before the inspection can be scheduled. Any fees resulting from multiple inspections will be billed to the applicant. If fees are not paid, future permit applications and/or inspections may be denied.

Once the plans have been reviewed and accepted, and the plan review fees have been paid, the contractor/installer may begin installation of the tanks and system in compliance with the accepted plans. Should the tank or system be installed or in the process of being installed prior to the review and approval of the application, a "Work without Permit" fee will be imposed in addition to the initial plan review fee.

Fees may be paid in person or via the phone. Cash, checks (made out to City of Colorado Springs), and credit cards (Visa and MasterCard only) are acceptable forms of payment.

The permit application must be approved prior to commencement of tank installation. Permit applications submitted without the required information listed above may be returned and/or not accepted. Permit applications, including required plans and supplemental information must be submitted to the Division of the Fire Marshal a minimum of five working days prior to the date of the scheduled event. Failure to do so may cause the installation to be delayed until the permit is acceptable or additional fees may be paid to expedite the plan review. The applicant will be notified either by phone and/or email the status of the application once the review has been completed.

III. Inspections

A fire inspection of the installation is required. To schedule an inspection, call 719-385-5978 and follow the prompts for inspection scheduling. This may be done and is recommended, at the same time fees are being paid. Due to the fluctuation of inspectors schedules, it is strongly recommend that inspections be scheduled a minimum of three business days prior to the date of the scheduled installation.

The following is required for the fire inspection:

1. Representative from the tank installing company be present
2. Representative from the user be present
3. Tank(s) to be fully installed
4. Fire extinguishers in place
5. All fuel and vent plumbing to be in place
6. Tank and piping ready for pressure testing, as required

NOTE: Some tank installations – especially those for underground fuel tanks and dispensing – may require multiple inspections to witness the various pressure tests required by NFPA 30. Please consult the testing requirements in 2015 IFC and NFPA 30 for the specific tank and piping installed. For reference, the following are required to be witnessed by the inspector for an underground fuel tank for vehicle dispensing:

1. Tank pressure testing of inner and outer walls
2. Fuel piping pressure testing of inner and outer walls
3. Full system inspection after all dispensing and safety equipment is installed (piping and tank are covered at this point).

Once the installation passes inspection, a permit will be issued and the tank may be filled and the installation utilized.

PLAN SUBMITTAL REQUIREMENTS

It is the installer's responsibility to install the tank and system per all applicable requirements of the locally adopted fire code. The requirements offered here are either new to the code or have generated issues and/or questions in the past. Tank installations must comply with Chapter 57 of the 2015 IFC, which references the latest edition of NFPA 30 for specific tank construction and testing criteria.

Tank Design The design, fabrication and construction of tanks shall comply with the requirements of NFPA 30 and shall have a nameplate that is visible and legible indicating the standard used as the basis of the design. These requirements include materials and pressure limitations. The tanks must be rated for the appropriate service and the design criteria must match the service it will be used for.

Tank Venting Tanks shall be fitted with a normal and emergency vent. Normal vent lines shall be fitted with pressure-vacuum vents for class IA liquids; and pressure-vacuum vents or flame arrestors for class IB and IC liquids. Normal vent outlets for class I, II, and IIIA liquids shall discharge at least 12' above grade, and outside a building. Only Class IIIB liquids connected to oil burning equipment can vent inside a building. Emergency vents must be for all tanks, and must be directed outside (except Class IIIB liquids) and must be properly sized.

Filling, Emptying, and Vapor Recovery Connections These connections that are made and broken must be made outside of buildings at least 5' away from ignition sources, building openings, and lot lines. An interior tank requires the use of a remote fuel filling station for filling; no filling connections shall be made inside of a building.

Overfill Prevention An approved means shall be provided to prevent overfilling of the tank by indicating to the filler that the tank has reached 90% full and either automatically shut off flow to the tank when it is 95% or reduce the flow rate to not more than 15 gallons per minute, but at a rate that will not cause overflow within 30 minutes and will automatically stop the flow when the tank is full.

Determination of Tank Capacity The fuel supplier shall have a means to determine the amount of fuel needed to fill the tank to 90% capacity prior to filling.

Spill Control and Secondary Containment Tanks shall be provided with spill control and secondary containment measures to prevent any spills from entering the environment. Most tanks are provided with double wall, which contain a rupture of the inner wall of the tank. This containment shall be provided with a means to establish the integrity of the containment in accordance with NFPA 30.

Aboveground Tanks Aboveground tanks shall meet all of the above requirements, but shall also be suitably protected against mechanical damage and against vehicles by placement of bollards, barriers, or using a UL 2085 protected tank. They shall meet the requirements in NFPA 30 for distances with respect to buildings, lot lines, etc.

Underground Tanks Underground tanks shall meet all of the above requirements (except those required specifically for aboveground tanks). They shall be suitably anchored to prevent water from lifting the tank, and shall be located away from foundations, lot lines, and other obstacles as indicated in NFPA 30.

Diesel Generator Integral Tanks Tanks that are integral to diesel generator packages shall meet the same requirements as aboveground tanks, especially in regards to indoor locations.