

HAZARDOUS MATERIALS

SUBPART H

FLAMMABLE AND COMBUSTIBLE LIQUIDS - 1910.106

Introduction

The primary basis of this standard is the National Fire Protection Association's publication NFPA 30, *Flammable and Combustible Liquids Code*. This standard applies to the handling, storage, and use of flammable and combustible liquids with a flash point below 200°F. There are two primary hazards associated with flammable and combustible liquids: explosion and fire. In order to prevent these hazards, this standard addresses the primary concerns of: design and construction, ventilation, ignition sources, and storage.



Definitions

There are a number of definitions included in 1910.106. These definitions were derived from consensus standards, and were not uniquely developed for OSHA regulations. Some of the more important definitions are discussed below.

Aerosol shall mean a material which is dispensed from its container as a mist, spray, or foam by a propellant under pressure.

Approved shall mean approved or listed by a nationally recognized testing laboratory.

Boiling point shall mean the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (psia). This pressure is equivalent to 760 millimeters of mercury (760 mm Hg).

At temperatures above the boiling point, the pressure of the atmosphere can no longer hold the liquid in the liquid state and bubbles begin to form. The lower the boiling point, the greater the vapor pressure at normal ambient temperatures and consequently the greater the fire risk.

Container shall mean any can, barrel, or drum.

Closed container shall mean a container so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

Fire area shall mean an area of a building separated from the remainder of the building by construction having a fire resistance of at least 1 hour and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 1 hour.

Flash point means the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid. The flash point is normally an indication of susceptibility to ignition.

The flash point is determined by heating the liquid in test equipment and measuring the temperature at which a flash will be obtained when a small flame is introduced in the vapor zone above the surface of the liquid.

A standard closed container is used to determine the closed-cup flash point and a standard open-surface dish for the open-cup flash point temperature, as specified by the American Society for Testing and Materials (ASTM). These methods are referenced in OSHA's 1910.106 standard.

Combustible liquid means any liquid having a flash point at or above 100°F (37.8°C). Combustible liquids shall be divided into two classes as follows:

Class II liquids shall include those with flash points at or above 100°F (37.8°C) and below 140°F (60°C), except any mixture having components with flash points of 200°F (93.3°C) or higher, the volume of which make up 99 percent or more of the total volume of the mixture.

Class III liquids shall include those with flash points at or above 140°F (60°C). Class III liquids are subdivided into two subclasses:

Class IIIA liquids shall include those with flash points at or above 140°F (60°C) and below 200°F (93.3°C), except any mixture having components with flash points of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

Class IIIB liquids shall include those with flash points at or above 200°F (93.3°C). This section does not regulate Class IIIB liquids. Where the term "Class III liquids" is used in this section, it shall mean only Class IIIA liquids.

When a combustible liquid is heated to within 30°F (16.7°C) of its flash point, it shall be handled in accordance with the requirements for the next lower class of liquids.

Flammable liquid means any liquid having a flash point below 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids shall be known as Class I liquids. Class I liquids are divided into three classes as follows:

Class IA shall include liquids having flash points below 73°F (22.8°C) and having a boiling point below 100°F (37.8°C).

Class IB shall include liquids having flash points below 73°F (22.8°C) and having a boiling point at or above 100°F (37.8°C).

Class IC shall include liquids having flash points at or above 73°F (22.8°C) and below 100°F (37.8°C).

It should be mentioned that flash point was selected as the basis for classification of flammable and combustible liquids because it is directly related to a liquid's ability to generate vapor, i.e., its volatility. Since it is the vapor of the liquid, not the liquid itself, that burns, vapor generation becomes the primary factor in determining the fire hazard. The expression "low flash - high hazard" applies. Liquids having flash points below ambient storage temperatures generally display a rapid rate of flame spread over the surface of the liquid, since it is not necessary for the heat of the fire to expend its energy in heating the liquid to generate more vapor.

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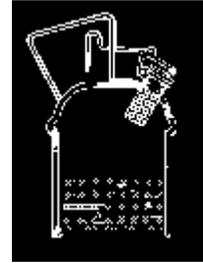
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The above definitions for classification of flammable and combustible liquids are quite complex. The diagram below should aid in their understanding.

Contains Data for
Protective Only.

Portable tank shall mean a closed container having a liquid capacity over 60 U.S. gallons and not intended for fixed installation.

Safety can shall mean an approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.



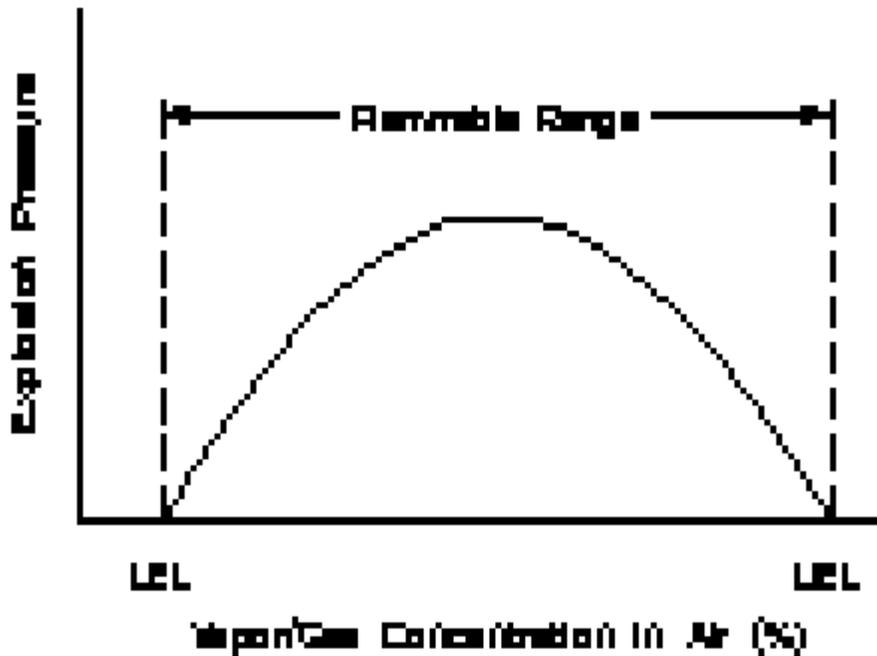
Vapor pressure shall mean the pressure, measured in pounds per square inch (absolute) exerted by a volatile liquid as determined by the *Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)*, American Society for Testing and Materials ASTM D323-68.

Vapor pressure is a measure of a liquid's propensity to evaporate. The higher the vapor pressure, the more volatile the liquid and, thus, the more readily the liquid gives off vapors.

Ventilation as specified in this section is for the prevention of fire and explosion. It is considered adequate if it is sufficient to prevent accumulation of significant quantities of vapor-air mixtures in concentration over one-fourth of the lower flammable limit.

Flammable (Explosive) Limits

When vapors of a flammable or combustible liquid are mixed with air in the proper proportions in the presence of a source of ignition, rapid combustion or an explosion can occur. The proper proportion is called the *flammable range* and is also often referred to as the *explosive range*. The flammable range includes all concentrations of flammable vapor or gas in air, in which a flash will occur or a flame will travel if the mixture is ignited. There is a minimum concentration of vapor or gas in air below which propagation of flame does not occur on contact with a source of ignition. There is also a maximum proportion of vapor in air above which propagation of flame does not occur. These boundary-line mixtures of vapor with air are known as the *lower and upper flammable or explosive limits* (LEL or UEL) respectively, and they are usually expressed in terms of percentage by volume of vapor in air. See figure below.



In popular jargon, a vapor/air mixture below the flammable limit is too "lean" to burn or explode, and a mixture above the upper flammable limit is too "rich" to burn or explode. No attempt is made to differentiate between the terms *flammable* and *explosive* as applied to the lower and upper limits of flammability.

Container and Portable Tank Storage

Scope

This section applies only to the storage of flammable or combustible liquids in drums or other containers (including flammable aerosols) not exceeding 60 gallons individual capacity and portable tanks of less than 660 gallon individual capacity. A portable tank is a closed container which has a liquid capacity of over 60 gallons and is not intended for fixed installations.

This section does not apply to the following:

Storage of containers in bulk plants, service stations, refineries, chemical plants, and distilleries;

Class I or Class II liquids in the fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine;

Flammable or combustible paints, oils, varnishes, and similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days;

Beverages when packed in individual containers not exceeding 1 gallon in size.

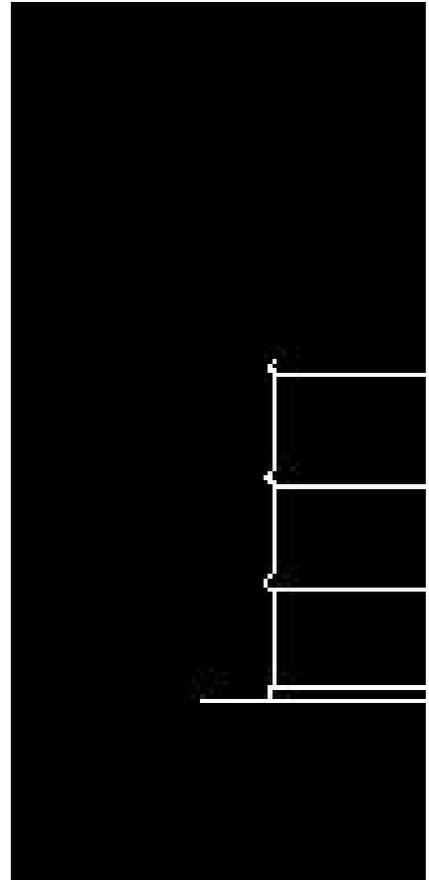
Design, Construction, and Capacity of Containers

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Only approved containers and portable tanks may be used to store flammable and combustible liquids. Metal containers and portable tanks meeting the requirements of the Department of Transportation (DOT) (49 CFR 178) are deemed acceptable when containing products authorized by the DOT (49 CFR 173).



latest version of NFPA 30, *Flammable and Combustible Liquids*, indicates that certain petroleum products may be safely stored in plastic containers if the terms and conditions of the following specifications are met:

- (a) ANSI/ASTM D 3435-80, *Plastic Containers (Jerry Cans) for Petroleum Products.*
 - (b) ASTM F 852-86, *Standard for Portable Gasoline Containers for Consumer Use.*
 - (c) ASTM F 976-86, *Standard for Portable Kerosine Containers for Consumer Use.*
 - (d) ANSI/UL 1313-83, *Nonmetallic Safety Cans for Petroleum Products.*
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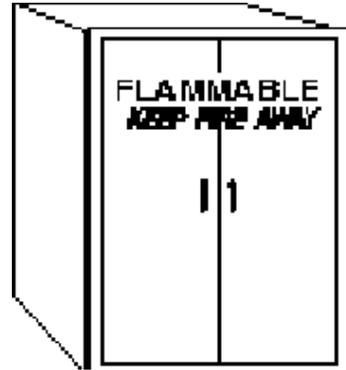
This standard also requires portable tanks to have provision for emergency venting. Top-mounted emergency vents must be capable of limiting internal pressure under fire exposure conditions to 10 psig or 30 percent of the bursting pressure of the tank, whichever is greater. Portable tanks are also required to have at least one pressure-activated vent with a minimum capacity of 6,000 cubic feet of free air at 14.7 psia and 60°F. These vents must be set to open at not less than 5 psig. If fusible vents are used, they shall be actuated by elements that operate at a temperature not exceeding 300°F.

Maximum allowable sizes of various types of containers and portable tanks are specified based on the class of flammable and combustible liquid they contain.

Design, Construction and Capacity of Storage Cabinets

Not more than 60 gallons of Class I and/or Class II liquids, or not more than 120 gallons of Class III liquids may be stored in an individual cabinet.

This standard permits both metal and wooden storage cabinets. Storage cabinets shall be designed and constructed to limit the internal temperature to not more than 325°F when subjected to a standardized 10-minute fire test. All joints and seams shall remain tight and the door shall remain securely closed during the fire test. Storage cabinets shall be conspicuously labeled, "Flammable - Keep Fire Away."



Storage cabinets shall be

The bottom, top, door, and sides of metal cabinets shall be at least No. 18 gage sheet metal and double walled with 1½-inch air space. The door shall be provided with a three-point lock, and the door sill shall be raised at least 2 inches above the bottom of the cabinet.

Design and Construction of Inside Storage Rooms

Construction

Construction is to comply with the test specifications included in NFPA 251-1969, *Standard Methods of Fire Tests of Building Construction and Materials*.

Openings to other rooms or buildings shall be provided with non-combustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the storage area shall be at least 4 inches below the surrounding floor. Openings shall be provided with approved self-closing fire doors. The room shall be liquid-tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench inside of the room which drains to a safe location. This method may be preferred if there is an extensive need to transfer flammable liquids into and out of the room by means of hand trucks.

Rating and Capacity

Storage in inside storage rooms shall comply with the following:

STORAGE IN INSIDE ROOMS		
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Fire Protection Provided ¹	Fire Resistance	Maximum Floor Area (ft ²)	Total Allowable Quantities (gal/ft ² floor area)
Yes	2 hr.	500	10
No	2 hr.	500	4*
Yes	1 hr.	150	5*
No	1 hr.	150	2

* NOTE: These numbers are incorrectly shown in 29 CFR 1910.106.

Wiring

Electrical wiring and equipment located in inside storage rooms used for Class I liquids shall be approved under Subpart S, Electrical, for Class I, Division 2 Hazardous Locations; for Class II and Class III liquids, shall be approved for general use.

Ventilation

Every inside storage room shall be provided with either a gravity or a mechanical exhaust ventilation system designed to provide for a complete change of air within the room at least six times per hour. Ventilation is vital to the prevention of flammable liquid fires and explosions. It is important to ensure that air flow through the system is constant and prevents the accumulation of any flammable vapors.

Storage

In every inside storage room, there shall be maintained an aisle at least 3 feet wide. Easy movement within the room is necessary in order to reduce the potential for spilling or damaging the containers and to provide both access for fire fighting and a ready escape path for occupants of the room, should a fire occur.

Containers over 30 gallons capacity shall not be stacked one upon the other. Such containers are built to DOT specifications and are not required to withstand a drop test greater than 3 feet when full.

Dispensing shall be only by approved pump or self-closing faucet.

¹ Fire protection system shall be sprinkler, water spray, carbon dioxide, or other system.

Storage Inside Building

Egress

Flammable or combustible liquids, including stock for sale, shall not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people.

Office Occupancies

Storage shall be prohibited except that which is required for maintenance and operation of equipment. Such storage shall be kept in closed metal containers stored in a storage cabinet or in safety cans or in an inside storage room not having a door that opens into that portion of the building used by the public.

General Purpose Public Warehouses

There are tables in the standard summarizing the storage requirements applicable to "General Purpose Public Warehouses." These tables refer to indoor storage of flammable and combustible liquids which are confined in containers and portable tanks. Storage of incompatible materials that create a fire exposure (e.g., oxidizers, water-reactive chemicals, certain acids and other chemicals) is not permitted.

Warehouses or Storage Buildings

The last type of inside storage covered by this paragraph addresses storage in "warehouses or storage buildings." These structures are sometimes referred to as outside storage rooms. Practically any quantity of flammable and combustible liquid can be stored in these buildings provided that they are stored in a configuration consistent with the tables in this paragraph.

Containers in piles shall be separated by pallets or dunnage where necessary to provide stability and to prevent excessive stress on container walls.

Stored material shall not be piled within 3 feet of beams or girders and shall be at least 3 feet below sprinkler deflectors or discharge orifices of water spray, or other fire protection equipment.

Aisles of at least 3 feet in width shall be maintained to access doors, windows or standpipe connections.

Storage Outside Buildings

Requirements covering "storage outside buildings" are summarized in tables in this paragraph. Associated requirements are given for storage adjacent to buildings. Also

included are requirements involving controls for diversion of spills away from buildings and security measures for protection against trespassing and tampering. Certain housekeeping requirements are given which relate to control of weeds, debris and accumulation of unnecessary combustibles.

Fire Control

Suitable fire control devices, such as small hose or portable fire extinguishers, shall be available at locations where flammable or combustible liquids are stored.

At least one portable fire extinguisher having a rating of not less than 12-B units shall be located:

- outside of, but not more than 10 feet from, the door opening into any room used for storage; and
- not less than 10 feet, nor more than 25 feet, from any Class I or Class II liquid storage area located outside of a storage room but inside a building.

The reason for requiring that portable fire extinguishers be located a distance away from the storage room is that fires involving Class I and Class II flammable liquids are likely to escalate rapidly. If the fire is too close to the storage area, it may be impossible to get to it once the fire has started.

Open flames and smoking shall not be permitted in flammable or combustible liquid storage areas.

Materials which react with water shall not be stored in the same room with flammable or combustible liquids. Many flammable and combustible liquid storage areas are protected by automatic sprinkler or water spray systems and hose lines. Consequently, any storage of water-reactive material in the storage area creates an unreasonable risk.

Industrial Plants

Scope

This paragraph applies to those industrial plants where:

- the use of flammable or combustible liquids is incidental to the principal business; or

where flammable or combustible liquids are handled or used only in unit physical operations such as mixing, drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reaction.

This paragraph shall not apply to chemical plants, refineries or distilleries.

Incidental Storage or Use of Flammable or Combustible Liquids

Application

This subparagraph is applicable to those portions of an industrial plant where the use and handling of flammable or combustible liquids is only incidental to the principal business, such as paint thinner storage in an automobile assembly plant, solvents used in the construction of electronic equipment, and flammable finishing materials used in furniture manufacturing.

Containers

Flammable or combustible liquids shall be stored in tanks or closed containers.

The quantity of liquid that may be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed:

25 gallons of Class IA liquids in containers

120 gallons of Class IB, IC, II, or III liquids in containers

660 gallons of Class 1B, 1C, II, or III liquids in a single portable tank.

Handling Liquids at Point of Final Use

Flammable liquids shall be kept in covered containers when not actually in use.

Where flammable or combustible liquids are used or handled, except in closed containers, means shall be provided to dispose promptly and safely of leakage or spills.

Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or portable tanks within a building only in the following manner:

- (1) Through a closed piping system,
- (2) From safety cans,

- (3) By means of a device drawing through the top, or
- (4) From containers or portable tanks by gravity through an approved self-closing valve.

Transfer operations must be provided with adequate ventilation. Sources of ignition are not permitted in areas where flammable vapors may travel.

Transferring liquids by means of air pressure on the container or portable tanks is prohibited. This may result in an overpressure which could exceed what the container or tank could withstand. In addition, a flammable atmosphere could be created within the container or tank. This atmosphere would be particularly sensitive to ignition because of the increased pressure.

Unit Physical Operations

Application

This subparagraph applies to those portions of industrial plants where flammable or combustible liquids are handled or used in unit physical operations such as mixing, drying, evaporating, filtering, distillation, and similar operations which do not involve chemical change. Examples are plants compounding cosmetics, pharmaceuticals, solvents, cleaning fluids, insecticides, and similar types of activities.

Location

Industrial plants shall be located so that each building or unit of equipment is accessible from at least one side for fire fighting and fire control purposes.

Drainage

Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location.

Ventilation

The standard requires that adequate ventilation be provided in operating areas. Appropriate measures must be taken to trap and remove hazardous vapors.

Tank Vehicle and Tank Car Loading and Unloading

Tank vehicle and tank car loading or unloading facilities shall be separated from above-ground tanks, warehouses, and similar facilities by a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured from the nearest position of any fill stem.

Fire Control

These requirements basically state that hazards shall be evaluated and appropriate fire protection provided. Such an evaluation must consider the hazards of the operation, the various materials used, the design of the plant and equipment, materials handling and transfer requirements, any unusual conditions and the available fire protection sprinkler systems and other types of protective systems that may be necessary to protect employees.

Sources of Ignition

General

Adequate precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical, and mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

These are some examples of common ignition sources, although the list is neither all-inclusive nor applicable in all cases. Again, it is emphasized that control of ignition sources is the second line of defense; minimizing the possibility of a spill or leak is the primary objective of this regulation.

Bonding

Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected.

Electrical

All electrical wiring and equipment shall be installed according to the requirements of Subpart S, Electrical.

Locations where flammable vapor-air mixtures may exist under normal operations shall be classified Class I, Division 1 according to the requirements of Subpart S. For those pieces of equipment installed in accordance with the above paragraphs on unit physical operations, the Division 1 area shall extend 5 feet in all directions from all points of vapor liberation. Unventilated pits within any Class I area are classified as Division 1 locations.

Locations where flammable vapor-air mixtures may exist under abnormal conditions and for a distance beyond Division 1 locations shall be classified Division 2 according

to the requirements of Subpart S, Electrical. These locations include an area within 20 feet horizontally, 3 feet vertically beyond a Division 1 area, and up to 3 feet above floor or grade level within 25 feet, if indoors, or 10 feet if outdoors, from any pump, bleeder, withdrawal fitting, meter, or similar device handling Class I liquids. Adequately ventilated pits are Class I, Division 2 locations.

Repairs to Equipment

Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an individual in responsible charge.

Housekeeping

Maintenance and operating practices shall follow established procedures that control leakage and prevent accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.

Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.

Bulk Plants

Storage

Class I liquids shall be stored in closed containers, or in storage tanks above ground outside of buildings, or underground in accordance with the requirements of this section.

Class II and III liquids shall be stored in containers, or in tanks within buildings or above ground outside of buildings, or underground in accordance with the requirements of this section.

Buildings

Rooms in which flammable or combustible liquids are stored or handled by pumps shall have exit facilities arranged to prevent occupants from being trapped in the event of fire.

Rooms in which Class I liquids are stored or handled shall be heated only by means not constituting a source of ignition, such as steam or hot water.

Adequate ventilation shall be provided for all rooms, buildings, or enclosures in which Class I liquids are pumped or dispensed.

Loading and Unloading Facilities

Tank vehicle and tank car loading or unloading facilities shall be separated from above-ground tanks, warehouses, and similar facilities a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured from the nearest position of any fill spout. (Buildings for pumps or shelters for personnel may be considered as a part of the loading and unloading facilities).

Equipment such as piping, pumps, and meters used for the transfer of Class I liquids between storage tanks and the fill stem of the loading rack shall not be used for the transfer of Class II or Class III liquids.

Static Protection

Bonding facilities for protection against static sparks during the loading of tank vehicles through open domes shall be provided:

- (1) Where Class I liquids are loaded, or
- (2) Where Class II or Class III liquids are loaded into vehicles which may contain vapors from previous cargoes of Class I liquids.

The standard requires appropriate bonding equipment and procedures. Facilities for materials that do not have a static electricity hazard are not required to be bonded.

Container Filling Facilities

Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected.

Electrical Equipment

This subparagraph applies to areas where Class I liquids are stored or handled. For areas where Class II or Class III liquids only are stored or handled, the electrical equipment may be installed in accordance with requirements for ordinary (non-hazardous) locations.

Classification of electrical equipment hazardous areas is given in a table referenced in this subparagraph.

Sources of Ignition

Class I liquids shall not be handled, drawn, or dispensed where flammable vapors may reach a source of ignition.

Smoking shall be prohibited except in designated locations. "No Smoking" signs shall be conspicuously posted where hazard from flammable liquid vapors is normally present.

Drainage and Waste Disposal

Provision shall be made to prevent flammable or combustible liquids which may be spilled at loading or unloading points from entering public sewers and drainage systems, or natural waterways. Connection to such sewers, drains, or waterways by which flammable or combustible liquids might enter shall be provided with separator boxes or other approved means whereby such entry is precluded. Crankcase drainings and flammable or combustible liquids shall not be dumped into sewers, but shall be stored in tanks or tight drums outside of any building until removed from the premises.

Fire Control

Suitable fire-control devices, such as small hose or portable fire extinguishers, shall be available to locations where fires are likely to occur.

Service Stations

Liquids shall be stored in approved closed containers not exceeding 60 gallons capacity, in underground tanks, or in tanks in special enclosures or aboveground as provided for in this section (Service Stations).

No Class I liquids may be dispensed into portable containers unless the metal container has a tight closure with screwed or spring cover, and is fitted with a spout or so designed that the contents can be poured without spilling.

A clearly identified and easily accessible switch(es) or a circuit breaker(s) shall be provided at a location remote from dispensing devices, including remote pumping systems, to shut off the power to all dispensing devices in the event of an emergency.

Processing Plants

Scope

This paragraph applies to those plants or buildings which contain chemical operations such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes but does not apply to chemical plants, refineries or distilleries.

Processing Building

This section requires that appropriate facilities be provided for flammable and combustible liquid processing within buildings. Buildings must be safely constructed with appropriate drainage, ventilation and explosion relief.

Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. If connected to public sewers or discharged into public waterways, these systems shall be equipped with traps or separators.

Liquid Handling

The storage of flammable or combustible liquids in tanks shall be in accordance with the provisions of this section (Processing Plants). Piping must be identified and meet safety requirements.

The transfer of large quantities of flammable or combustible liquids shall be through piping by means of pumps or water displacement. Except as required in process equipment, gravity flow shall not be used. The use of compressed air as a transferring medium is prohibited. Equipment must be designed to assure containment. Where the vapor space is usually within the flammable range or other operational hazards indicate a need, equipment must be protected against explosion by construction or other appropriate measures.

Fire Control

Fire control provisions, including portable extinguishers, water supply, fixed extinguishing systems, and alarm systems shall be provided. An analysis similar to that required for plants having unit physical operations must be performed. Appropriate fire control facilities must be provided as indicated by the special hazards of the plant.

Sources of Ignition

As in other paragraphs of this section, sources of ignition shall be prevented from igniting flammable vapors.

Waste and Residues

Combustible waste material and residues in a building or operating area shall be kept to a minimum, stored in closed metal waste cans, and disposed of daily.

Refineries, Chemical Plants, and Distilleries

General

Plants must be protected from catastrophic fire, explosion and/or release of toxic materials. Refer to 29 CFR 1910.119, *Process Safety Management of Highly Hazardous Chemicals*, which requires programmatic control regarding these hazards. Recognized safe-practice documents from the affected industries identify necessary controls.

Storage Tanks

Flammable and combustible liquids shall be stored in tanks, in containers, or in portable tanks in accordance with requirements of this section (Refineries, Chemical Plants, and Distilleries).

Wharves

Wharves handling flammable or combustible liquids shall be in accordance with requirements of this section.

Location of Process Units

Process units shall be located so that they are accessible from at least one side for the purpose of fire control.

Fire Control

Fire control provisions, including portable fire extinguishers, water supply, and fixed extinguishing systems shall be provided.