

FLAMMABLE LIQUID SAFETY

Supplement to Standard Training Module

TRAINING REQUIREMENTS OVERVIEW

This standard Vivid training module provides a general overview of Flammable and Combustible Liquids safety. Although no particular training regimen is required by the OSHA standard, employees should receive information and training on the hazards of flammable materials in their work area.

In addition to the general overview, employees ***should*** receive facility and work-specific training. This additional training ***should*** cover:

- Flammable and Combustible materials used in their specific work area
- Location and availability of MSDS's for those materials
- Safe handling procedures and specific container use at their workstation
- Location of flammable and combustible liquid storage areas, including rooms and cabinets
- Specific PPE requirements
- Grounding and Bonding systems and requirements
- Specific procedures for transferring liquids from container to container
- Application and use of portable fire extinguishers

The General Duty Clause requires an employer to “provide employment and a place of employment which are free from recognized hazards”. Employee training, appropriate to recognized workplace hazards, is anticipated to be a part of a facility’s overall safety and health program.

Frequency: Training ***should*** be provided to affected employees:

- Upon initial assignment of work
- When recognized hazards change, or new hazards are introduced into the workplace
- When new or modified processes, procedures, and/or equipment are introduced into the workplace

GENERAL OVERVIEW OF THE STANDARD

FLAMMABLE AND COMBUSTIBLE LIQUIDS – 29 CFR 1910.106

PURPOSE: 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. Information concerning these hazards is important to effectively be communicated to employers and employees.

1. **SCOPE:** 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.

This standard does not apply to:

- Bulk transportation of flammable and combustible liquids;
 - Storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment;
 - Storage of flammable and combustible liquids on farms;
 - Liquids without flashpoints that may be flammable under some conditions, such as certain halogenated hydrocarbons and mixtures containing halogenated hydrocarbons;
 - Mists, sprays, or foams, except flammable aerosols covered in paragraph (d) of 1910.106; or
 - Installations made in accordance with requirements of standards that are incorporated by reference, as specified in Sec. 1910.6.
2. **TANK STORAGE:** Requirements are stated regarding the design and construction of interior and exterior storage tanks (both above and below ground), their supports and foundations. Subtopics include:
 - Design and Construction (materials, fabrication, pressures, etc.)
 - Installation of outside aboveground tanks (spacing, venting, drainage, and dikes)
 - Installation of underground tanks (location, depth/cover, venting, and openings)
 - Installations of tanks inside of buildings (location, venting)
 - Supports, foundations, and anchorage for all tank locations (fire resistance, load distribution, foundations, natural hazard areas)
 - Sources of ignition

3. PIPING, VALVES AND FITTINGS: Requirements are stated regarding the design and construction of materials used for joints, supports, corrosion protection and valves. Requirements are also stated for the testing of fixed piping.
4. CONTAINER AND PORTABLE TANK STORAGE: This section applies 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 that has a liquid capacity of over 60 gallons and is not intended for fixed installations.

Rules cover the general design and construction requirements of:

- Containers (emergency venting, size)
 - Storage cabinets (capacity, size, fire resistance)
 - Interior storage rooms (construction, rating and capacity, wiring, ventilation, container storage)
 - General storage inside and outside of buildings
 - Additional requirements apply for storage of flammable and combustible liquids inside: Office Occupancies, Mercantile operations, General Purpose Public Warehouses, Warehouses or Storage Buildings
 - Fire control, including fire extinguishers, sprinklers and other special fire control systems.
5. INDUSTRIAL PLANTS: This section 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.

The regulations address specific requirements for:

- Incidental Storage -
 - containers (size and quantity)
 - separation and protection of areas for liquid transfer
 - safe handling procedures at the point of final use
- Unit Physical Operations
 - location
 - chemical processes
 - drainage
 - ventilation
 - storage and handling

- Tank Vehicle and Tank Car Loading and Unloading
 - Fire Control
 - Sources of Ignition
 - Electrical Systems
 - Repairs to Equipment
 - Housekeeping
6. BULK PLANTS: Rules in this section govern those portions of a facility where flammable and combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids in the same manner as received. Stated requirements cover:
- Container requirements for specific classes of liquids
 - Piling of containers
 - Building requirements (egress, heating, ventilation)
 - Loading and unloading facility specifications
 - Wharves (equipment or structures located over navigable waters)
 - Electrical equipment specifications
 - Sources of ignition
 - Drainage and waste disposal
 - Fire control
7. SERVICE STATIONS: Rules in this section govern flammable and combustible liquids in fueling service stations. Because these operations are specialized, specific rules are not discussed in this document or the Vivid training module.
8. PROCESSING PLANTS (other than listed in 9, below) Rules in this section govern flammable and combustible liquids in processing plants that contain chemical operations such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes. Because these operations are specialized, specific rules are not discussed in this document or the Vivid training module.
9. REFINERIES, CHEMICAL PLANTS, AND DISTILLERIES: Rules in this section govern flammable and combustible liquids in Refineries, chemical plants, and distilleries. Because these operations are specialized, specific rules are not discussed in this document or the Vivid training module.

REFERENCE MATERIALS

Publications

Fire Safety Documents by Topic A listing of several fire safety information documents from National Ag Safety Database (NASD).

Can be accessed at: <http://www.cdc.gov/niosh/nasd/menus/topfire.html>

Flammable and Combustible Materials Checklist

<http://www.osha.gov/SLTC/smallbusiness/chklist.html#Flammable>

Website

OSHA website:

<http://www.osha.gov/SLTC/firesafety/index.html>