Section 1.4: FLAMMABLE LIQUID STORAGE CABINETS

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A. Regulations, Standards and References

California Code of Regulations (CCR), Title 8, Article 141, Sections 5531-5540
California Fire Code Section 7902
NFPA 30 Chapter 4

B. Scope

Flammable liquid storage cabinets are intended for the storage of flammable and combustible liquids. This Guide applies to all Stanford University facilities, including leased properties. It covers the design, construction, and installation of Flammable Liquid Storage Cabinets; the Guide does not address the proper use of Flammable Liquid Storage Cabinets.

C. Design

- ***Approval/Submittal***

1. Flammable Liquid Storage Cabinets must be UL listed and must meet California Fire Code requirements.

Good Practice

UL listing and EH&S approval assures a minimum level of quality consistent with code requirements and good practice.

- ***Cabinet Capability***

2. Where flammable liquid storage cabinets are required, they shall be designed such that they do not exceed 120 gallons for the combined total quantity of all liquids (i.e., Classes 1, 2, and 3).

CCR, Title 24, Part 9, Section 7902.5.9.2
NFPA 30, Chapter 4-3.1

[Note: The 60-gallon limit for Classes 1 and 2 liquids has been deleted in Section 7902.5.9.2 of the 1998 California Fire Code (i.e., CCR, Title 24, Part 9). While NFPA 30 Chapter 4-3.1 still contains the limit, it is preempted by the California Fire Code and is therefore not enforceable.]

3. One or more Flammable Liquid Storage Cabinets are required for laboratories which store, use, or handle more than 10 gallons of flammable or combustible liquids.

CCR, Title 24, Part 9, Article 79

- ***Labeling***

3. Flammable Liquid Storage Cabinets shall be conspicuously labeled in red letters on contrasting background "FLAMMABLE - KEEP FIRE AWAY."

CCR, Title 8, Section 5533(b)

CCR, Title 24, Part 9, Section 7902.5.9.3.1
NFPA 30, Chapter 4-3.5

4. When flammable or combustible liquids present multiple hazards, the laboratory design shall address the storage requirements for each hazard.

CCR, Title 24, Part 9, Section 7902
California Fire Code Section 8001.11.8

For example, acetic acid is a corrosive and flammable material. Therefore, if stored in a flammable cabinet with other flammable materials, it must be segregated through the use of separate barriers (e.g., secondary containment). Incompatible material shall not be stored within the same cabinet.

D. Construction

- ***Materials***

1. New Flammable Liquid Storage Cabinets must be constructed of steel.

Good Practice per Stanford University EH&S

Wood cabinets are not UL listed or EH&S approved.

2. Flammable Liquid Storage Cabinets shall be constructed as follows:

a. Minimum wall thickness of 0.044 inches (18 gauge).

b. Double walled construction with a minimum air gap of 1-1/2-inches between the walls including the door, top, bottom, and sides.

c. Tight-fitting joints, welded or riveted.

d. Liquid-tight bottom with a door sill of at least 2 inches.

e. Three-point latch on doors.

CCR, Title 8, Section 5533
CCR, Title 24, Part 9, Section 7902.5.9.3
NFPA 30, Section 4-3.3(b)

- ***Doors***

3. Cabinet doors shall be self-closing and self-latching.

CCR, Title 24, Part 9, Section 7902.5.9.3.2

- ***Venting***

4. Flammable Liquid Storage Cabinets are not required to be vented except for odor control of malodorous materials. Vent openings shall be sealed with the bungs supplied with the cabinet or with bungs specified by the manufacturer of the cabinet. If vented, cabinet should be vented from the bottom with make-up air supplied to the

top. It shall be vented outdoors to an approved location or through a flame arrester to a fume hood exhaust system. Construction of the venting duct should be equal to the rating of the cabinet.

NFPA 30, Chapter 4-3.4
NFPA 99, Chapter 10-7.2.3

E. Location

1. Flammable Liquid Storage Cabinets shall NOT be located near exit doorways, stairways, or in a location that would impede egress.

CCR, Title 24, Part 9, Section 7902.5.5

2. Flammable Liquid Storage Cabinets must NOT be wall mounted.

Good Practice per Stanford University EH&S

Wall mounted cabinets are not UL Listed or Fire Marshal Approved.

3. Laboratory design must ensure that Flammable Liquid Storage Cabinets are NOT located near an open flame or other ignition source.

Good Practice per Stanford University EH&S

An open flame or other ignition source could start a fire or cause an explosion if an accident or natural disaster brought the ignition source and flammable liquids or vapors together.