

CENTRAL MARIN FIRE DEPARTMENT



Developed by

Ruben Martin, Fire Marshal
Approved by

Scott Shurtz, Fire Chief

Fire Protection Standard 311

Secondary Containment Aboveground Containers

Date: 8-21-2017

Revision: 8-21-2017

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The Central Marin Fire Department has developed this standard pursuant to Chapters 23 and 50 of the California Fire Code as adopted by ordinance. It is intended that this standard be used as a guide for minimum standards where secondary containment of above ground containers are required.

I. Scope

This standard shall apply to any container of hazardous materials as determined by ordinance adopted by the Central Marin Fire Department, which is not stored in an approved storage room or storage building.

II. When Required

- A. Secondary containment is required for any container of hazardous waste material, hazardous material, etiologic agent, or other materials as may be deemed necessary by the Fire Marshal or his designee to be secondarily contained.
- B. Any container 30-gallon liquid capacity or greater or 100 lbs. Solid, whichever is more restrictive.

III. Containment Construction

A. Spill Control

- 1. Floors shall be recessed a minimum of 4 inches or shall be provided with a liquid tight, raised sill. The seal shall be compatible with the material being stored.
- 2. The sill shall be constructed of non-combustible material with a minimum of two hour fire resistive rating and of a height, which would contain the quantity, specified in A3, B1 and B3.
- 3. In addition, the displacement volume of containers, equipment or tanks within the containment area shall be included in the containment calculation.
- 4. When liquid tight sills are provided, they may be omitted at door openings with the installation of an open-grate trench which connects to an approved secondary containment drainage system for the room.

B. Drainage

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1. The room, building or area shall be provided with a drainage system to direct the flow of liquids to an approved location. The area shall be designed to provide secondary containment for the hazardous materials and fire protection water.
2. A slope to drain not less than one percent shall be provided.
3. Drains from the area shall be sized to carry the automatic fire extinguishing system design flow rate over the system design area.
4. Materials of construction for the drainage system shall be compatible with the stored materials.
5. Incompatible materials shall be separated from each other in drain systems, They may be combined when they have been rendered acceptable by an approved means for discharge into the public sewer.
6. Flow from the drainage system shall be directed to an approved location.
7. Drainage of spillage and fire protection water may be directed to a neutralizer or treatment system which complies with the following:
 - a. The system shall be designed to handle the maximum worst case spill from the single largest container plus the volume of fire protection water from the system over the minimum design area for a period of 20 minutes.
 - b. The system shall be designed to overflow from the neutralizer or treatment system so that liquid leakage and fire protection water is directed to a safe location away from the building, valves, means of egress, adjoining property or fire district access roadway.

C. Containment

1. Drains shall be directed to a containment system or other location designed as secondary containment for the hazardous materials liquids and fire protection water, or the building, room or area shall be designed to provide secondary containment of hazardous material liquids and fire protection water through the use of recessed floors or liquid-tight sills.

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2. Secondary containment shall be designed to retain 150% of largest container of 10% or aggregate whichever is greater, plus the design flow rate of the automatic fire extinguishing system for the area of the room or area in which the storage is located. The containment capacity shall be capable of containing the flow for a period of 20 minutes.
3. Displacement volume shall be included in the containment calculation.
4. Overflow from the secondary containment system shall be provided to direct liquid leakage and fire protection water to a safe location away from the building, valves, means of egress, fire access roadway, adjoining property or storm drains.
5. If the storage area is open to rainfall, the secondary containment shall be designed to accommodate the volume of a 24-hour rainfall as determined by a 25-year storm. When curbs are used, provisions shall be made for draining accumulations of ground water or rain water, after which appropriate tests have been conducted for discharge to sewer and/or storm drain systems.
6. When secondary containment is required, a monitoring method capable of detecting hazardous material leakage from the primary containment into the secondary containment shall be provided. Visual inspection of the primary containment is the preferred method; however other means of monitoring may be approved by the Fire Marshal. Where secondary containment may be subject to the intrusion of water, a monitoring method for such water shall be provided. Whenever monitoring devices are provided, they shall be connected to distinct visual and/or audible alarms.

IV. Location

Materials shall be located based on requirements of Chapters 23 and 50 California Fire Code and based on hazard class and type of material.