TITLE 23. WATERS
DIVISION 3. STATE WATER RESOURCES CONTROL BOARD AND REGIONAL WATER QUALITY CONTROL BOARDS
CHAPTER 16. UNDERGROUND TANK REGULATIONS

Article 3. New Underground Storage Tank Design, Construction, and Monitoring Requirements

§ 2631. Design and Construction Requirements for New Underground Storage Tanks.

(a) All new underground storage tanks including associated piping used for the storage of hazardous substances shall have primary and secondary containment. Primary containment shall be product-tight. Secondary containment may be manufactured as an integral part of the primary containment or it may be constructed as a separate containment system. Secondary containment systems shall be designed and constructed such that the secondary containment system can be periodically tested in accordance with section 2637(a).

(b) Except as provided in subsection (j), the ~~The~~ design and construction of all primary containment including any integral secondary containment system shall be approved by an independent testing organization in accordance with industry codes, voluntary consensus standards, or engineering standards. Except as provided in subsection (j), all ~~All~~ other components used to construct the primary containment system, such as special accessories, fittings, coatings or linings, monitoring systems and level controls shall also be approved by an independent testing organization. This requirement became effective on July 1, 1991 for underground storage tanks; January 1, 1992 for piping; and shall be effective on January 1, 1995 for all other components. The exterior surface of underground storage tanks shall bear a marking, code stamp, or label showing the following minimum information:

(1) Engineering standard used;

(2) Nominal diameter in feet;

(3) Nominal capacity in gallons;

(4) Degree of secondary containment;

(5) Useable capacity in gallons;

(6) Design pressure in psig;

(7) Maximum operating temperature in degrees Fahrenheit;

(8) Construction materials;

(9) Year manufactured; and

(10) Identity of manufacturer.

(c) A primary containment system with or without an integral secondary containment system shall have wear plates (striker plates) installed, center to center, below all accessible openings. The plates shall be made of steel or other appropriate material if steel is not compatible with the hazardous substance stored. The width of the plate shall be at least eight inches on each side, or shall be equal to the area of the accessible opening or guide tube, whichever is larger. The thickness of the steel plate shall be at least 1/8 inch and those made of other materials shall be of sufficient thickness to provide equivalent protection. The plate, if under 1/4 inch thick, shall be rolled to the contours of the underground storage tank and all plates shall be bonded or tack welded in place. A drop tube-mounted bottom protector may fulfill this requirement.

(d) A secondary containment system which is not an integral part of primary containment shall be designed and constructed according to an engineering specification approved by a state registered professional engineer or according to a nationally recognized industry code or engineering standard. The engineering specification shall include the construction procedures. Materials used to construct the secondary containment system shall have sufficient thickness, density, and corrosion resistance to prevent structural weakening or damage to the secondary containment system as a result of contact with any released hazardous substance. The following requirements apply to these secondary containment systems:

(1) The secondary containment system shall be constructed to contain at least the following volumes:

(A) One hundred percent of the usable capacity of the primary containment system where only one primary container is within the secondary containment system.

(B) In the case of multiple primary containers within a single secondary containment system, the secondary containment system shall be large enough to contain 150 percent of the volume of the largest primary container within it, or 10 percent of the aggregate internal volume of all primary containers within the secondary containment system, whichever is greater. When all primary containers are completely enclosed within the secondary containment system, the restrictions of this subsection do not apply.

(2) If the secondary containment system is open to rainfall, it shall be constructed to accommodate the volume of precipitation which could enter the secondary containment system during a 24- hour, 25-year storm in addition to the volume specified in subsection (d)(1).

(3) If backfill material is placed in the secondary containment system, the volumetric requirements for the pore space shall be equal to the requirement in subsection (d)(1). The available pore space in the secondary containment system backfill shall be determined using standard engineering methods and safety factors. The specific retention and specific yield of the backfill material, the location of any primary container within the secondary containment, and the proposed method of operation for the secondary containment system shall be considered in determining the available pore space.

(4) The secondary containment system shall be equipped with a collection system to accumulate, temporarily store, and permit removal of any liquid within the system.

(5) The floor of the secondary containment system shall be constructed on a firm base and, if necessary for monitoring, shall be sloped to a collection sump. One or more access casings shall be installed in the sump and sized to allow removal of collected liquid. The access casing shall extend to the ground surface, be perforated in the region of the sump, and be covered with a locked waterproof cap or enclosed in a surface security structure that will protect the access casing(s) from entry of surface water, accidental damage, unauthorized access, and vandalism. A facility with locked gates will satisfy the requirements for protection against unauthorized access and vandalism. The casing shall have sufficient thickness to withstand all anticipated stresses with appropriate engineering safety factors and constructed of materials that will not be structurally weakened by the stored hazardous substance and will not donate, capture, or mask constituents for which analyses will be made.

(6) Secondary containment systems using membrane liners shall be approved by an independent testing organization in accordance with industry codes, voluntary consensus standards, or engineering standards. A membrane liner shall contain no primary nutrients or food-like substances attractive to rodents and shall meet the requirements in Table 3.1 after a 30-day immersion in the stored hazardous substance.

Table 3.1 Standards for Membrane Liners

Some Acceptable Test Methods (See Appendix I, Table A)

Property	Unsupported Liners	Supported Liners	Requirement
(A) Tensile strength Tensile strength at yield Tensile strength at break	ASTM D638	ASTM D751 Procedure B (Cut Strip Method)	>300 lbs./in. of width >200lbs./in. of width
(B) Permeability	ASTM E96	ASTM E96	<0.65 gram/meter-hr
(C) Seam Strength	ASTM D413	ASTM D751	=Parent material
(D) Solubility	ASTM D471	ASTM D471	<0.10% by weight
(E) Puncture	FTMS 101C Method 2065	FTMS 101C Method 2065	350 lbs. 80 lbs.
(F) Tear	ASTM D1004 DIEC	ASTM D721	152 lbs. 50 lbs.

(7) A membrane liner, if used, shall be installed under the direct supervision of a representative of the membrane liner fabricator or a contractor certified by the fabricator.

(8) The excavation base and walls for a membrane liner shall be prepared to the membrane liner fabricator's specifications and shall be firm, smooth, and free of any sharp objects or protrusions.

(9) The site shall be assessed to ensure that the secondary containment is always above the ground water and not in a 25-year flood plain, unless the containment and monitoring designs are for use under such conditions.

(e) Laminated, coated, or clad materials shall be considered a single wall and do not fulfill the requirements of both primary and secondary containment.

(f) Underground storage tanks with integral secondary containment systems, which satisfy the construction requirements of subsection (b), fulfill the volumetric requirements for secondary containment specified in subsection (d)(1).

(g) Underground storage tanks with secondary containment systems shall be so designed and installed so that any loss of a hazardous substance from the primary containment will be detected by an interstitial monitoring device or method.

(h) An underground storage tank which contains motor vehicle fuel and which is designed with an integral secondary containment system shall provide 100 percent secondary containment unless it is equipped with the overfill prevention system in accordance with section 2635(b)(2)(C). In this case, the top portion of the tank, no greater than two feet wide along the length of the tank, may be single-walled.

(i) Tanks designed and constructed pursuant to the provisions of this section shall be monitored according to the provisions of section 2632.

(j) Effective June 1, 2012, if an independent testing organization approval for containment or components described in subsection (b) does not include the compatibility of the hazardous substance stored or to be stored, an owner or operator may submit to the local agency a written, affirmative statement of compatibility for the specific hazardous substance from the manufacturer(s) of the containment or components. The written, affirmative statement of compatibility along with the independent testing approval specified in (b) shall satisfy the requirements in subsection (b) that all primary containment including any integral secondary containment system and all other components used to construct the primary containment system be approved by an independent testing organization as compatible with the specific hazardous substance stored or to be stored. If an affirmative statement of compatibility made by a manufacturer conflicts with a later determination by an independent testing organization on the compatibility of the hazardous substance stored or to be stored, the written, affirmative statement of compatibility shall no longer satisfy the compatibility requirements of subsection (b).

(k) Subsection (j) applies only to underground storage tanks that meet the construction requirements contained in Health and Safety Code section 25291, subdivision (a), paragraphs (1)-(6), inclusive and subdivisions (b)-(i), inclusive, section 25290.1 or section 25290.2, as applicable.

Authority: Sections 25299.3 and 25299.7, Health and Safety Code.
Reference: Sections 25281, 25284.1, and 25291, Health and Safety Code; 40 CFR 280.20.