

NFPA 1, Uniform Fire Code 2006
CHAPTER 52 Stationary Lead-Acid Battery Systems

52.1 SCOPE

Stationary lead-acid battery systems having an electrolyte capacity of more than 100 gallons (378.5L) in sprinklered buildings or 50 gallons (189.3L) in unsprinklered buildings used for facility standby power, emergency power or uninterrupted power supplies shall be in accordance with Chapter 52.

52.2 PERMITS

52.2.1 General. Permits, where required shall comply with Section 1.12.19

52.2.2 Design Submittals. Prior to installation, plans shall be submitted and approved by the AHJ (Authority Having Jurisdiction).

52.3 SAFETY FEATURES

52.3.1 Safety Venting. Batteries shall be provided with safety venting caps.

52.3.2 Thermal Runaway. Valve-regulated lead-acid (VRLA) battery systems shall be provided with a listed device or other approved method to preclude, detect, and control thermal runaway.

52.3.3 Location and Occupancy Separation

52.3.3.1 Battery systems shall be permitted in the same room as the equipment that they support.

52.3.3.2 Battery systems shall be housed in a noncombustible, locked cabinet or other enclosure to prevent access by unauthorized personnel unless located in a separate equipment room accessible only to authorized personnel.

52.3.3.3 In other than assembly, educational, detention and correction facilities, health care, ambulatory health care, day care centers, residential board and care, and residential occupancies, battery systems shall be located in a room separated from other portions of the building by a minimum of a 1-hour fire barrier.

52.3.3.4 In assembly, educational, detention and correction facilities, health care, ambulatory health care, day care centers, residential board and care, and residential occupancies, battery systems shall be located in a room separated from other portions of the building by a minimum of a 2-hour fire barrier.

52.3.4 Spill Control

52.3.4.1 Rooms, buildings, or areas containing free-flowing liquid electrolyte in individual vessels having a capacity of more than 55 gal (208 L) or multiple vessels having an aggregate capacity exceeding 1000 gal (3785 L) shall be provided with spill control to prevent the flow of liquids to adjoining areas.

52.3.4.2* An approved method and materials for the control of a spill of electrolyte shall be provided. The method shall be capable of controlling a spill from the single largest vessel.

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***A.52.3.4.2** Methods of achieving this protection include, but are not limited to, the following:

- (1) Liquid-tight sloped or recessed floors in indoor locations or similar areas in outdoor locations
- (2) Liquid-tight floors in indoor locations or similar areas in outdoor locations provided with liquid-tight raised or recessed sills or dikes
- (3) Sumps and collection systems

52.3.5 Neutralization

52.3.5.1 An approved method to neutralize spilled electrolyte shall be provided.

52.3.5.2 The method shall be capable of neutralizing a spill from the largest lead-acid battery to a pH between 7.0 and 9.0.

52.3.6 Ventilation. Ventilation shall be provided for rooms and cabinets in accordance with the mechanical code and one of the following:

- (1) The ventilation system shall be designed to limit the maximum concentration of hydrogen to 1.0 percent of the total volume of the room during the worst-case event of simultaneous "boost" charging of all the batteries, in accordance with nationally recognized standards.
- (2) Continuous ventilation shall be provided at a rate of not less than 1 ft³/min/ft² (5.1 L/sec/m²) of floor area of the room or cabinet.

52.3.7 Environment. The battery environment shall be controlled or analyzed to maintain temperature in a safe operating range for the specific battery technology used.

52.3.8 Signs.

52.3.8.1 Doors or accesses into rooms, buildings, or areas containing stationary lead-acid battery systems shall be provided with approved signs.

52.3.8.2 The signs shall state that the room contains lead-acid battery systems, that the battery room contains energized electrical circuits, and that the battery electrolyte solutions are corrosive liquids.

52.3.8.3 Battery cabinets shall be provided with exterior labels that identify the manufacturer and model number of the system and electrical rating (voltage and current) of the contained battery system. Within the cabinet, signs shall be provided to indicate the relevant electrical, chemical, and fire hazard.

52.3.9 Seismic Protection. In seismically active areas, battery systems shall be seismically braced in accordance with the building code.

52.3.10 Smoke Detection. An approved automatic smoke detection system shall be installed in such areas and supervised by an approved central, proprietary or remote station service or local alarm which will give an audible signal at a constantly attended location.



SPILL CONTAINMENT INC.

CODES & COMPLIANCES

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CHAPTER 3 Definitions

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3.3.21 Battery (Lead-Acid)

3.3.21.1* Valve-Regulated (VRLA). A lead-acid battery consisting of sealed cells furnished with a valve that opens to vent the battery whenever the internal pressure of the battery exceeds the ambient pressure by a set amount.

3.3.21.2* Vented (Flooded). A lead-acid battery consisting of cells that have electrodes immersed in liquid electrolyte.

3.3.22 Battery System (Lead-Acid). A system that consists of these interconnected subsystems: (1) lead-acid batteries; (2) battery chargers; and (3) a collection of rectifiers, inverters, converters, and associated electrical equipment as required for a particular application.

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