

**CHAPTER 44  
WATER-REACTIVE SOLIDS AND LIQUIDS**

**SECTION FC 4401  
GENERAL**

**4401.1 Scope.** This chapter shall govern the manufacture, storage, handling and use of water-reactive solids and liquids, except for the display and storage of water-reactive solids and liquids in Group M occupancies complying with the requirements of FC2703.11, and storage of water-reactive solids and liquids in Group S occupancies complying with the requirements of FC2703.11.

**4401.2 Permits.** Permits shall be required as set forth in FC105.6.

**4401.3 General.** Water-reactive solids and liquids shall be manufactured, stored, handled and used in accordance with this chapter.

**4401.4 Prohibited manufacture, storage, handling and use.** It shall be unlawful to manufacture, store, handle or use detonable water-reactive solids and liquids, except as specifically authorized by FC Chapter 33.

**4401.5 Supervision.** The handling and use of water-reactive solids and liquids in quantities requiring a permit shall be under the personal supervision of a certificate of fitness holder. The storage of water-reactive solids and liquids in quantities requiring a permit shall be under the general supervision of a certificate of fitness holder.

**SECTION FC 4402  
DEFINITIONS**

**4402.1 Definition.** The following term shall, for the purposes of this chapter and as used elsewhere in this code, have the meaning shown herein.

**WATER-REACTIVE MATERIAL.** A material that explodes, violently reacts, produces flammable, toxic or other hazardous gases, and/or generates enough heat to cause autoignition or ignition of combustible materials upon exposure to water or moisture. Water-reactive materials are classified as follows:

**Class 1.** Materials that react with water with some release of energy, but not violently.

**Class 2.** Materials that react violently with water or cause water to boil upon contact; produce flammable, toxic or other hazardous gases upon contact with water; or upon contact with water generate sufficient heat to cause autoignition or ignition of adjoining combustible materials.

**Class 3.** Materials that react explosively with water without requiring heat or confinement.

**SECTION FC 4403**

## GENERAL REQUIREMENTS

**4403.1 Quantities not exceeding the maximum allowable quantity per control area.** The storage, handling and use of water-reactive solids and liquids in amounts not exceeding the maximum allowable quantity per control area indicated in FC2703.1 shall be in accordance with FC 2701, 2703, 4401, 4403 and 4406.

**4403.1.1 Prohibited indoor storage, handling and use by occupancy.** It shall be unlawful to store, handle or use:

1. Class 3 water-reactive solids and liquids in Group A, E, I, R or U occupancies.
2. Class 3 water-reactive solids and liquids in offices in Group B, F, M or S occupancies, or any other areas of such occupancy accessible to the public.

**4403.2 Quantities exceeding the maximum allowable quantity per control area.** The storage, handling and use of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in FC2703.1 shall be in accordance with FC Chapter 27 and this chapter.

**4403.3 Multiple hazard sign.** Where more than one class of water-reactive solids and liquids is stored in immediate proximity to one another, such area shall be provided with hazard identification signs pursuant to FC Chapter 27 for the most severe class present.

**4403.4 Multiple class storage.** Except as otherwise specifically provided in this code, where more than one class of water-reactive solids and liquids is stored in the same control area, the maximum quantity allowed of each water-reactive solid or liquid shall be limited as follows: the maximum quantity shall be reduced by the maximum allowable quantity for each such solid or liquid by the proportion that such solid or liquid bears to the total quantity of water-reactive solid and liquid stored in the control area. The total of the proportional amounts shall not exceed 100 percent.

## SECTION FC 4404 STORAGE

**4404.1 Indoor storage.** Indoor storage of water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in FC Table 2703.1.1(1), shall be in accordance with FC 2701, 2703, 2704 and this chapter.

**4404.1.1 Detached storage.** Storage of water-reactive solids and liquids shall be in a detached building when required by FC2703.8.2.

**4404.1.2 Liquid-tight floor.** In addition to the provisions of FC2704.12, floors in storage areas for water-reactive solids and liquids shall be of liquid-tight construction.

**4404.1.3 Waterproof room.** Rooms or areas used for the storage of water-reactive solids and liquids shall be constructed in a manner which resists the penetration of water through the use of waterproof materials. Piping carrying water for other than sprinkler systems shall not be within such rooms or areas.

**4404.1.4 Water-tight containers.** When Class 2 and/or Class 3 water-reactive solids and liquids are stored in areas protected by a sprinkler system, the materials shall be stored in closed water-tight containers.

**4404.1.5 Storage configuration.** Water-reactive solids and liquids stored in quantities greater than 500 cubic feet (14 m<sup>3</sup>) shall be separated into piles, each not larger than 500 cubic feet (14 m<sup>3</sup>). Aisle widths between piles shall not be less than the height of the pile or 4 feet (1219 mm), whichever is greater.

**Exception:** Water-reactive solids and liquids stored in tanks.

**4404.1.5.1 Class 2 storage in basements or other areas below grade.** Class 2 water-reactive solids and liquids shall not be stored in basements or other areas below grade unless such materials are stored in closed water-tight containers or tanks.

**4404.1.5.2 Class 3 storage in basements or other areas below grade.** Class 3 water-reactive solids and liquids shall not be stored in basements or other areas below grade.

**4404.1.5.3 Flammable liquids.** Class 2 or Class 3 water-reactive solids and liquids shall not be stored with flammable liquids.

**4404.1.6 Explosion control.** Indoor storage rooms, areas and buildings containing Class 2 or Class 3 water-reactive solids and liquids shall be provided with explosion control in accordance with FC911 and the construction codes, including the Building Code.

**4404.1.7 Smoke and heat venting.** Rooms or areas for the storage of water-reactive solids and liquids shall be provided with smoke and heat venting in accordance with FC910 and the construction codes, including the Building Code.

**4404.2 Outdoor storage.** Outdoor storage of water-reactive solids and liquids in quantities exceeding the maximum allowable quantity per control area indicated in FC Table 2703.1.1(3) shall be in accordance with FC 2701, 2703, 2704 and this chapter.

**4404.2.1 General.** Outdoor storage of water-reactive solids and liquids shall be within tanks or closed water-tight containers and shall be in accordance with FC 4404.2.2 through 4404.2.5.

**4404.2.2 Distance to exposures from Class 3 material outdoor storage areas.** Class 3 water-reactive solids and liquids shall not be stored within 75 feet (22 860 mm) of buildings, lot lines, public streets, private roads or means of egress.

**4404.2.3 Distance to exposures from Class 1 and Class 2 material outdoor storage areas.**

Outdoor storage of Class 1 and Class 2 water-reactive solids and liquids shall not be within 20 feet (6096 mm) of buildings, lot lines, public streets, private roads or means of egress. A 2-hour fire barrier wall without openings or penetrations, and extending not less than 30 inches (762 mm) above and to the sides of the storage area, is allowed in lieu of such distance. The wall shall either be an independent structure, or the exterior wall of the building adjacent to the storage area.

**4404.2.4 Storage conditions.** Class 3 water-reactive solids and liquids shall be limited to piles not greater than 500 cubic feet (14 m<sup>3</sup>).

**4404.2.4.1 Class 1 and Class 2 piles.** Class 1 and Class 2 water-reactive solids and liquids shall be limited to piles not greater than 1,000 cubic feet (28 m<sup>3</sup>).

**4404.2.4.2 Aisle widths.** Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

**4404.2.5 Containment.** Secondary containment shall be provided in accordance with FC2704.2.2.

## **SECTION FC 4405 HANDLING AND USE**

**4405.1 General.** Water-reactive solids and liquids in amounts exceeding the maximum allowable quantity per control area indicated in FC Table 2703.1.1(1) or 2703.1.1(3) shall be handled and used in accordance with FC 2701, 2703, 2705 and this chapter.

## **SECTION FC 4406 MANUFACTURING RESTRICTIONS**

**4406.1 Water-reactive solids and liquids classified as a Class IV material.** Water-reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution may be utilized in manufacturing processes or other production in manufacturing districts only when authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution.

**4406.1.1 Manufacture of water-reactive solids and liquids classified as a Class IV material.** It shall be unlawful to manufacture water-reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution.

**4406.1.2 Storage of water-reactive solids and liquids classified as a Class IV material.** It shall be unlawful to store water-reactive solids and liquids classified as a Class IV material as defined in Section 42-272 of the Zoning Resolution, except that accessory storage authorized by a special permit pursuant to Section 42-276 of the Zoning Resolution shall be allowed.