

CHAPTER 39

ORGANIC PEROXIDES

SECTION 3901 GENERAL

3901.1 Scope. The storage and use of organic peroxides shall be in accordance with this chapter and Chapter 27.

Unclassified detonable organic peroxides that are capable of *detonation* in their normal shipping containers under conditions of fire exposure shall be stored in accordance with Chapter 33.

3901.2 Permits. Permits shall be required for organic peroxides as set forth in Section 105.6.

SECTION 3902 DEFINITIONS

3902.1 Definition. The following word and term shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

ORGANIC PEROXIDE. An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (*detonation* or *deflagration*) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

Class I. Describes those formulations that are capable of *deflagration* but not *detonation*.

Class II. Describes those formulations that burn very rapidly and that pose a moderate reactivity hazard.

Class III. Describes those formulations that burn rapidly and that pose a moderate reactivity hazard.

Class IV. Describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.

Class V. Describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

Unclassified detonable. Organic peroxides that are capable of *detonation*. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.

SECTION 3903 GENERAL REQUIREMENTS

3903.1 Quantities not exceeding the maximum allowable quantity per control area. The storage and use of organic peroxides in amounts not exceeding the *maximum allowable quantity per control area* indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703, 3901 and 3903.

3903.1.1 Special limitations for indoor storage and use by occupancy. The indoor storage and use of organic peroxides shall be in accordance with Sections 3903.1.1.1 through 3903.1.1.4.

3903.1.1.1 Group A, E, I or U occupancies. In Group A, E, I or U occupancies, any amount of unclassified detonable and Class I organic peroxides shall be stored in accordance with the following:

1. Unclassified detonable and Class I organic peroxides shall be stored in hazardous materials storage cabinets complying with Section 2703.8.7.
2. The hazardous materials storage cabinets shall not contain other storage.

3903.1.1.2 Group R occupancies. Unclassified detonable and Class I organic peroxides shall not be stored or used within Group R occupancies.

3903.1.1.3 Group B, F, M or S occupancies. Unclassified detonable and Class I organic peroxides shall not be stored or used in offices, or retail sales areas of Group B, F, M or S occupancies.

3903.1.1.4 Classrooms. In classrooms in Group B, F or M occupancies, any amount of unclassified detonable and Class I organic peroxides shall be stored in accordance with the following.

1. Unclassified detonable and Class I organic peroxides shall be stored in hazardous materials storage cabinets complying with Section 2703.8.7.
2. The hazardous materials storage cabinets shall not contain other storage.

3903.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of organic peroxides in amounts exceeding the *maximum allowable quantity per control area* indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

SECTION 3904 STORAGE

3904.1 Indoor storage. Indoor storage of organic peroxides in amounts exceeding the *maximum allowable quantity per control area* indicated in Table 2703.1.1(1) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

Indoor storage of unclassified detonable organic peroxides that are capable of *detonation* in their normal shipping containers under conditions of fire exposure shall be stored in accordance with Chapter 33.

3904.1.1 Detached storage. Storage of organic peroxides shall be in detached buildings when required by Section 2703.8.2.

3904.1.2 Distance from detached storage buildings to exposures. In addition to the requirements of the *International Building Code*, detached storage buildings shall be located in accordance with Table 3904.1.2.

3904.1.3 Liquid-tight floor. In addition to the requirements of Section 2704.12, floors of storage areas shall be of liquid-tight construction.

3904.1.4 Electrical wiring and equipment. In addition to the requirements of Section 2703.9.4, electrical wiring and equipment in storage areas for Class I or II organic peroxides shall comply with the requirements for electrical Class I, Division 2 locations.

3904.1.5 Smoke detection. An *approved* supervised smoke detection system in accordance with Section 907 shall be provided in rooms or areas where Class I, II or III organic peroxides are stored. Activation of the smoke detection system shall sound a local alarm.

Exception: A smoke detection system shall not be required in detached storage buildings equipped throughout with an *approved* automatic fire-extinguishing system complying with Chapter 9.

3904.1.6 Maximum quantities. Maximum allowable quantities per building in a mixed occupancy building shall not exceed the amounts set forth in Table 2703.8.2. Maximum allowable quantities per building in a detached storage building shall not exceed the amounts specified in Table 3904.1.2.

3904.1.7 Storage arrangement. Storage arrangements for organic peroxides shall be in accordance with Table 3904.1.7 and shall comply with all of the following:

1. Containers and packages in storage areas shall be closed.
2. Bulk storage shall not be in piles or bins.
3. A minimum 2-foot (610 mm) clear space shall be maintained between storage and uninsulated metal walls.
4. Fifty-five-gallon (208 L) drums shall not be stored more than one drum high.

3904.1.8 Location in building. The storage of Class I or II organic peroxides shall be on the ground floor. Class III organic peroxides shall not be stored in basements.

3904.1.9 Contamination. Organic peroxides shall be stored in their original DOTn shipping containers. Organic peroxides shall be stored in a manner to prevent contamination.

3904.1.10 Explosion control. Indoor storage rooms, areas and buildings containing unclassified detonable and Class I organic peroxides shall be provided with explosion control in accordance with Section 911.

3904.1.11 Standby power. Standby power in accordance with Section 604 shall be provided for storage areas of Class I and unclassified detonable organic peroxide.

3904.2 Outdoor storage. Outdoor storage of organic peroxides in amounts exceeding the *maximum allowable quantities per control area* indicated in Table 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2704 and this chapter.

3904.2.1 Distance from storage to exposures. Outdoor storage areas for organic peroxides shall be located in accordance with Table 3904.1.2.

3904.2.2 Electrical wiring and equipment. In addition to the requirements of Section 2703.9.4, electrical wiring and equipment in outdoor storage areas containing unclassified detonable, Class I or II organic peroxides shall comply with the requirements for electrical Class I, Division 2 locations.

3904.2.3 Maximum quantities. Maximum quantities of organic peroxides in outdoor storage shall be in accordance with Table 3904.1.2.

3904.2.4 Storage arrangement. Storage arrangements shall be in accordance with Table 3904.1.7.

3904.2.5 Separation. In addition to the requirements of Section 2703.9.8, outdoor storage areas for organic peroxides in amounts exceeding those specified in Table 2703.8.2 shall be located a minimum distance of 50 feet (15 240 mm) from other hazardous material storage.

**TABLE 3904.1.2
ORGANIC PEROXIDES—DISTANCE TO EXPOSURES FROM
DETACHED STORAGE BUILDINGS OR OUTDOOR STORAGE AREAS**

ORGANIC PEROXIDE CLASS	MAXIMUM STORAGE QUANTITY (POUNDS) AT MINIMUM SEPARATION DISTANCE					
	Distance to buildings, lot lines, public streets, public alleys, public ways or means of egress			Distance between individual detached storage buildings or individual outdoor storage areas		
	50 feet	100 feet	150 feet	20 feet	75 feet	100 feet
I	2,000	20,000	175,000	2,000	20,000	175,000
II	100,000	200,000	No Limit	100,000 ^a	No Limit	No Limit
III	200,000	No Limit	No Limit	200,000 ^a	No Limit	No Limit
IV	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit
V	No Limit	No Limit	No Limit	No Limit	No Limit	No Limit

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg.

a. When the amount of organic peroxide stored exceeds this amount, the minimum separation shall be 50 feet.

**TABLE 3904.1.7
STORAGE OF ORGANIC PEROXIDES**

ORGANIC PEROXIDE CLASS	PILE CONFIGURATION				MAXIMUM QUANTITY PER BUILDING
	Maximum width (feet)	Maximum height (feet)	Minimum distance to next pile (feet)	Minimum distance to walls (feet)	
I	6	8	4 ^a	4 ^b	Note c
II	10	8	4 ^a	4 ^b	Note c
III	10	8	4 ^a	4 ^b	Note c
IV	16	10	3 ^{a,d}	4 ^b	No Requirement
V	No Requirement	No Requirement	No Requirement	No Requirement	No Requirement

For SI: 1 foot = 304.8 mm.

- a. At least one main aisle with a minimum width of 8 feet shall divide the storage area.
- b. Distance to noncombustible walls is allowed to be reduced to 2 feet.
- c. See Table 3904.1.2 for maximum quantities.
- d. The distance shall not be less than one-half the pile height.

SECTION 3905 USE

3905.1 General. The use of organic peroxides in amounts exceeding the *maximum allowable quantity per control area* indicated in Table 2703.1.1(1) or 2703.1.1(3) shall be in accordance with Sections 2701, 2703, 2705 and this chapter.

