

CHAPTER 36

FLAMMABLE SOLIDS

SECTION 3601 GENERAL

3601.1 Scope. The storage and use of flammable solids shall be in accordance with this chapter.

3601.2 Permits. Permits shall be required as set forth in Section 105.6.

SECTION 3602 DEFINITIONS

3602.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in this code, have the meanings shown herein.

FLAMMABLE SOLID. A solid, other than a blasting agent or *explosive*, that is capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR; Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.1 inch (2.5 mm) per second along its major axis.

MAGNESIUM. The pure metal and alloys, of which the major part is magnesium.

SECTION 3603 GENERAL REQUIREMENTS

3603.1 Quantities not exceeding the maximum allowable quantity per control area. The storage and use of flammable solids in amounts not exceeding the *maximum allowable quantity per control area* as indicated in Section 2703.1 shall be in accordance with Sections 2701, 2703 and 3601.

3603.2 Quantities exceeding the maximum allowable quantity per control area. The storage and use of flammable solids exceeding the *maximum allowable quantity per control area* as indicated in Section 2703.1 shall be in accordance with Chapter 27 and this chapter.

SECTION 3604 STORAGE

3604.1 Indoor storage. Indoor storage of flammable solids 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.

3604.1.1 Pile size limits and location. Flammable solids stored in quantities greater than 1,000 cubic feet (28 m³) shall be separated into piles each not larger than 1,000 cubic feet (28 m³).

3604.1.2 Aisles. Aisle widths between piles shall not be less than the height of the piles or 4 feet (1219 mm), whichever is greater.

3604.1.3 Basement storage. Flammable solids shall not be stored in *basements*.

3604.2 Outdoor storage. Outdoor storage of flammable solids 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. Outdoor storage of magnesium shall be in accordance with Section 3606.

3604.2.1 Distance from storage to exposures. Outdoor storage of flammable solids shall not be located within 20 feet (6096 mm) of a building, *lot line*, public street, public alley, *public way* or *means of egress*. A 2-hour *fire barrier* without openings or penetrations and extending 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.

3604.2.2 Pile size limits. Outdoor storage of flammable solids shall be separated into piles not larger than 5,000 cubic feet (141 m³) each. Piles shall be separated by aisles with a minimum width of not less than one-half the pile height or 10 feet (3048 mm), whichever is greater.

SECTION 3605 USE

3605.1 General. The use of flammable solids 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. The use of magnesium shall be in accordance with Section 3606.

SECTION 3606 MAGNESIUM

3606.1 General. Storage, use, handling and processing of magnesium, including the pure metal and alloys of which the major part is magnesium, shall be in accordance with Chapter 27 and Sections 3606.2 through 3606.5.8.

3606.2 Storage of magnesium articles. The storage of magnesium shall comply with Sections 3606.2.1 through 3606.4.3.

3606.2.1 Storage of greater than 50 cubic feet. Magnesium storage in quantities greater than 50 cubic feet (1.4 m³) shall be separated from storage of other materials that are either combustible or in combustible containers by aisles. Piles shall be separated by aisles with a minimum width of not less than the pile height.

3606.2.2 Storage of greater than 1,000 cubic feet. Magnesium storage in quantities greater than 1,000 cubic feet (28 m³) shall be separated into piles not larger than 1,000 cubic feet (28 m³) each. Piles shall be separated by aisles with a minimum width of not less than the pile height. Such storage shall not be located in nonsprinklered buildings of Type III, IV or V construction, as defined in the *International Building Code*.

3606.2.3 Storage in combustible containers or within 30 feet of other combustibles. Where in nonsprinklered buildings of Type III, IV or V construction, as defined in the *International Building Code*, magnesium shall not be stored in combustible containers or within 30 feet (9144 mm) of other combustibles.

3606.2.4 Storage in foundries and processing plants. The size of storage piles of magnesium articles in foundries and processing plants shall not exceed 1,250 cubic feet (25 m³). Piles shall be separated by aisles with a minimum width of not less than one-half the pile height.

3606.3 Storage of pigs, ingots and billets. The storage of magnesium pigs, ingots and billets shall comply with Sections 3606.3.1 and 3606.3.2.

3606.3.1 Indoor storage. Indoor storage of pigs, ingots and billets shall only be on floors of noncombustible construction. Piles shall not be larger than 500,000 pounds (226.8 metric tons) each. Piles shall be separated by aisles with a minimum width of not less than one-half the pile height.

3606.3.2 Outdoor storage. Outdoor storage of magnesium pigs, ingots and billets shall be in piles not exceeding 1,000,000 pounds (453.6 metric tons) each. Piles shall be separated by aisles with a minimum width of not less than one-half the pile height. Piles shall be separated from combustible materials or buildings on the same or adjoining property by a distance of not less than the height of the nearest pile.

3606.4 Storage of fine magnesium scrap. The storage of scrap magnesium shall comply with Sections 3606.4.1 through 3606.4.3.

3606.4.1 Separation. Magnesium fines shall be kept separate from other combustible materials.

3606.4.2 Storage of 50 to 1,000 cubic feet. Storage of fine magnesium scrap in quantities greater than 50 cubic feet (1.4 m³) [six 55-gallon (208 L) steel drums] shall be separated from other occupancies by an open space of at least 50 feet (15 240 mm) or by a *fire barrier* constructed in accordance with the *International Building Code*.

3606.4.3 Storage of greater than 1,000 cubic feet. Storage of fine magnesium scrap in quantities greater than 1,000 cubic feet (28 m³) shall be separated from all buildings other than those used for magnesium scrap recovery operations by a distance of not less than 100 feet (30 480 mm).

3606.5 Use of magnesium. The use of magnesium shall comply with Sections 3606.5.1 through 3606.5.8.

3606.5.1 Melting pots. Floors under and around melting pots shall be of noncombustible construction.

3606.5.2 Heat-treating ovens. *Approved* means shall be provided for control of magnesium fires in heat-treating ovens.

3606.5.3 Dust collection. Magnesium grinding, buffing and wire-brushing operations, other than rough finishing of castings, shall be provided with *approved* hoods or enclosures for dust collection which are connected to a liquid-precipitation type of separator that converts dust to sludge without contact (in a dry state) with any high-speed moving parts.

3606.5.3.1 Duct construction. Connecting ducts or suction tubes shall be completely grounded, as short as possible, and without bends. Ducts shall be fabricated and assembled with a smooth interior, with internal lap joints pointing in the direction of airflow and without unused capped side outlets, pockets or other dead-end spaces which allow an accumulation of dust.

3606.5.3.2 Independent dust separators. Each machine shall be equipped with an individual dust-separation unit.

Exceptions:

1. One separator is allowed to serve two dust-producing units on multiunit machines.
2. One separator is allowed to serve not more than four portable dust-producing units in a single enclosure or stand.

3606.5.4 Power supply interlock. Power supply to machines shall be interlocked with exhaust airflow, and liquid pressure level or flow. The interlock shall be designed to shut down the machine it serves when the dust removal or separator system is not operating properly.

3606.5.5 Electrical equipment. Electric wiring, fixtures and equipment in the immediate vicinity of and attached to dust-producing machines, including those used in connection with separator equipment, shall be of *approved* types and shall be *approved* for use in Class II, Division 1 hazardous locations in accordance with NFPA 70.

3606.5.6 Grounding. Equipment shall be securely grounded by permanent ground wires in accordance with NFPA 70.

3606.5.7 Fire-extinguishing materials. Fire-extinguishing materials shall be provided for every operator performing machining, grinding or other processing operation on magnesium as follows:

1. Within 30 feet (9144 mm), a supply of extinguishing materials in an *approved* container with a hand scoop or shovel for applying the material; or
2. Within 75 feet (22 860 mm), a portable fire extinguisher complying with Section 906.

All extinguishing materials shall be *approved* for use on magnesium fires. Where extinguishing materials are stored in cabinets or other enclosed areas, the enclosures shall be openable without the use of a key or special knowledge.

3606.5.8 Collection of chips, turnings and fines. Chips, turnings and other fine magnesium scrap shall be collected

from the pans or spaces under machines and from other places where they collect at least once each working day. Such material shall be placed in a covered, vented steel container and removed to an *approved* location.

