Department of Commerce
Division of Industrial Compliance
John R. Kasich, Governor
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November 2014

At its meeting on October 24, 2014, the Ohio Board of Building Standards adopted the rule changes identified as Amendments Group 89. These rule amendments were adopted for an **effective date of January 1, 2015**.

Amendments Group 89 included the following amended Ohio Building Code (OBC) rules. For your use, a summary of the changes is provided below and the text of the rules can be found immediately following this coversheet:

Rule Number	OBC Chapter	Chapter Title	Effective date
4101:1-3-01	3	Use and occupancy classification.	January 1, 2015
4101:1-35-01	35	Referenced standards.	January 1, 2015

Reason for Amendments: 4101:1-3-01 to clarify the appropriate NFPA 70 (National Electrical Code) edition to be used for R-3 occupancies using the Residential Code of Ohio requirements; **4101:1-35-01** to update the NFPA 70 standard in the Ohio Building Code to the 2014 edition for non-residential buildings as a result of approved Petition #13-004, to add "residential" to the title of ASHRAE 90.1, and to list TIA 10-4 and TIA 10-5 with the NFPA 72 standard to clarify the intent of the low frequency alarm requirements for fire alarm and emergency alarm systems and smoke alarms.

If you should have any questions regarding these rule changes, please call BBS staff at (614)644-2613.

4101:1-3-01 Use and occupancy classification.

[Comment: When a reference is made within this rule to a federal statutory provision, an industry consensus standard, or any other technical publication, the specific date and title of the publication as well as the name and address of the promulgating agency are listed in rule 4101:1-35-01 of the Administrative Code. The application of the referenced standards shall be limited and as prescribed in section 102.5 of rule 4101:1-1-01 of the Administrative Code.]

SECTION 301
GENERAL

301.1 Scope. The provisions of this chapter shall control the classification of all buildings and structures as to use and occupancy.

SECTION 302
CLASSIFICATION

302.1 General. Structures or portions of structures shall be classified with respect to occupancy in one or more of the groups listed below. A room or space that is intended to be occupied at different times for different purposes shall comply with all of the requirements that are applicable to each of the purposes for which the room or space will be occupied. Structures with multiple occupancies or uses shall comply with Section 508. Where a structure is proposed for a purpose that is not specifically provided for in this code, such structure shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard involved.

1. Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5
2. Business (see Section 304): Group B
3. Educational (see Section 305): Group E
4. Factory and Industrial (see Section 306): Groups F-1 and F-2
5. High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5
6. Institutional (see Section 308): Groups I-1, I-2, I-3 and I-4
7. Mercantile (see Section 309): Group M
8. Residential (see Section 310): Groups R-1, R-2, R-3 and R-4
9. Storage (see Section 311): Groups S-1 and S-2
10. Utility and Miscellaneous (see Section 312): Group U

SECTION 303

ASSEMBLY GROUP A

303.1 Assembly Group A. Assembly Group A occupancy includes, among others, the use of a building or structure, or a portion thereof, for the gathering of persons for purposes such as civic, social or religious functions; recreation, food or drink consumption or awaiting transportation.

Exceptions:

1. A building or tenant space used for assembly purposes with an occupant load of less than 50 persons shall be classified as a Group B occupancy.
2. A room or space used for assembly purposes with an occupant load of less than 50 persons and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
3. A room or space used for assembly purposes that is less than 750 square feet (70 m^2) in area and accessory to another occupancy shall be classified as a Group B occupancy or as part of that occupancy.
4. Assembly areas that are accessory to Group E occupancies are not considered separate occupancies except when applying the assembly occupancy requirements of Chapter 11.
5. Accessory religious educational rooms and religious auditoriums with occupant loads of less than 100 are not considered separate occupancies.

Assembly occupancies shall include the following:

A-1 Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures including, but not limited to:

Motion picture theaters

Symphony and concert halls

Television and radio studios admitting an audience

Theaters

A-2 Assembly uses intended for food and/or drink consumption including, but not limited to:

Banquet halls
Night clubs
Restaurants
Taverns and bars

A-3 Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

Amusement arcades
Art galleries
Bowling alleys
Community halls
Courtrooms
Dance halls (not including food or drink consumption)
Exhibition halls
Funeral parlors
Gymnasiums (without spectator seating)
Indoor swimming pools (without spectator seating)
Indoor tennis courts (without spectator seating)
Lecture halls
Libraries
Museums
Places of religious worship
Pool and billiard parlors
Waiting areas in transportation terminals

A-4 Assembly uses intended for viewing of indoor sporting events and activities with spectator seating including, but not limited to:

Arenas
Skating rinks
Swimming pools
Tennis courts

A-5 Assembly uses intended for participation in or viewing outdoor activities including, but not limited to:

Amusement park structures
Bleachers
Grandstands
Stadiums

SECTION 304
BUSINESS GROUP B

304.1 Business Group B. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

Airport traffic control towers

Ambulatory health care facilities
Animal hospitals, kennels and pounds
Banks
Barber and beauty shops
Car wash
Civic administration
Clinic—outpatient
Dry cleaning and laundries: pick-up and delivery stations and self-service
Educational occupancies for students above the 12th grade
Electronic data processing
Laboratories: testing and research
Motor vehicle showrooms
Post offices
Print shops
Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
Radio and television stations
Telephone exchanges
Training and skill development not within a school or academic program

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

AMBULATORY HEALTH CARE FACILITY. In accordance with Section 422, buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less than 24-hour basis to individuals who are rendered incapable of self-preservation.

CLINIC, **OUTPATIENT**. Buildings or portions thereof used to provide medical care on less than a 24-hour basis to individuals who are not rendered incapable of self-preservation by the services provided.

SECTION 305
EDUCATIONAL GROUP E

305.1 Educational Group E. Educational Group E occupancy includes, among others, the use of a building or structure, or a portion thereof, by six or more persons at any one time for educational purposes through the 12th grade. Religious educational rooms and religious auditoriums, which are accessory to places of religious worship in accordance with Section 303.1 and have occupant loads of less than 100, shall be classified as A-3 occupancies.

305.2 Day care. The use of a building or structure, or portion thereof, for educational, supervision or personal care services for more than five children older than 2 ½ years of age, shall be classified as a Group E occupancy.
A child day care facility that provides care for more than five but no more than 100 children 2 ½ years or less of age, where the rooms in which the children are cared for are located on a level of exit discharge serving such rooms and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.

SECTION 306
FACTORY GROUP F

306.1 Factory Industrial Group F. Factory Industrial Group F occupancy includes, among others, the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as a Group H hazardous or Group S storage occupancy.

306.2 Factory Industrial F-1 Moderate-hazard Occupancy.
Factory industrial uses which are not classified as Factory Industrial F-2 Low Hazard shall be classified as F-1 Moderate Hazard and shall include, but not be limited to, the following:

Aircraft (manufacturing, not to include repair) Appliances
Athletic equipment
Automobiles and other motor vehicles
Bakeries
Beverages: over 16-percent alcohol content
Bicycles
Boats
Brooms or brushes
Business machines
Cameras and photo equipment
Canvas or similar fabric
Carpets and rugs (includes cleaning)
Clothing
Construction and agricultural machinery
Disinfectants
Dry cleaning and dyeing
Electric generation plants
Electronics
Engines (including rebuilding)

Food processing
Furniture
Hemp products
Jute products
Laundries
Leather products
Machinery
Metals
Millwork (sash and door)
Motion pictures and television filming (without spectators)
Musical instruments
Optical goods
Paper mills or products
Photographic film
Plastic products
Printing or publishing
Recreational vehicles
Refuse incineration
Shoes
Soaps and detergents
Textiles
Tobacco
Trailers
Upholstering
Wood; distillation
Woodworking (cabinet)

306.3 Factory Industrial F-2 **Low-hazard Occupancy**. Factory industrial uses that involve the fabrication or manufacturing of noncombustible materials which during finishing, packing or processing do not involve a significant fire hazard shall be classified as F-2 occupancies and shall include, but not be limited to, the following:

Beverages; up to and including 16-percent alcohol content Brick and masonry
Ceramic products
Foundries
Glass products
Gypsum
Ice
Metal products (fabrication and assembly)

SECTION 307
HIGH-HAZARD GROUP H

307.1 High-hazard Group H. High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or health hazard in quantities in excess of those allowed in control areas complying with Section 414, based on the maximum allowable quantity limits for control areas set forth in Tables 307.1(1) and 307.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this section, the requirements of Section 415 and the *fire code*. Hazardous materials stored, or used on top of roofs or canopies shall be classified as outdoor storage or use and shall comply with the *fire code*.

Exceptions: The following shall not be classified as Group H, but shall be classified as the occupancy that they most nearly resemble.

1. Buildings and structures occupied for the application of flammable finishes, provided that such buildings or areas conform to the requirements of Section 416 and the *fire code*.
2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the *fire code*.
3. Closed piping system containing flammable or combustible liquids or gases utilized for the operation of machinery or equipment.
4. Cleaning establishments that utilize combustible liquid solvents having a flash point of 140°F (60°C) or higher in closed systems employing equipment listed by an approved testing agency, provided that this occupancy is separated from all other areas of the building by 1-hour fire barriers constructed in accordance with Section 707 or 1-hour horizontal assemblies constructed in accordance with Section 712, or both.
5. Cleaning establishments that utilize a liquid solvent having a flash point at or above 200°F (93°C).
6. Liquor stores and distributors without bulk storage.
7. Refrigeration systems.
8. The storage or utilization of materials for agricultural purposes on the premises.
9. Stationary batteries utilized for facility emergency power, uninterrupted power supply or telecommunication facilities, provided that the batteries are provided with safety venting caps and ventilation is provided in accordance with the *mechanical code*.
10. Corrosives shall not include personal or household products in their original packaging used in retail display or commonly used building

materials.

11. Buildings and structures occupied for aerosol storage shall be classified as Group S-1, provided that such buildings conform to the requirements of the *fire code*.
12. Display and storage of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in quantities not exceeding the maximum allowable quantity per control area in Group M or S occupancies complying with Section 414.2.5.
13. The storage of black powder, smokeless propellant and small arms primers in Groups M and R-3 and special industrial explosive devices in Groups B, F, M and S, provided such storage conforms to the quantity limits and requirements prescribed in the *fire code*.

TABLE 307.1(1)
MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARD[a, j, m, n, p]

MATERIAL	CLASS	GROUP WHEN THE MAXIMUM ALLOWABLE QUANTITY IS EXCEEDED	STORAGE[b]			USE-CLOSED SYSTEMS[b]			USE-OPEN SYSTEMS[b]	
			Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons (pounds)	Gas (cubic feet at NTP)	Solid pounds (cubic feet)	Liquid gallons(pounds)
Combustible liquid[c,i]	II IIIA IIIB	H-2 or H-3 H-2 or H-3 N/A	N/A	120 [d, e] 330 [d,e] 13,200 [e, f]	N/A	N/A	120[d] 330[d] 13,200[f]	N/A	N/A	30 [d] 80 [d] 3,300[f]
Combustible fiber	Loose Baled [o]	H-3	(100) (1,000)	N/A	N/A	(100) (1,000)	N/A	N/A	(20) (200)	N/A
Consumer fireworks(Class C, Common)	1.4G	H-3	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cryogenics, flammable	N/A	H-2	N/A	45[d]	N/A	N/A	45[d]	N/A	N/A	10[d]
Cryogenics, inert	N/A	N/A	N/A	N/A	NL	N/A	N/A	NL	N/A	N/A
Cryogenics, oxidizing	N/A	H-3	N/A	45[d]	N/A	N/A	45[d]	N/A	N/A	10[d]
Explosives	Division 1.1 Division 1.2 Division 1.3 Division 1.4 Division 1.4G Division 1.5 Division 1.6	H-1 H-1 H-1 or H-2 H-3 H-3 H-1 H-1	1 [e, g] 1 [e, g] 5 [e, g] 50 [e, g] 125 [d, e, l] 1 [e, g] 1 [d, e, g]	(1) [e, g] (1) [e, g] (5) [e, g] (50) [e, g] N/A (1) [e, g] N/A	N/A N/A N/A N/A N/A N/A N/A	0.25 [g] 0.25 [g] 1 [g] 50 [g] N/A 0.25[g] N/A	(0.25)[g] (0.25) [g] (1) [g] (50) [g] N/A (0.25) [g] N/A	N/A N/A N/A N/A N/A N/A N/A	0.25 [g] 0.25 [g] 1 [g] N/A N/A 0.25 [g] N/A	(0.25) [g] (0.25) [g] (1) [g] N/A N/A (0.25)[g] N/A
Flammable gas	Gaseous Liquefied	H-2	N/A	N/A (150)[d, e]	1,000 [d, e] N/A	N/A	N/A (150)[d, e]	1,000[d, e] N/A	N/A	N/A

Flammable liquid[c]	1A 1B and 1C	H-2 or H-3	N/A	30 [d, e] 120 [d, e]	N/A	N/A	30 [d] 120 [d]	N/A	N/A	10 [d] 30 [d]
Flammable liquid,combination (1A, 1B, 1C)	N/A	H-2 or H-3	N/A	120 [d, e, h]	N/A	N/A	120 [d, h]	N/A	N/A	30 [d, h]
Flammable solid	N/A	H-3	125[d, e]	N/A	N/A	125[d]	N/A	N/A	25 [d]	N/A
Inert gas	Gaseous Liquefied	N/A N/A	N/A N/A	N/A N/A	NL NL	N/A N/A	N/A N/A	NL NL	N/A N/A	N/A N/A
Organic peroxide	UD I II III IV V	H-1 H-2 H-3 H-3 N/A N/A	1 [e, g] 5 [d, e] 50 [d, e] 125 [d, e] NL NL	(1) e, g (5) d, e (50)d, e (125)d, e NL NL	N/A N/A N/A N/A N/A N/A	0.25[g] 1 [d] 50 [d] 125 [d] NL NL	(0.25)[g] (1) (50)[d] (125)[d] NL NL	N/A N/A N/A N/A N/A N/A	0.25[g] 1 [d] 10 [d] 25 [d] NL NL	(0.25)[g] (1) [d] (10)[d] (25)[d] NL NL
Oxidizer	4 3 [k] 2 1	H-1 H-2 or H-3 H-3 N/A	1 [e, g] 10 [d, e] 250 [d, e] 4,000 [e, f]	(1) [e, g] (10)[d, e] (250)[d, e] (4,000)[e, f]	N/A N/A N/A N/A	0.25[g] 2 [d] 250[d] 4,000[f]	(0.25)[g] (2) [d] (250)[d] (4,000)[f]	N/A N/A N/A N/A	0.25[g] 2 [d] 50 [d] 1,000[f]	(0.25)[g] (2) [d] (50)[d] (1,000)[f]
Oxidizing gas	Gaseous Liquefied	H-3	N/A N/A	N/A (150)[d, e]	1,500 [d,e] N/A	N/A N/A	N/A (150)[d, e]	1,500 [d, e] N/A	N/A N/A	N/A N/A
Pyrophoric material	N/A	H-2	4[e, g]	(4) [e, g]	50 [e, g]	1 [g]	(1) [g]	10 [g]	0	0
Unstable (reactive)	4 3 2 1	H-1 H-1 or H-2 H-3 N/A	1 [e, g] 5 [d, e] 50 [d, e] NL	(1) [e, g] (5) [d, e] (50)[d, e] NL	10 [g] 50 [d, e] 250[d, e] NL	0.25[g] 1 [d] 50 [d] NL	(0.25)[g] (1) [d] (50)[d] NL	2 [e, g] 10[d, e] 250[d, e] NL	0.25[g] 1 [d] 10 [d] NL	(0.25)[g] (1)[d] (10)[d] NL
Water reactive	3 2 1	H-2 H-3 N/A	5 [d, e] 50[d, e] NL	(5) [d, e] (50)[d, e] NL	N/A N/A N/A	5 [d] 50 [d] NL	(5) [d] (50)[d] NL	N/A N/A N/A	1 [d] 10 [d] NL	(1)[d] (10)[d] NL

For SI: 1 cubic foot = 0.028 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.NL = Not Limited; N/A = Not Applicable; UD = Unclassified Detonable

a. For use of control areas, see Section 414.2.

b. The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

c. The quantities of alcoholic beverages in retail and wholesale sales occupancies shall not be limited providing the liquids are packaged in individual containers not exceeding 1.3 gallons. In retail and wholesale sales occupancies, the quantities of medicines, foodstuffs, consumer or industrial products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids with the remainder of the solutions not being flammable, shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.

d. Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1. Where Note e also applies, the increase for both notes shall be applied accumulatively.

e. Maximum allowable quantities shall be increased 100 percent when stored in approved storage cabinets, day boxes, gas cabinets or exhausted enclosures or in listed safety cans in accordance with Section 2703.9.10 of the *fire code*. Where Note d also applies, the increase for both notes shall be applied accumulatively.

f. The permitted quantities shall not be limited in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

g. Permitted only in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
h. Containing not more than the maximum allowable quantity per control area of Class IA, IB or IC flammable liquids.
i. The maximum allowable quantity shall not apply to fuel oil storage complying with Section 603.3.2 of the *fire code*.
j. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column.
k. A maximum quantity of 200 pounds of solid or 20 gallons of liquid Class 3 oxidizers is allowed when such materials are necessary for maintenance purposes, operation or sanitation of equipment. Storage containers and the manner of storage shall be approved.
l. Net weight of the pyrotechnic composition of the fireworks. Where the net weight of the pyrotechnic composition of the fireworks is not known, 25 percent of the gross weight of the fireworks, including packaging, shall be used.
m. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 2703.1.2 of the *fire code*.
n. For storage and display quantities in Group M and storage quantities in Group S occupancies complying with Section 414.2.5, see Tables 414.2.5(1) and 414.2.5(2).
o. Densely packed baled cotton that complies with the packing requirements of ISO 8115 shall not be included in this material class.
p. The following shall not be included in determining the maximum allowable quantities:
    1. Liquid or gaseous fuel in fuel tanks on vehicles.
    2. Liquid or gaseous fuel in fuel tanks on motorized equipment operated in accordance with this code.
    3. Gaseous fuels in piping systems and fixed appliances regulated by the *fuel gas code.*
    4. Liquid fuels in piping systems and fixed appliances regulated by the *mechanical code*.

TABLE 307.1(2)

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIAL POSING A HEALTH HAZARD[a, b, c, i]

MATERIAL	STORAGE[d]			USE-CLOSED SYSTEMS[d]			USE-OPEN SYSTEMS[d]	
	Solid pounds (cubic feet)	Liquid gallons (pounds)[e, f]	Gas (cubic feet at NTP)[e]	Solid pounds[e]	Liquid gallons (pounds)[e]	Gas (cubic feet at NTP)[e]	Solid pounds[e]	Liquid gallons (pounds)[e]
Corrosive	5,000	500	Gaseous 810[f] Liquefied (150)[h]	5,000	500	Gaseous 810[f] Liquefied (150)[h]	1,000	100
Highly toxic	10	(10)[h]	Gaseous 20[g] Liquefied (4)[g, h]	10	(10)[i]	Gaseous 20[g] Liquefied (4)[g, h]	3	(3)[i]
Toxic	500	(500)[h]	Gaseous 810[f] Liquefied (150)[f, h]	500	(500)[i]	Gaseous 810[f] Liquefied (150)[f, h]	125	(125)

For SI: 1 cubic foot = 0.028 m^3, 1 pound = 0.454 kg, 1 gallon = 3.785 L.
a. For use of control areas, see Section 414.2.
b. In retail and wholesale sales occupancies, the quantities of medicines, foodstuffs, consumer or industrial products, and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and

with the remainder of the solutions not being flammable, shall not be limited, provided that such materials are packaged in individual containers not exceeding 1.3 gallons.

c. For storage and display quantities in Group M and storage quantities in Group S occupancies complying with Section 414.2.5, see Tables 414.2.5(1) and 414.2.5(2).

d. The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

e. Maximum allowable quantities shall be increased 100 percent in buildings equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1. Where Note f also applies, the increase for both notes shall be applied accumulatively.

f. Maximum allowable quantities shall be increased 100 percent when stored in approved storage cabinets, gas cabinets or exhausted enclosures as specified in the *fire code*. Where Note e also applies, the increase for both notes shall be applied accumulatively.

g. Allowed only when stored in approved exhausted gas cabinets or exhausted enclosures as specified in the *fire code*.

h. Quantities in parenthesis indicate quantity units in parenthesis at the head of each column.

i. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 2703.1.2 of the *fire code*.

307.1.1 Hazardous materials. Hazardous materials in any quantity shall conform to the requirements of this code, including Section 414, and the *fire code*.

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

AEROSOL. A product that is dispensed from an aerosol container by a propellant.

Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, 2 or 3.

Level 1 aerosol products. Those with a total chemical heat of combustion that is less than or equal to 8,600 British thermal units per pound (Btu/lb) (20 kJ/g).

Level 2 aerosol products. Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20 kJ/g), but less than or equal to 13,000 Btu/lb (30 kJ/g).

Level 3 aerosol products. Those with a total chemical heat combustion that is greater than 13,000 Btu/lb (30 kJ/g).

AEROSOL CONTAINER. A metal can or a glass or plastic bottle designed to dispense an aerosol. Metal cans shall be limited to a maximum size of 33.8 fluid ounces (1000 ml). Glass or plastic bottles shall be limited to a maximum size of 4 fluid ounces (118 ml).

BALED COTTON. A natural seed fiber wrapped in and secured with industry accepted materials, usually consisting of burlap, woven polypropylene, polyethylene or cotton or sheet polyethylene, and secured with steel, synthetic or wire bands or wire; also includes linters (lint removed from the cottonseed) and motes (residual materials from the ginning process).

BALED COTTON, **DENSELY PACKED**. Cotton made into banded bales with a packing density of at least 22 pounds per cubic foot (360 kg/m^3), and dimensions complying with the following: a length of 55 inches (1397 ± 20 mm), a width of 21 inches (533.4 ± 20 mm) and a height of 27.6 to 35.4 inches (701 to 899 mm).

BARRICADE. A structure that consists of a combination of walls, floor and roof, which is designed to withstand the rapid release of energy in an explosion and which is fully confined, partially vented or fully vented; or other effective method of shielding from explosive materials by a natural or artificial barrier.

Artificial barricade. An artificial mound or revetment a minimum thickness of 3 feet (914 mm).

Natural barricade. Natural features of the ground, such as hills, or timber of sufficient density that the surrounding exposures that require protection cannot be seen from the magazine or building containing explosives when the trees are bare of leaves.

BOILING POINT. The temperature at which the vapor pressure of a liquid equals the atmospheric pressure of 14.7 pounds per square inch (psi) (101 kPa) gage or 760 mm of mercury. Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for the purposes of this classification, the 20-percent evaporated point of a distillation performed in accordance with ASTM D 86 shall be used as the boiling point of the liquid.

CLOSED SYSTEM. The use of a solid or liquid hazardous material involving a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment.

COMBUSTIBLE DUST. Finely divided solid material that is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a U.S. No. 40 standard sieve.

COMBUSTIBLE FIBERS. Readily ignitable and free-burning materials in a fibrous or shredded form, such as cocoa fiber, cloth, cotton, excelsior, hay, hemp,

henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials. This definition does not include densely packed baled cotton.

COMBUSTIBLE LIQUID. A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).
Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).
Class IIIB. Liquids having a closed cup flash point at or above 200°F (93°C).

The category of combustible liquids does not include compressed gases or cryogenic fluids.

COMPRESSED GAS. A material, or mixture of materials, that:

1 Is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure; and
2 Has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gases which have no other health-or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C).

The states of a compressed gas are categorized as follows:

1 Nonliquefied compressed gases are gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C).
2 Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C).
3 Compressed gases in solution are nonliquefied gases that are dissolved in a solvent.
4 Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

CONTROL AREA. Spaces within a building where quantities of hazardous materials not exceeding the maximum allowable quantities per control area are

stored, dispensed, used or handled. See also the definition of “Outdoor control area” in the *fire code*.

CORROSIVE. A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR, Part 173.137, such a chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.

CRYOGENIC **FLUID**. A liquid having a boiling point lower than -150°F (-101°C) at 14.7 pounds per square inch atmosphere (psia) (an absolute pressure of 101 kPa).

DAY BOX. A portable magazine designed to hold explosive materials constructed in accordance with the requirements for a Type 3 magazine as defined and classified in Chapter 33 of the *fire code*.

DEFLAGRATION. An exothermic reaction, such as the extremely rapid oxidation of a flammable dust or vapor in air, in which the reaction progresses through the unburned material at a rate less than the velocity of sound. A deflagration can have an explosive effect.

DETONATION. An exothermic reaction characterized by the presence of a shock wave in the material which establishes and maintains the reaction. The reaction zone progresses through the material at a rate greater than the velocity of sound. The principal heating mechanism is one of shock compression. Detonations have an explosive effect.

DISPENSING. The pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases are liberated to the atmosphere.

EXPLOSION. An effect produced by the sudden violent expansion of gases, which may be accompanied by a shock wave or disruption, or both, of enclosing materials or structures. An explosion could result from any of the following:

1 Chemical changes such as rapid oxidation, deflagration or detonation, decomposition of molecules and runaway polymerization (usually detonations).
2 Physical changes such as pressure tank ruptures.
3 Atomic changes (nuclear fission or fusion).

EXPLOSIVE. A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited

to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, igniters and display fireworks, 1.3G (Class B, Special).

The term “explosive” includes any material determined to be within the scope of USC Title 18: Chapter 40 and also includes any material classified as an explosive other than consumer fireworks, 1.4G (Class C, Common) by the hazardous materials regulations of DOTn 49 CFR Parts 100-185.

High explosive. Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap when unconfined.

Low explosive. Explosive material that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low explosives include, but are not limited to, black powder; safety fuse; igniters; igniter cord; fuse lighters; fireworks, 1.3G (Class B, Special) and propellants, 1.3C.

Mass-detonating explosives. Division 1.1, 1.2 and 1.5 explosives alone or in combination, or loaded into various types of ammunition or containers, most of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, severe concussion, impact, the impulse of an initiating agent or the effect of a considerable discharge of energy from without. Materials that react in this manner represent a mass explosion hazard. Such an explosive will normally cause severe structural damage to adjacent objects. Explosive propagation could occur immediately to other items of ammunition and explosives stored sufficiently close to and not adequately protected from the initially exploding pile with a time interval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

UN/DOTn Class 1 explosives. The former classification system used by DOTn included the terms “high” and “low” explosives as defined herein. The following terms further define explosives under the current system applied by DOTn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (i.e., the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

Division 1.1. Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.

Division 1.2. Explosives that have a projection hazard but not a mass explosion hazard.

Division 1.3. Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

Division 1.4. Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.

Division 1.5. Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard, but that are so insensitive there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Division 1.6. Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

FIREWORKS. Any composition or device for the purpose of producing a visible or audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.4G fireworks or 1.3G fireworks as set forth herein.

Fireworks, **1.3G**. (Formerly Class B, Special Fireworks.) Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition, and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as fireworks, UN0335 by the DOTn.

Fireworks, **1.4G**. (Formerly Class C, Common Fireworks.) Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply with the construction, chemical composition and labeling regulations of the DOTn for fireworks, UN0336, and the U.S. Consumer Product Safety Commission (CPSC) as set forth in CPSC 16 CFR: Parts 1500 and 1507, are not explosive materials for the purpose of this code.

FLAMMABLE GAS. A material that is a gas at 68°F (20°C) or less at 14.7

pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] which:

1 Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2 Has a flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E 681.

FLAMMABLE LIQUEFIED GAS. A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

FLAMMABLE LIQUID. A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:

Class IA. Liquids having a flash point below 73°F (23°C) and a boiling point below 100°F (38°C).

Class IB. Liquids having a flash point below 73°F (23°C) and a boiling point at or above 100°F (38°C).

Class IC. Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).

The category of flammable liquids does not include compressed gases or cryogenic fluids.

FLAMMABLE MATERIAL. A material capable of being readily ignited from common sources of heat or at a temperature of 600°F (316°C) or less.

FLAMMABLE SOLID. A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption or 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.

FLASH POINT. The minimum temperature in degrees Fahrenheit at which a liquid will give off sufficient vapors to form an ignitable mixture with air near the surface or in the container, but will not sustain combustion. The flash point of a liquid shall be determined by appropriate test procedure and apparatus as spec-

ified in ASTM D 56, ASTM D 93 or ASTM D 3278.

HANDLING. The deliberate transport by any means to a point of storage or use.

HAZARDOUS MATERIALS. Those chemicals or substances that are physical hazards or health hazards as defined and classified in this section and the *fire code*, whether the materials are in usable or waste condition.

HEALTH HAZARD. A classification of a chemical for which there is statistically significant evidence that acute or chronic health effects are capable of occurring in exposed persons. The term "health hazard" includes chemicals that are toxic or highly toxic, and corrosive.

HIGHLY TOXIC. A material which produces a lethal dose or lethal concentration that falls within any of the following categories:

1 A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

2 A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

3 A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxic. While this system is basically simple in application, any hazard evaluation that is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

INCOMPATIBLE MATERIALS. Materials that, when mixed, have the potential to react in a manner that generates heat, fumes, gases or byproducts which are hazardous to life or property.

INERT GAS. A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health properties as defined (other than acting as a simple asphyxiant)

or hazard properties other than those of a compressed gas. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen and xenon.

OPEN SYSTEM. The use of a solid or liquid hazardous material involving a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

OPERATING BUILDING. A building occupied in conjunction with the manufacture, transportation or use of explosive materials. Operating buildings are separated from one another with the use of intraplant or intraline distances.

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 pose 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. Those formulations that are capable of deflagration but not detonation.

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

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

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

Class V. 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.

OXIDIZER. A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.

Class 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the

burning rate and can cause spontaneous ignition of combustibles.

Class 3. An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.

Class 2. An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.

Class 1. An oxidizer that does not moderately increase the burning rate of combustible materials.

OXIDIZING GAS. A gas that can support and accelerate combustion of other materials.

PHYSICAL HAZARD. A chemical for which there is evidence that it is a combustible liquid, cryogenic fluid, explosive, flammable (solid, liquid or gas), organic peroxide (solid or liquid), oxidizer (solid or liquid), oxidizing gas, pyrophoric (solid, liquid or gas), unstable (reactive) material (solid, liquid or gas) or water-reactive material (solid or liquid).

PYROPHORIC. A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54.4°C).

PYROTECHNIC COMPOSITION. A chemical mixture that produces visible light displays or sounds through a self-propagating, heat-releasing chemical reaction which is initiated by ignition.

TOXIC. A chemical falling within any of the following categories:

1 A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

2 A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram, but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

3 A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million, but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

UNSTABLE (REACTIVE) MATERIAL. A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize,

decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.

Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.

Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.

Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

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

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

Class **2**. Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases or evolve enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture.

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

307.3 High-hazard Group H-1. Buildings and structures containing materials that pose a detonation hazard shall be classified as Group H-1. Such materials shall include, but not be limited to, the following:

Detonable pyrophoric materials

Explosives:

Division 1.1
Division 1.2
Division 1.3

Exception: Materials that are used and maintained in a form where either confinement or configuration will not elevate the hazard from a mass fire to mass explosion hazard shall be allowed in H-2 occupancies.

Division 1.4

Exception: Articles, including articles packaged for shipment, that are not regulated as an explosive under Bureau of Alcohol, Tobacco and Firearms regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles shall be allowed in H-3 occupancies.

Division 1.5
Division 1.6

Organic peroxides, unclassified detonable

Oxidizers, Class 4

Unstable (reactive) materials, Class 3 detonable and Class 4

307.4 High-hazard Group H-2. Buildings and structures containing materials that pose a deflagration hazard or a hazard from accelerated burning shall be classified as Group H-2. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids which are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103.4 kPa) gage.
Combustible dusts
Cryogenic fluids, flammable
Flammable gases
Organic peroxides, Class I
Oxidizers, Class 3, that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 psi (103 kPa) gage
Pyrophoric liquids, solids and gases, nondetonable
Unstable (reactive) materials, Class 3, nondetonable
Water-reactive materials, Class 3

307.5 High-hazard Group H-3. Buildings and structures containing materials that readily support combustion or that pose a physical hazard shall be classified

as Group H-3. Such materials shall include, but not be limited to, the following:

Class I, II or IIIA flammable or combustible liquids that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103.4 kPa) or less Combustible fibers, other than densely packed baled cotton

Consumer fireworks, 1.4G (Class C, Common)

Cryogenic fluids, oxidizing

Flammable solids

Organic peroxides, Class II and III

Oxidizers, Class 2 Oxidizers, Class 3, that are used or stored in normally closed containers or systems pressurized at 15 pounds per square inch gauge (103 kPa) or less

Oxidizing gases

Unstable (reactive) materials, Class 2

Water-reactive materials, Class 2

307.6 High-hazard Group H-4. Buildings and structures which contain materials that are health hazards shall be classified as Group H-4. Such materials shall include, but not be limited to, the following:

Corrosives

Highly toxic materials

Toxic materials

307.7 High-hazard Group H-5 structures. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials is in excess of those listed in Tables 307.1(1) and 307.1(2) shall be classified as Group H-5. Such facilities and areas shall be designed and constructed in accordance with Section 415.8.

307.8 Multiple hazards. Buildings and structures containing a material or materials representing hazards that are classified in one or more of Groups H-1, H-2, H-3 and H-4 shall conform to the code requirements for each of the occupancies so classified.

SECTION 308
INSTITUTIONAL GROUP I

308.1 Institutional **Group I.** Institutional Group I occupancy includes, among others, the use of a building or structure, or a portion thereof, in which people are cared for or live in a supervised environment, having physical limitations because

of health or age are harbored for medical treatment or other care or treatment, or in which people are detained for penal or correctional purposes or in which the liberty of the occupants is restricted. Institutional occupancies shall be classified as Group I-1, I-2, I-3 or I-4.

308.2 Group I-1. This occupancy shall include buildings, structures or parts thereof housing more than 16 persons, on a 24-hour basis, who because of age, mental disability or other reasons, live in a supervised residential environment that provides personal care services. The occupants are capable of responding to an emergency situation without physical assistance from staff. This group shall include, but not be limited to, the following:

Alcohol and drug centers
Assisted living facilities
Congregate care facilities
Convalescent facilities
Group homes
Halfway houses
Residential board and care facilities
Social rehabilitation facilities

A facility such as the above with five or fewer persons shall be classified as a Group R-3 or shall comply with the *Residential Code of Ohio*. A facility such as above, housing at least six and not more than 16 persons, shall be classified as Group R-4.

This group shall also include residential care facilities (see section 310.2 Definitions) where more than sixteen individuals reside and supervision and personal care services are provided for three or more individuals and when no more than five need physical assistance in response to an emergency.

308.3 Group I-2. This occupancy shall include buildings and structures used for medical, surgical, psychiatric, nursing or custodial care for persons who are not capable of self-preservation. This group shall include, but not be limited to, the following:

Child care facilities
Detoxification facilities
Hospitals
Mental hospitals
Nursing homes

This occupancy shall also include nursing homes where personal care services

and skilled nursing care are provided for three or more individuals.

This group shall also include residential care facilities (see section 310.2 Definitions) where more than sixteen individuals reside and supervision and personal care services are provided for three or more individuals when more than five are not capable of responding to an emergency without physical assistance.

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

CHILD CARE FACILITIES. Facilities that provide care on a 24-hour basis to more than five children, 2 ½ years of age or less.

CUSTODIAL CARE. See Section 202.

DETOXIFICATION FACILITIES. Facilities that serve patients who are provided treatment for substance abuse on a 24-hour basis and who are incapable of self-preservation or who are harmful to themselves or others.

HOSPITALS AND MENTAL HOSPITALS.
Buildings or portions thereof used on a 24-hour basis for the medical, psychiatric, obstetrical or surgical treatment of inpatients who are incapable of self-preservation.

NURSING HOMES. *A home used for the reception and care of individuals who by reason of illness or physical or mental impairment require skilled nursing care and of individuals who require personal care services but not skilled nursing care. A nursing home is required to be licensed by the Ohio Department of Health to provide personal care services and skilled nursing care.*

308.4 Group I-3. This occupancy shall include buildings and structures that are inhabited by more than five persons who are under restraint or security. An I-3 facility is occupied by persons who are generally incapable of self-preservation due to security measures not under the occupants' control. This group shall include, but not be limited to, the following:

Correctional centers
Detention centers
Jails
Prerelease centers
Prisons
Reformatories

Buildings of Group I-3 shall be classified as one of the occupancy conditions indicated in Sections 308.4.1 through 308.4.5 (see Section 408.1).

308.4.1 Condition 1. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress without restraint. A Condition 1 facility is permitted to be constructed as Group R.

308.4.2 Condition 2. This occupancy condition shall include buildings in which free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments. Egress to the exterior is impeded by locked exits.

308.4.3 Condition 3. This occupancy condition shall include buildings in which free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping units and group activity spaces, where egress is impeded by remote-controlled release of means of egress from such a smoke compartment to another smoke compartment.

308.4.4 Condition 4. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Remote-controlled release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.4.5 Condition 5. This occupancy condition shall include buildings in which free movement is restricted from an occupied space. Staff-controlled manual release is provided to permit movement from sleeping units, activity spaces and other occupied areas within the smoke compartment to other smoke compartments.

308.5 Group I-4, day care facilities. This group shall include buildings and structures occupied by persons of any age who receive custodial care for less than 24 hours by individuals other than parents or guardians, relatives by blood, marriage or adoption, and in a place other than the home of the person cared for. A facility such as the above with five or fewer persons shall be classified as a Group R-3 or shall comply with the *Residential Code of Ohio*. Places of worship during religious functions are not included.

308.5.1 Adult care facility. A facility that provides accommodations for less than 24 hours for more than five unrelated adults and provides supervision and personal care services shall be classified as Group I-4.

Exception: A facility where occupants are capable of responding to an

emergency situation without physical assistance from the staff shall be classified as Group R-3.

308.5.2 Child *day* care facility. A facility that provides supervision and personal care on less than a 24-hour basis for more than five children $2^{1}/2$ years of age or less shall be classified as Group I-4.

Exception: A child day care facility that provides care for more than five but no more than 100 children 2 ½ years or less of age, where the rooms in which the children are cared for are located on a level of exit discharge serving such rooms and each of these child care rooms has an exit door directly to the exterior, shall be classified as Group E.

SECTION 309
MERCANTILE GROUP M

309.1 Mercantile Group M. Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

Department stores
Drug stores
Markets
Motor fuel-dispensing facilities
Retail or wholesale stores
Sales rooms

309.2 Quantity of hazardous materials. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials stored or displayed in a single control area of a Group M occupancy shall not exceed the quantities in Table 414.2.5(1).

SECTION 310
RESIDENTIAL GROUP R

310.1 Residential Group R. Residential Group R includes, among others, the use of a building or structure, or a portion thereof, for sleeping purposes when not classified as an Institutional Group I or when not a detached one-, two-, or three-

family dwelling regulated by the *Residential Code of Ohio.*

Detached One-, Two-, or Three- Family Dwellings. *The "Residential Code of Ohio for One-, Two-, or Three- Family Dwellings" shall apply to structures comprised exclusively of one-, two-, or three-family dwellings (having independent exits) and their accessory structures in jurisdictions where a residential department is certified by the board. If no residential department is certified in a jurisdiction, construction documents for structures comprised exclusively of one-, two-, or three-family dwellings are not required to be submitted for approval.*

Residential occupancies shall include the following:

R-1 Residential occupancies containing sleeping units where the occupants are primarily transient in nature, including:

Boarding houses (transient)
Hotels (transient)
Motels (transient)

R-1 occupancies typically will include sleeping units but may also include dwelling units when those units are not used primarily as permanent residences.

SRO facilities are not an occupancy within the R-1 occupancy group but in order to qualify for Fire Marshal issued licensure, an SRO facility must be designed and constructed to meet the R-1 criteria in this code.

Congregate living facilities (transient) with 10 or fewer occupants are permitted to comply with the construction requirements *found in Chapters 4-34 of this code* for Group R-3.

R-2 Residential occupancies containing sleeping units or more than *three* dwelling units where the occupants are primarily permanent in nature *in structures with shared exits*, including:

Apartment houses
Boarding houses (nontransient)
Convents
Dormitories
Fraternities and sororities
Hotels (nontransient)
Live/work units
Monasteries
Motels (nontransient)

SRO (Single room occupancy) facility (also see R-1)
Vacation timeshare properties

Congregate living facilities with 16 or fewer occupants are permitted to comply with the construction requirements *found in Chapters 4-34 of this code* for Group R-3.

Residential occupancies in buildings or structures of mixed use containing one or more dwelling units where the occupants are primarily permanent in nature in structures with shared exits.

This group includes buildings or structures containing two or three dwelling units when the units share an exit.

R-3 Residential occupancies *having more than three dwelling* units where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, and where each unit has independent *exit* including:

Adult care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.

Child care facilities that provide accommodations for five or fewer persons of any age for less than 24 hours.

Congregate living facilities with 16 or fewer persons.

This group includes residential occupancies in buildings or structures of mixed use, three stories or less, where the occupants are primarily permanent in nature and where each dwelling unit has an independent exit.

The "Residential Code of Ohio for One-, Two-, and Three-Family Dwellings" (RCO) is permitted to be used in place of the requirements of this code for R-3 occupancies in buildings three stories or less, comprised exclusively of dwelling units where each unit has an independent exit with the following conditions:

1. *No more than one dwelling unit is allowed to be located above another unit. Fire separation between units within a grouping of two units including a unit located partially or totally above another unit shall be in accordance with the RCO section 302.2. Fire separation between any grouping of two units and other adjacent units shall be in accordance with RCO sections 302.2 through 302.6.*

2. *Chapter 1 of the OBC shall be applicable for code administration purposes.*

3. The edition of NFPA 70 listed in Chapter 35 of the OBC shall be applicable for electrical components, equipment, and system requirements.

Adult care and child care facilities that are within a single-family home are permitted to comply with the *Residential Code of Ohio.*

R-4 Residential occupancies shall include buildings arranged for occupancy as residential care/assisted living facilities including more than five but not more than 16 occupants, excluding staff.
Group R-4 occupancies shall meet the requirements for construction as defined for Group R-3, except as otherwise provided for in this code or shall comply with the *Residential Code of Ohio* provided the building is protected by an automatic sprinkler system installed in accordance with Section *903.2.8*.

310.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.
BOARDING HOUSE. A building arranged or used for lodging for compensation, with or without meals, and not occupied as a single-family unit.

CONGREGATE LIVING FACILITIES. A building or part thereof that contains sleeping units where residents share bathroom and/or kitchen facilities.

CUSTODIAL CARE. *See Section 202.*

DWELLING. *Any building that exclusively contains one, two, or three dwelling units, each of which may be occupied by a family and no more than five lodgers or boarders, intended, or designed to be built, used, rented, leased, let or hired out to be occupied, or that is occupied for living purposes, physically separated from adjacent structures, and with an independent exit from each dwelling unit.*

DWELLING, ONE-, TWO-, OR THREE-FAMILY*. See Dwelling.*

DWELLING UNIT. *A single unit providing complete, independent living facilities for one or more persons, that includes permanent provisions for living, sleeping, eating, cooking and sanitation. The dwelling unit may include any accessory space intended for the exclusive use of the occupants of an individual dwelling unit such as a private garage, greenhouse, etc.*

DORMITORY. A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not

members of the same family group, under joint occupancy and single management, as in college dormitories or fraternity houses.

PERSONAL CARE SERVICE. *Assistance to residents with the activities of daily living to include assistance with the self-administration of medications and preparation of special diets as may be prescribed by physician or licensed dietitian. For purposes of this code, personal care service shall extend to assurance of physical safety of the resident.*

PRIMARILY TRANSIENT. *Use of a space for sleeping that has facilities for sanitation, with or without other spaces used for living purposes, offered or otherwise intended to be used for short periods of time but not intended to be used as a permanent residence or an institutional-use group facility where care or supervision is provided.*

RESIDENTIAL CARE/ASSISTED LIVING FACILITIES. *Any building or part thereof, regardless of by which name held out publicly, housing residents on a 24-hour basis, who, because of age, mental illness, severe mental disability, infirmity, or other reason, live in a supervised residential environment which provides personal care service as a condition of licensing, and the occupants of which are capable of responding to an emergency situation without physical assistance from staff. This classification shall include, but not be limited to, residential care facilities holding themselves out as: board and care facilities, assisted living facilities, halfway houses, adult care or mental health group homes, congregate care facilities, social rehabilitation facilities, alcohol and drug abuse centers, and convalescent facilities with a maximum of 16 persons as residents.*

SRO (Single room occupancy) FACILITY. *A facility with more than five sleeping rooms that is kept, used, maintained, advertised or held out to the public as a place where each individual is provided with separate sleeping accommodations which is intended to be the permanent residence of a single occupant. SRO facilities are required to be licensed by the Ohio Fire Marshal and do not include agricultural labor camps, apartment houses, lodging houses, rooming houses or college dormitories.*

TRANSIENT. *See PRIMARILY TRANSIENT above.*

SECTION 311
STORAGE GROUP S

311.1 Storage Group S. Storage Group S occupancy includes, among others, the use of a building or structure, or a portion thereof, for storage that is not classified as a hazardous occupancy.

311.2 Moderate-hazard storage, **Group S-1**. Buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosols, Levels 2 and 3
Aircraft hangar (storage and repair)
Bags: cloth, burlap and paper
Bamboos and rattan
Baskets
Belting: canvas and leather
Books and paper in rolls or packs
Boots and shoes
Buttons, including cloth covered, pearl or bone
Cardboard and cardboard boxes
Clothing, woolen wearing apparel
Cordage
Dry boat storage (indoor)
Furniture Furs
Glues, mucilage, pastes and size
Grains
Horns and combs, other than celluloid
Leather
Linoleum
Lumber
Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials listed in Table 307.1(1) (see Section 406.6)
Photo engravings
Resilient flooring
Silks
Soaps
Sugar
Tires, bulk storage of
Tobacco, cigars, cigarettes and snuff
Upholstery and mattresses
Wax candles

311.3 Low-hazard storage, **Group S-2**. Includes, among others, buildings used

for the storage of noncombustible materials such as products on wood pallets or in paper cartons with or without single thickness divisions; or in paper wrappings. Such products are permitted to have a negligible amount of plastic *trim*, such as knobs, handles or film wrapping. Group S-2 storage uses shall include, but not be limited to, storage of the following:

Asbestos
Beverages up to and including 16-percent alcohol in metal, glass or ceramic containers
Cement in bags
Chalk and crayons
Dairy products in nonwaxed coated paper containers
Dry cell batteries
Electrical coils
Electrical motors
Empty cans
Food products
Foods in noncombustible containers
Fresh fruits and vegetables in nonplastic trays or containers
Frozen foods
Glass
Glass bottles, empty or filled with noncombustible liquids
Gypsum board
Inert pigments
Ivory
Meats
Metal cabinets
Metal desks with plastic tops and *trim*
Metal parts
Metals
Mirrors
Oil-filled and other types of distribution transformers
Parking garages, open or enclosed
Porcelain and pottery
Stoves
Talc and soapstones
Washers and dryers

SECTION 312
UTILITY AND MISCELLANEOUS GROUP U

312.1 General. Buildings and structures of an accessory character and miscellaneous structures not classified in any specific occupancy *and not used for agricultural purposes as defined in section 3781.06 of the Revised Code,* shall be constructed, equipped and maintained to conform to the requirements of this code commensurate with the fire and life hazard incidental to their occupancy. Group U shall include, but not be limited to, the following:

Agricultural buildings *not used for agricultural purposes as defined in section 3781.06 of the Revised Code*
Aircraft hangars, *residential* (see Section 412.5)
Barns
Carports
Fences more than 6 feet (1829 mm) high
Grain silos, accessory to a residential occupancy
Greenhouses
Livestock shelters *not used for agricultural purposes as defined in section 3781.06 of the Revised Code*
Private garages
Retaining walls
Sheds
Stables
Tanks
Towers

Effective: 01/01/2015

Five Year Review (FYR) Dates: 11/01/2016

CERTIFIED ELECTRONICALLY

Certification

11/20/2014

Date

Promulgated Under: 119.03
Statutory Authority: 3781.10(A)
Rule Amplifies: 3781.10, 3781.11, 3791.04
Prior Effective Dates: 7/1/79, 1/1/81, 7/1/82, 3/1/85, 7/1/85, 3/1/86, 9/1/86, 1/1/89, 1/1/90, 8/1/90, 8/2/91, 9/1/92, 7/5/93, 9/1/94, 7/1/95, 3/1/98, 4/1/99, 1/1/02, 7/1/02, 8/15/03, 3/1/05, 9/6/05, 7/1/07, 1/1/09, 11/1/11, 7/1/14

4101:1-35-01 Referenced standards.

3501.1 General. *This chapter lists the standards that are referenced in various sections of the building code. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title. The application of the referenced standards shall be as specified in Section 102.5.*

3501.2 Referenced codes. *When indicated in this code, the following codes refer to provisions in the listed chapters of the administrative code:*

Referenced Code	***Ohio Administrative Code Chapters***
Building Code	*4101:1-1 to 4101:1-35*
Energy Code	*4101:1-13*
Fire Code	*1301:7-1 to 1301:7-7*
Mechanical Code	*4101:2-1 to 4101:2-15*
Ohio Boiler and Pressure Vessel Rules	*4101:4-1 to 4101:4-10*
Ohio Elevator Code	*4101:5-1 to 4101:5-3*
Residential Code of Ohio for One, Two and Three Family Dwellings	*4101:8-1 to 4101:8-44*
Plumbing Code	*4101:3-1 to 4101:3-13*

3501.3 Building Code Referenced Standards.

Aluminum Association
1525 Wilson Boulevard, Suite 600
Arlington, VA 22209

AA Standard reference number	**Title**
ADM1—*10*	Aluminum Design Manual: Part 1-A Specification for Aluminum Structures, Allowable Stress Design; and Part 1-B—Aluminum Structures, Load and Resistance Factor Design

ASM 35—00	Aluminum Sheet Metal Work in Building Construction (Fourth Edition)

American Architectural Manufacturers Association
1827 Waldon Office
Square, Suite 550
Schaumburg, IL 60173

AAMA Standard reference number	**Title**
1402—*09*	Standard Specifications for Aluminum Siding, Soffit and Fascia
AAMA/WDMA/CSA 101/I.S.2/A440—08	North American Fenestration Standard/Specifications for Windows, Doors and Skylights

American Concrete Institute
38800 Country Club Dive
Farmington Hills, MI 48331

ACI Standard reference number	**Title**
216.1—07	Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies
318—08	Building Code Requirements for Structural Concrete
530—08	Building Code Requirements for Masonry Structures
530.1—08	Specifications for Masonry Structures

American Forest & Paper Association
1111 19th St, NW Suite 800
Washington, DC 20036

AF&PA Standard reference number	**Title**

WCD No. 4—*03*	Wood Construction Data—Plank and Beam Framing for Residential
NDS—05	National Design Specification (NDS) for Wood Construction with 2005 Supplement
AF&PA—93	Span Tables for Joists and Rafters
ANSI/AF&PA PWF—07	Permanent Wood Foundation Design Specification
ANSI/AF&PA SDPWS—08	Special Design Provisions for Wind and Seismic

American Institute of Steel Construction
One East Wacker Drive, Suite 3100
Chicago, IL 60601-2001

AISC

Standard reference number	**Title**
341—05	Seismic Provisions for Structural Steel Buildings, including Supplement No. 1 dated 2005
360—05	Specification for Structural Steel Buildings

American Iron and Steel Institute
1140 Connecticut Avenue
Suite 705
Washington, DC 20036

AISI

Standard reference number	**Title**
S100—07	North American Specification for the Design of Cold-formed Steel Structural Members
S200—*08*	North American Standard for Cold-formed Steel Framing—General
S210—*08*	North American Standard for Cold-formed Steel Framing—Floor and Roof System Design
S211—*08*	North American Standard for Cold-formed Steel Framing—Wall Stud
S212—*08*	North American Standard for Cold-formed Steel Framing—Header Design

S213—*08*	North American Standard for Cold-formed Steel Framing—Lateral Design
S214—*08*	North American Standard for Cold-formed Steel Framing—Truss Design, with Supplement 2, dated 2008

American Institute of Timber Construction
Suite 140
7012 S. Revere Parkway
Englewood, CO 80112

AITC Standard reference number	**Title**
AITC Technical Note 7—96	Calculation of Fire Resistance of Glued Laminated Timbers
AITC 104—03	Typical Construction Details
AITC 110—01	Standard Appearance Grades for Structural Glued Laminated
AITC 113—01	Standard for Dimensions of Structural Glued Laminated Timber
AITC 117—04	Standard Specifications for Structural Glued Laminated Timber of Softwood Species
AITC 119—96	Standard Specifications for Structural Glued Laminated Timber of Hardwood
AITC200—*09*	Manufacturing Quality Control Systems Manual for Structural Glued Laminated Timber
ANSI/AITCA 190.1—07	Structural Glued Laminated Timber

Automotive Lift Institute
P.O. Box 85
Courtland, NY 13045

ALI Standard reference number	**Title**
ALI ALCTV—*2007*	Standard for Automobile Lifts—Safety Requirements for Construction, Testing and Validation (ANSI)

American National Standards Institute
25 West 43rd Street, Fourth Floor
New York, NY 10036

ANSI Standard reference number	**Title**
A13.1—*07*	Scheme for the Identification of Piping Systems
A108.1A—*09*	Installation of Ceramic Tile in the Wet-set Method, with Portland Cement
A108.1B—*09*	Installation of Ceramic Tile, quarry Tile on a Cured Portland Cement Mortar Setting Bed with Dry-set orLatex-
A108.4—*09*	Installation of Ceramic Tile with Organic Adhesives or Water-cleanable Tile-setting Epoxy Adhesive
A108.5—*09*	Installation of Ceramic Tile with Dry-set Portland Cement Mortar or Latex-portland Cement Mortar
A108.6—*09*	Installation of Ceramic Tile with Chemical-resistant,Water Cleanable Tile-setting and -grouting Epoxy
A108.8—*09*	Installation of Ceramic Tile with Chemical-resistant Furan Resin Mortar and Grout
A108.9—*09*	Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout
A108.10—*09*	Installation of Grout in Tilework
A118.1—*10.1*	American National Standard Specifications for Dry-set Portland Cement
A118.3—*10.1*	American National Standard Specifications for Chemical-resistant, Water-cleanable Tile-setting and -grouting Epoxy and Water Cleanable Tile-setting Epoxy
A118.4—*10.1*	American National Standard Specifications for Latex-portland Cement
A118.5—*10.1*	American National Standard Specifications for Chemical Resistant Furan Mortar and Grouts for Tile
A118.8—*10.1*	American National Standard Specifications for Modified Epoxy Emulsion Mortar/Grout
A136.1—*10.1*	American National Standard Specifications for Organic Adhesives for Installation of Ceramic
137.1—*08*	American National Standard Specifications for Ceramic Tile
A208.1—*09*	Particleboard

Z 97.1—*09*	Safety Glazing Materials Used in Buildings—Safety Performance Specifications and Methods of Test

APA - Engineered Wood Association
7011 South 19th
Tacoma, WA 98466

APA Standard reference number	**Title**
APA PDS—*08*	Panel Design Specification
APA PDS Supplement 1—90	Design and Fabrication of Plywood Curved Panels (revised 1995)
APA PDS Supplement 2—92	Design and Fabrication of Plywood-lumber Beams (revised 1998
APA PDS Supplement 3—*96*	Design and Fabrication of Plywood Stressed-skin Panels (revised 1996
APA PDS Supplement 4—*93*	Design and Fabrication of Plywood Sandwich Panels (revised 1993)
APA PDS Supplement 5—95	Design and Fabrication of All-plywood Beams (revised 1995
EWS R540—*07*	Builders Tips: Proper Storage and Handling of Glulam Beams
EWS S475—*07*	Glued Laminated Beam Design Tables
EWS S560—*10*	Field Notching and Drilling of Glued Laminated Timber Beams
EWS T300—*07*	Glulam Connection
EWS X440—*08*	Product Guide— Glulam
EWS X450—01	Glulam in Residential Construction—Western Edition

The Association of Pool & Spa Professionals
2111 Eisenhower Avenue
Alexandria, VA 22314

APSP

Standard reference number	Title
ANSI/APSP 7—06	Standard for Suction Entrapment Avoidance in Swimming Pools, Wading Pools, Spas, Hot Tubs and Catch Basins

American Society of Agricultural and Biological Engineers
2950 Niles Road
St. Joseph, MI 49085

ASABE Standard reference number	Title
EP 484.2 -*98*	Diaphragm Design of Metal-clad, Post-frame Rectangular Buildings
EP 486.1 -*99*	Shallow-post Foundation Design
EP 559 -03	Design Requirements and Bending Properties for Mechanically Laminated Columns

American Society of Civil Engineers
Structural Engineering Institute
1801 Alexander Bell Drive
Reston, VA 20191-4400

ASCE/SEI Standard reference number	Title
3—91	Structural Design of Composite Slabs
5—08	Building Code Requirements for Masonry
6—08	Specification for Masonry Structures
7—05	Minimum Design Loads for Buildings and Other Structures including Supplements No. 1 and 2, excluding Chapter 14 and Appendix 11A
8—02	Standard Specification for the Design of Cold-formed Stainless Steel Structural Members
19—*10*	Structural Applications of Steel Cables for Buildings
24—05	Flood Resistant Design and Construction
29—05	Standard Calculation Methods for Structural Fire Protection

32—01 Design and Construction of Frost Protected Shallow Foundations

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
1791 Tullie Circle, NE
Atlanta, GA 30329-2305

ASHRAE Standard Reference Number	***Title***
ASHRAE 90.1-2007	*Energy Standard for Buildings Except Low-Rise Residential Buildings*

American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

ASME Standard reference number	**Title**
A17.1/CSA B44—*2010*	Safety Code for Elevators and Escalators
A18.1—*2008*	Safety Standard for Platform Lifts and Stairway Chairlifts
A90.1—*2009*	Safety Standard for Belt Manlifts
B16.18—2001 (Reaffirmed 2005)	Cast Copper Alloy Solder Joint Pressure Fittings
B16.22—2001 (Reaffirmed 2005)	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
B20.1—*2009*	Safety Standard for Conveyors and Related Equipment
B31.3—*2008*	Process Piping

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

ASTM Standard

reference number	Title
A 36/A 36M—*08*	Specification for Carbon Structural Steel
A 153/A 153M—*09*	Specification for Zinc Coating (Hot-dip) on Iron and Steel Hardware
A 240/A 240M—*10a*	Standard Specification for Chromium and Chromium-nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications
A 252—*10*	Specification for Welded and Seamless Steel Pipe Piles
A 283/A 283M—03*(2007)*	Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
A 307—*07b*	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
A 416/A 416M—*10*	Specification for Steel Strand, Uncoated Seven-wire for Prestressed Concrete
A 463/A 463M—*09a*	Standard Specification for Steel Sheet, Aluminum-coated, by the Hot-dip Process
A 572/A 572M—07	Specification for High-strength Low-alloy Columbium-vanadium Structural Steel
A 588/A 588M—*10*	Specification for High-strength Low-alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (100 mm) Thick
A 615/A 615M—*09b*	Specification for Deformed and Plain Billet-steel Bars for Concrete Reinforcement
A 653/A 653M—*09a*	Specification for Steel Sheet, Zinc-coated Galvanized or Zinc-iron Alloy-coated Galvannealed by the Hot-dip Process
A 690/A 690M—07	Standard Specification for High-strength Low-alloy Nickel, Copper, Phosphorus Steel H-piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments
A 706/A 706M—*09b*	Specification for Low-alloy Steel Deformed and Plain Bars for Concrete Reinforcement
A 722/A 722M—07	Specification for Uncoated High-strength Steel Bar for Prestressing
A 755/A 755M—*03(2008)*	Specification for Steel Sheet, Metallic-coated by the Hot-dip Process and Prepainted by the

	Coil-coating Process for Exterior Exposed Building Products
A 792/A 792M—*09a*	Specification for Steel Sheet, 55% Aluminum-zinc Alloy-coated by the Hot-dip Process
A 875/A 875M—*09a*	Standard Specification for Steel Sheet Zinc-5 percent, Aluminum Alloy-coated by the Hot-dip Process
A 913/A 913M—*07*	Specification for High-strength Low-alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-tempering Process (QST)
A 924/A 924M—*10*	Standard Specification for General Requirements for Steel Sheet, Metallic-coated by the Hot-dip Process
A 992/A 992M—06a	Standard Specification for Structural Shapes
B 42—*10*	Specification for Seamless Copper Pipe, Standard
B 43—*09*	Specification for Seamless Red Brass Pipe, Standard Sizes
B 68—02	Specification for Seamless Copper Tube, Bright Annealed (Metric
B 88—*09*	Specification for Seamless Copper Water Tube
B 101—*07*	Specification for Lead-coated Copper Sheet and Strip for Building Construction
B 209—*07*	Specification for Aluminum and Aluminum Alloy Steel and Plate
B 251—*10*	Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube
B 280—*08*	Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
B 370—*09*	Specification for Cold-rolled Copper Sheet and Strip for Building Construction
B 695—04*(2009)*	Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
C 5—*10*	Specification for Quicklime for Structural
C 22/C 22M—00 (2005)e01	Specification for Gypsum
C 27—98 (*2008*)	Specification for Standard Classification of Fireclay and High-alumina Refractory Brick
C 28/C 28M—*10*	Specification for Gypsum
C 31/C 31M—*10*	Practice for Making and Curing Concrete Test Specimens in the Field
C 33—*08*	Specification for Concrete Aggregates

C 34—*10*	Specification for Structural Clay Load-bearing Wall Tile
C 35—01(*2009*)	Specification for Inorganic Aggregates for Use in Gypsum Plaster
C 36/C 36M—03	Specification for Gypsum Wallboard
C 37/C 37M—01	Specification for Gypsum Lath
C 55—*09*	Specification for Concrete Building Brick
C 56—*10*	Specification for Structural ClayNonloadBearing Tile
C 59/C 59M—00 (2006)	Specification for Gypsum Casting and Molding Plaster
C 61/C 61M—00 (2006)	Specification for Gypsum Keene's
C 62—*10*	Specification for Building Brick (Solid Masonry Units Made from Clay or Shale
C 67—*09*	Test Methods of Sampling and Testing Brick and Structural Clay
C 73—05	Specification for Calcium Silicate Face Brick (Sand-lime Brick)
C 79—04a	Specification for Treated Core and Nontreated Core Gypsum Sheathing Board
C 90—*09*	Specification for Loadbearing Concrete Masonry Units
C 91—05	Specification for Masonry Cement
C 94/C 94M—*10*	Specification for Ready-mixed
C 126—*10*	Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick and Solid Masonry Units
C 140—*10*	Test Method Sampling and Testing Concrete Masonry Units and Related Units
C 150—*09*	Specification for Portland Cement
C 172—*10*	Practice for Sampling Freshly Mixed
C 199—84 (2005)	Test Method for Pier Test for Refractory Mortars
C 206—03 *(2009)*	Specification for Finishing Hydrated Lime
C 208—*08a*	Specification for Cellulosic Fiber Insulating Board
C 212—*10*	Specification for Structural Clay Facing Tile
C 216—*10*	Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale
C 270—*10*	Specification for Mortar for Unit Masonry
C 315—07	Specification for Clay Flue Liners and Chimney Pots
C 317/C 317M—00 (2005)	Specification for Gypsum Concrete

C 330—*09*	Specification for Lightweight Aggregates for Structural Concrete
C 331—05	Specification for Lightweight Aggregates for Concrete Masonry Units
C 406—*10*	Specification for Roofing Slate
C 442/C 442M—04	Specification for Gypsum Backing Board and Coreboard and Gypsum Shaftliner Board
C 472—99 (*2009*)	Specification for Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
C 473—*10*	Test Method for Physical Testing of Gypsum Panel Products
C 474—05	Test Methods for Joint Treatment Materials for Gypsum Board Construction
C 475—*02 (2007)*	Specification for Joint Compound and Joint Tape for Finishing Gypsum Wallboard
C 503—*10*	Specification for Marble Dimension Stone (Exterior
C 514—04 *(2009)e1*	Specification for Nails for the Application of Gypsum
C 516—*08*	Specifications for Vermiculite Loose Fill Thermal
C 547—*07e1*	Specification for Mineral Fiber Pipe Insulation
C 549—06	Specification forPerliteLoose Fill
C 552—*07*	Standard Specification for Cellular Glass Thermal Insulation
C 557—*03(2009)e01*	Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing
C 568—*10*	Specification for Limestone Dimension Stone
C 578—*10*	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
C 587—04 *(2009)*	Specification for Gypsum Veneer Plaster
C 588/C 588M—01	Specification for Gypsum Base for Veneer Plasters
C 595—*10*	Specification for Blended Hydraulic Cements
C 615—*10*	Specification for Granite Dimension
C 616—*10*	Specification for Quartz Dimension Stone
C 629—*10*	Specification for Slate Dimension
C 630/C 630M—03	Specification for Water-resistant Gypsum Backing Board
C 631—*09*	Specification for Bonding Compounds for Interior Gypsum Plastering

C 635*/C 635M-07*	Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel
C 636/C 636M*—08*	Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
C 645*—09a*	Specification for Nonstructural Steel Framing Members
C 652*—10*	Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale
C 728—05 *(2010)*	Standard Specification forPerliteThermal Insulation Board
C 744*—10*	Specification for Prefaced Concrete and Calcium Silicate Masonry
C 754*—09a*	Specification for Installation of Steel Framing Members to Receive Screw-attached Gypsum Panel Products
C 836/*C 836M-10*	Specification for High-solids Content, Cold Liquid-applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
C 840*—08*	Specification for Application and Finishing of Gypsum Board
C 841—03 *(2008)e1*	Specification for Installation of Interior Lathing and Furring
C 842—05	Specification for Application of Interior Gypsum Plaster
C 843—99 (2006)	Specification for Application of Gypsum Veneer Plaster
C 844*—10*	Specification for Application of Gypsum Base to Receive Gypsum Veneer Plaster
C 847*—10a*	Specification for Metal Lath
C 887—05 *(2010)*	Specification for Packaged, Dry Combined Materials for Surface Bonding Mortar
C 897—05 *(2009)*	Specification for Aggregate for Job-mixed Portland Cement-based Plaster
C 920*—10*	Standard for Specification forElastomericJoint Sealants
C 926*—06*	Specification for Application of Portland Cement-based Plaster
C 931/C 931M—04	Specification for Exterior Gypsum Soffit Board

C 932—06	Specification for Surface-applied Bonding Compounds Agents for Exterior Plastering
C 933—*09*	Specification for Welded Wire Lath
C 946—*10*	Specification for Practice for Construction of Dry-stacked, Surface-bonded Walls
C 954—*10*	Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inch (0.84 mm) to 0.112 inch (2.84 mm) in Thickness
C 955—*09a*	Standard Specification for Load-bearing Transverse and Axial Steel Studs, Runners Tracks, and Bracing or Bridging, for Screw Application of Gypsum Panel Products and Metal Plaster Bases
C 956—04 *(2010)*	Specification for Installation of Cast-in-place Reinforced Gypsum
C 957—*10*	Specification for High-solids Content, Cold Liquid-applied Elastomeric Waterproofing Membrane with Integral Wearing Surface
C 960—04	Specification forPredecoratedGypsum Board
C 1002—*07*	Specification for Steel Self-piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
C 1007—*08a*	Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories
C 1019—*09*	Test Method of Sampling and Testing Grout
C 1029—*10*	Specification for Spray-applied Rigid Cellular Polyurethane Thermal Insulation
C 1032—06	Specification for Woven Wire Plaster Base
C 1047—*10a*	Specification for Accessories for Gypsum Wallboard and Gypsum Veneer
C 1063—*08*	Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-based Plaster
C 1088—*10*	Specification for Thin Veneer Brick Units Made from Clay or Shale
C 1167—03 *(2009)*	Specification for Clay Roof Tiles
C 1177/C 1177M—*08*	Specification for Glass Mat Gypsum Substrate for Use as Sheathing

C 1178/C 1178M—*08*	Specification for Coated Glass Mat Water-resistant Gypsum Backing Panel
C 1186—*08*	Specification for Flat-Fiber Cement Sheets
C 1261—*10*	Specification for Firebox Brick for Residential Fireplaces
C 1278/C 1278M—*07a*	Specification for Fiber-reinforced Gypsum Panels
C 1280—*09*	Specification for Application of Gypsum Sheathing
C 1283—07*a*	Practice for Installing Clay Flue Lining.
C 1288—99 (*2010*)	Standard Specification for Discrete Nonasbestos Fiber-cement Interior Substrate Sheets
C 1289—*10*	Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
C 1314—*10*	Test Method for Compressive Strength of Masonry Prisms
C 1325—*08b*	Standard Specification for Nonasbestos Fiber-mat Reinforced Cement Interior Substrate Sheets
C 1328—05	Specification for Plastic (Stucco Cement
C 1386—07	Specification for Precast Autoclaved Aerated Concrete (AAC) Wall Construction
C 1395/C 1395M—06a	Specification for Gypsum Ceiling Board
C 1396M—*09a*	Specification for Gypsum Board
C 1405—*10*	Standard Specification for Glazed Brick (Single Fired, Solid Brick Units
C 1492—03 *(2009)*	Standard Specification for Concrete Roof
C 1629/C 1629M—06	Standard Classification for Abuse-resistant Nondecorated Interior Gypsum Panel Products and Fiber-reinforced Cement Panels
C 1658/C 1658M—06	Standard Specification for Glass Mat Gypsum Panels
D 25—99 (2005)	Specification for Round Timber Piles
D 41—05 *(2010)*	Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing
D 43—00 (2006)	Specification for Coal Tar Primer Used in Roofing, Dampproofing and Waterproofing
D 56—05	Test Method for Flash Point By Tag Closed Tester
D 86—*10a*	Test Method for Distillation of Petroleum Products at Atmospheric Pressure
D 93—*10*	Test Method for Flash Point ByPensky-MartensClosed Cup Tester
D 225—*07*	Specification for Asphalt Shingles (Organic Felt) Surfaced with Mineral Granules

D 226/D 226M-09	Specification for Asphalt-saturated Organic Felt Used in Roofing and Waterproofing
D 227—03	Specification for Coal-tar-saturated Organic Felt Used in Roofing and Waterproofing
D 312—00 (2006)	Specification for Asphalt Used in
D 422—63 *(2007)*	Test Method for Particle-size Analysis of Soils
D 448—*08*	Standard Classification for Sizes of Aggregate for Road and Bridge
D 450—07	Specification for Coal-tar Pitch Used in Roofing, Dampproofing and Waterproofing
D 635—*10*	Test Method for Rate of Burning and/or Extent and Time of Burning of Self-supporting Plastics in a Horizontal Position
D 1143/D 1143M—07*e1*	Test Method for Piles Under Static Axial Compressive Load
D 1227—95 (2007)	Specification for Emulsified Asphalt Used as a Protective Coating for Roofing
D 1557—*09*	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lb/ft^3 (2,700 KN m/m^3)]
D 1586—*08a*	Specification for Penetration Test and Split-barrel Sampling of Soils
D 1761—06	Test Method for Mechanical Fasteners in Wood
D 1863—05	Specification for Mineral Aggregate Used on Built-up Roofs
D 1929—96 (2001)e01	Test Method for Determining Ignition Properties of Plastics
D 1970—*09*	Specification for Self-adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roof Underlayment for Ice Dam Protection
D 2166—06	Test Method for Unconfined Compressive Strength of Cohesive Soil
D 2178—04	Specification for Asphalt Glass Felt Used in Roofing and Waterproofing
D 2216—*10*	Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D 2487—*10*	Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
D 2626—04	Specification for Asphalt Saturated and Coated Organic Felt Base Sheet Used in Roofing
D 2822—05	Specification for Asphalt Roof Cement

D 2823—05	Specification for Asphalt Roof Coatings
D 2843—*10*	Test for Density of Smoke from the Burning or Decomposition of Plastics
D 2850—03a *(2007)*	Test Method for Unconsolidated, Undrained Triaxial Compression Test on Cohesive Soils
D 2898—*10*	Test Methods for Accelerated Weathering of Fire-retardant-treated Wood for Fire Testing
D 3019—*08*	Specification for Lap Cement Used with Asphalt Roll Roofing, Nonfibered, Asbestos Fibered and NonasbestosFibered
D 3161—*09*	Test Method for a Wind Resistance of Asphalt Shingles (Fan Induced Method)
D 3200—74 (2005)	Standard Specification and Test Method for Establishing Recommended Design Stresses for Round Timber Construction Poles
D 3201—*08ae1*	Test Method for Hygroscopic Properties of Fire-retardant-treated Wood and Wood-based Products
D 3278—*96*(2004)e01	Test Methods for Flash Point of Liquids by Small Scale Closed-cup Apparatus
D 3462/ *D3462M-10a*	Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules
D 3468—99 (2006)e1	Specification for Liquid-applied Neoprene and Chlorosulfonated Polyethylene Used in Roofing and Waterproofing
D 3679—*09a*	Specification for Rigid Poly [Vinyl Chloride (PVC) Siding]
D 3689—*07*	Method for Testing Individual Piles Under Static Axial Tensile Load
D 3737—*09*	Practice for Establishing Allowable Properties for Structural Glued Laminated Timber (Glulam)
D 3746—85 (*2008*)	Test Method for Impact Resistance of Bituminous Roofing Systems
D 3747—79 (2007)	Specification for Emulsified Asphalt Adhesive for Adhering Roof Insulation
D 3909—97b (2004)e01	Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules
D 3957—*09*	Standard Practices for Establishing Stress Grades for Structural Members Used in Log Buildings
D 4022—07	Specification for Coal Tar Roof Cement, Asbestos Containing

D 4272—*09*	Test Method for Total Energy Impact of Plastic Films by Dart Drop
D 4318—*10*	Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils
D 4434/D 4434M-09	Specification for Poly (Vinyl Chloride) Sheet Roofing
D 4479—07	Specification for Asphalt Roof Coatings—Asbestos-free
D 4586—*07*	Specification for Asphalt Roof Cement—Asbestos-free
D 4601—04	Specification for Asphalt-coated Glass Fiber Base Sheet Used in Roofing
D 4637/*D 4637M-10*	Specification forEPDMSheet Used in Single-ply Roof Membrane
D 4829—*08a*	Test Method for Expansion Index of Soils
D 4869—05e01	Specification for Asphalt-saturated (Organic Felt) Underlayment Used in Steep Slope Roofing
D 4897/*D 4897M-01(2009)*	Specification for Asphalt-coated Glass Fiber Venting Base Sheet Used in Roofing
D 4945—*08*	Test Method for High-strain Dynamic Testing of Piles
D 4990—97a (2005)e1	Specification for Coal Tar Glass Felt Used in Roofing and Waterproofing.
D 5019—07a	Specification for Reinforced Nonvulcanized Polymeric Sheet Used in Roofing Membrane
D 5055—*10*	Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-joists
D 5456—*10*	Specification for Evaluation of Structural Composite Lumber Products
D 5516—*09*	Test Method of Evaluating the Flexural Properties of Fire-retardant-treated Softwood Plywood Exposed to the Elevated Temperatures
D 5643—06	Specification for Coal Tar Roof Cement, Asbestos-free
D 5664—*10*	Test Methods for Evaluating the Effects of Fire-retardant Treatment and Elevated Temperatures on Strength Properties of Fire-retardant-treated Lumber
D 5665—99a (2006)	Specification for Thermoplastic Fabrics Used in Cold-applied Roofing and Waterproofing
D 5726—98 (2005)	Specification for Thermoplastic Fabrics Used in Hot-applied Roofing and Waterproofing .

D 6083—05e01	Specification for Liquid Applied Acrylic Coating Used in Roofing
D 6162—00a *(2008)*	Specification for Styrene-butadiene-styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
D 6163—00 *(2008)*	Specification for Styrene-butadiene-styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements
D 6164—05 e1	Specification for Styrene-butadiene-styrene (SBS) Modified Bituminous Sheet Metal Materials Using Polyester Reinforcements
D 6222—*08*	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements
D 6223/*D6223M-02(2009)e1*	Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
D 6298—05e1	Specification for Fiberglass Reinforced Styrene-butadiene-styrene (SBS) Modified Bituminous Sheets with a Factory Applied Metal Surface
D 6305—*08*	Practice for Calculating Bending Strength Design Adjustment Factors for Fire-retardant-treated Plywood Roof Sheathing
D 6380—03 *(2009)*	Standard Specification for Asphalt Roll Roofing (Organic) Felt
D 6509/*D6509M-09*	Standard Specification for Atactic Polypropylene (APP) Modified Bituminous base Sheet Materials Using Glass Fiber Reinforcements
D 6694—*08*	Standard Specification for Liquid-applied Silicone Coating Used in Spray Polyurethane Foam Roofing
D 6754*/D6754M-10*	Standard Specification for Ketone Ethylene Ester Based Sheet Roofing
D 6757—07	Standard Specification for Inorganic Underlayment for Use with Steep Slope Roofing Products
D 6841—*08*	Standard Practice for Calculating Design Value Treatment Adjustment Factors for Fire-retardant-treated Lumber
D 6878—*08e1*	Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

D 6947—07	Standard Specification for Liquuid Applied Moisture Cured Polyurethane Coating Used in Spray Polyurethane Foam Roofing System
D 7158—*08d*	Standard Test Method for Wind Resistance of Sealed Asphalt Shingles (Uplift Force/Uplift Resistance Method
E 84—*10b*	Test Methods for Surface Burning Characteristics of Building Materials
E 90—*09*	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
E 96/E 96M—05	Test Method for Water Vapor Transmission of Materials
E 108—*10a*	Test Methods for Fire Tests of Roof Coverings
E 119—*10b*	Test Methods for Fire Tests of Building Construction and Materials
E 136—*09b*	Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
E 330—02 *(2010)*	Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
E 331—00 *(2009)*	Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference
E 492—*09*	Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-ceiling Assemblies Using the Tapping Machine
E 605—93 (2006)	Test Method for Thickness and Density of Sprayed Fire-resistive Material (SFRM) Applied to Structural Members.
E 681—*09*	Test Methods for Concentration Limits of Flammability of Chemical Vapors and Gases
E 736—00 (2006)	Test Method for Cohesion/Adhesion of Sprayed Fire-resistive Materials Applied to Structural Members
E 814—*10*	Test Method of Fire Tests of Through-penetration Firestops
E 970—*10*	Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source

E 1300—*09a*	Practice for Determining Load Resistance of Glass in Buildings.
E 1354—*10a*	Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter
E 1592—*05*	Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference
E 1602—03 *(2010)e1*	Guide for Construction of Solid Fuel-burning Masonry Heaters
E 1886—*05*	Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Storm Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials
E 1966—*07*	Test Method for Fire-resistant Joint Systems.
E 1996—*09*	Specification for Performance of Exterior Windows, Glazed Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes
E 2072—*10*	Standard Specification for Photoluminescent (Phosphorescent) Safety Markings
E 2273—03	Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies
E 2307—*10*	Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-scale, Multistory Test Apparatus
E 2404—*10*	Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Vinyl Wall or Ceiling Coverings to Assess Surface Burning Characteristics
E 2568—*09e1*	Standard Specification for PB Exterior Insulation and Finish Systems (EIFS)
E 2570—07	Standard Test Method for Evaluating Water-resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) for EIFS with Drainage
E 2573—*07a*	Standard Practice for Specimen Preparation and Mounting of Site-fabricated Stretch Systems to Assess Surface Burning Characteristics

F 547—*06*	Terminology of Nails for Use with Wood and Wood-based Materials
F 1346—91 (2003)	Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs
F 1667—*10*	Specification for Driven Fasteners: Nails, Spikes and Staples
F 2006—*10*	Standard/Safety Specification for Window Fall Prevention Devices for NonemergencyEscape (Egress) and Rescue (Ingress) Windows
F 2090—*10*	Specification for Window Fall Prevention Devices with Emergency Escape (Egress) Release Mechanisms
F 2200—05	Standard Specification for Automated Vehicular Gate Construction
G 152—06	Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
G 154—*06*	Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
G 155—05a	Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials

The Association of the Wall and Ceiling Industries International
513 West Broad Street, Suite 210
Falls Church, VA 22046

AWCI Standard reference number	**Title**
12-B—*05*	Technical Manual 12-B Standard Practice for the Testing and Inspection of Field Applied Thin Film Intumescent Fire-resistive Materials; an Annotated Guide, *Second* Edition

American Wood Protection Association
P.O. Box 361784
Birmingham, AL 35236-1784

AWPA Standard

reference number	Title
C1—03	All Timber Products—Preservative Treatment by Pressure Processes
M4—06	Standard for the Care of Preservative-treated Wood Products
U1—*10*	USE CATEGORY SYSTEM: User Specification for Treated Wood Except Section 6, Commodity Specification H

American Welding Society
550 N.W. LeJeune Road
Miami, FL 33126

AWS Standard reference number	Title
D1.1—*10*	Structural Welding Code—Steel
D1.3—*08*	Structural Welding Code—Sheet Steel
D1.4—*05*	Structural Welding Code—Reinforcing Steel

Builders Hardware Manufacturers' Association
355 Lexington Avenue, 17th Floor
New York, NY 10017-6603

BHMA Standard reference number	Title
A 156.10—*05*	Power Operated Pedestrian Doors
A 156.19—*07*	Standard for Power Assist and Low Energy Operated Doors

Canadian General Standards Board
Place du Portage 111, 6B1
11 Laurier Street
Gatineau, Quebec, Canada KIA 1G6

CGSB Standard Reference Number	Title

37-GP-52M (1984)	Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric
37-GP-56M (*1985)*	Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing—with December 1985 Amendment
CAN/CGSB 37.54—95	Polyvinyl Chloride Roofing and Waterproofing Membrane

Composite Panel Association
19465 Deerfield Avenue, Suite 306
Leesburg, VA 20176

CPA Standard reference number	**Title**
ANSI A135.4—2004	Basic Hardboard
ANSI A135.5—2004	Prefinished Hardboard Paneling
ANSI A135.6—*2006*	Hardboard Siding

Consumer Product Safety Commission
4330 East West Highway
Bethesda, MD 20814-4408

CPSC Standard reference number	**Title**
16 CFR Part 1201(1977)	Safety Standard for Architectural Glazing Material
16 CFR Part 1209 (1979)	Interim Safety Standard for Cellulose Insulation
16 CFR Part 1301(1977)	*Ban of Unstable Refuse Bins*
16 CFR Part 1404 (1979)	Cellulose Insulation
16 CFR Part 1500 (1991)	Hazardous Substances and Articles; Administration and Enforcement Regulations
16 CFR Part 1500.44 (2001)	Method for Determining Extremely Flammable and Flammable Solids
16 CFR Part 1507 (2001)	Fireworks Devices

16 CFR Part 1630 (2000)	Standard for the Surface Flammability of Carpets and Rugs

Canadian Standards Association
5060 Spectrum Way, Suite 100
Mississauga, Ontario, L4W 5N6 Canada

CSA Standard reference number	**Title**
101/I.S.2/A440—08	Specifications for Windows, Doors and Unit Skylights

Cedar Shake and Shingle Bureau
P.O. Box 1178
Sumas, WA 98295-1178

CSSB Standard reference number	**Title**
CSSB—97	Grading and Packing Rules for Western Red Cedar Shakes and Western Red Shingles of the Cedar Shake and Shingle Bureau

Door and Access Systems Manufacturers Association International
1300 Summer Avenue
Cleveland, OH 44115-2851

DASMA Standard reference number	**Title**
ANSI/DASMA 107—1997 (R2004)	Room Fire Test Standard for Garage Doors Using Foam Plastic Insulation
108—05	Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference

115—05	Standard Method for Testing Sectional Garage Doors and Rolling Doors: Determination of Structural Performance Under Missile Impact and Cyclic Wind Pressure

U.S. Department of Commerce
National Institute of Standards and Technology
1401 Constitution Avenue, NW
Washington, DC 20230

DOC Standard reference number	**Title**
PS-1—07	Structural Plywood
PS-2—04	Performance Standard for Wood-based Structural-use Panels
PS 20—05	American Softwood Lumber Standard

U.S. Department of Labor
c/o Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325

DOL Standard reference number	**Title**
29 CFR Part 1910.1000 (1974)	Air Contaminants

U.S. Department of Transportation
c/o Superintendent of Documents
1200 New Jersey Avenue, SE
Washington, DC 20402-9325

DOTn Standard reference

number	Title
49CFRParts 100-185-2005	Hazardous Materials Regulations
49 CFR Parts 173.137 (2005)	Shippers—General Requirements for Shipments and Packaging—Class 8—Assignment of Packing Group
49 CFR—1998	Specification of Transportation of Explosive and Other Dangerous Articles, UN 0335, UN 0336 Shipping Containers

European Committee for Standardization (EN)
Central Secretariat
Rue de Stassart 36
B-10 50 Brussels

EN Standard reference number	Title
EN 1081-98	Resilient Floor Coverings—Determination of the Electrical Resistance

Federal Emergency Management Agency
Federal Center Plaza
500 C Street S.W.
Washington, DC 20472

FEMA Standard reference number	Title
FIA-TB11—01	Crawlspace Construction for Buildings Located in Special Flood Hazard Areas

Factory Mutual Global Research
Standards Laboratories Department
1301 Atwood Avenue, P.O. Box 7500
Johnson, RI 02919

FM Standard

reference number	Title
4450 (1989)	Approval Standard for Class 1 Insulated Steel Deck Roofs—with Supplements through July 1992
4470 *(2010)*	Approval Standard for Class 1 Roof Covers
4474 (04)	Evaluating the Simulated Wind Uplift Resistance of Roof Assemblies Using Static Positive and/or Negative Differential Pressures
4880 *(2010)*	American National Standard for Evaluating Insulated Wall or Wall and Roof/ Ceiling Assemblies, Plastic Interior Finish Materials, Plastic Exterior Building Panels, Wall/Ceiling Coating Systems, Interior and Exterior Finish Systems

Gypsum Association
810 First Street N.E. #510
Washington, DC 20002-4268

GA Standard reference number	Title
GA 216—*10*	Application and Finishing of Gypsum Panel Products
GA 600—*09*	Fire-resistance Design Manual, 18th Edition

Hardwood Plywood Veneer Association
1825 Michael Faraday Drive
Reston, VA 20190-5350

HPVA Standard reference number	Title
HP-1—*2009*	Standard for Hardwood and Decorative Plywood

U.S. Department of Housing and Urban Development
451 7th Street, SW,
Washington, DC 20410

HUD Standard

reference number	Title
HUD 24 CFR Part 3280 (1994)	Manufactured Home Construction and Safety Standards

International Code Council, Inc.
500 New Jersey Ave, NW 6th Floor
Washington, DC 20001

ICC Standard reference number	Title
ICC/ANSI A117.1—*09*	Accessible and Usable Buildings and Facilities
ICC 300—07	ICC Standard on Bleachers, Folding and Telescopic Seating and
ICC 400—07	Standard on Design and Construction of Log Structures
ICC 500—08	ICC/NSSA Standard on the Design and Construction of Storm
ICC 600—08	Standard for Residential Construction in High Wind Regions
IEBC – 09	International Existing Buildings Code
IECC—09	International Energy Conservation Code *(adoption includes only section 101 of chapter 1 and chapters 2 through 6)*
IFGC—09	International Fuel Gas Code *(including ICC Emergency Amendment changing IFGC Sections 406.7)*
SBCCI SSTD 11—*99*	Test Standard for Determining Wind Resistance of Concrete or Clay Roof Tiles

International Organization for Standardization
ISO Central Secretariat,
1 ch, de la Voie-Creuse,
Case Postale 56
CH-1211 Geneva 20, Switzerland

ISO Standard reference

number	Title
ISO 8115—86	Cotton Bales–Dimensions and Density

National Association of Architectural Metal Manufacturers,
800 Roosevelt Road,
Bldg. C, Suite 312
Glen Ellyn, IL 60137

NAAMM Standard reference number	Title
FP 1001—*07*	Guide Specifications for Design of Metal Flag Poles

National Concrete Masonry Association,
13750 Sunrise Valley,
Herndon, VA 22071-4662

NCMA Standard reference number	Title
TEK5-*08*	Details for Concrete Masonry Fire Walls

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02269-9101

NFPA Standard reference number	Title
10—*10*	Portable Fire Extinguishers
11—*10*	Low Expansion Foam
12—*08*	Carbon Dioxide Extinguishing Systems
12A—04	Halon 1301 Fire Extinguishing Systems
13—*10*	Installation of Sprinkler Systems *(including TIA 10-2)*
13D—*10*	Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes (*including TIA 10-2)*

13R—*10*	Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height *(including TIA 10-2)*
14—*10*	Installation of Standpipe and Hose System
16—07	Installation of Foam-water Sprinkler and Foam-water Spray Systems
17—*09*	Dry Chemical Extinguishing Systems
17A—*09*	Wet Chemical Extinguishing
20—*10*	Installation of Stationary Pumps for Fire Protection
30—08	Flammable and Combustible Liquids Code
31—06	Installation of Oil-burning Equipment
32—07	Dry Cleaning Plants
40—*11*	Storage and Handling of Cellulose Nitrate Film
58—*11*	Liquefied Petroleum Gas Code
61—08	Prevention of Fires and Dust Explosions in Agricultural and Food Product Facilities
70—~~*11*~~ *14*	National Electrical Code ~~*(including TIA 11-1)*~~
72—*10*	National Fire Alarm *and Signaling* Code *(including TIA 10-4 and TIA 10-5)*
80—*10*	Fire Doors and Other Opening Protectives
85—07	Boiler and Combustion System Hazards Code (Note: NFPA 8503 has been incorporated into NFPA 85)
92B—*09*	Smoke Management Systems in Malls, Atria and Large Spaces
99—05	Standard for Health Care Facilities
105—*10*	Standard for the Installation of Smoke Door Assemblies
110—*10*	Emergency and Standby Power Systems
111—*10*	Stored Electrical Energy Emergency and Standby Power Systems
120—*10*	Coal Preparation Plants
170—*09*	Standard for Fire Safety and Emergency Symbols
211—*10*	Chimneys, Fireplaces, Vents and Solid Fuel-burning
252—*08*	Standard Methods of Fire Tests of Door Assemblies
253—06	Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source
257—07	Standard for Fire Test for Window and Glass Block Assemblies

259—*08*	Test Method for Potential Heat of Building Materials
265—07	Method of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings on Full Height Panels and Walls
268—07	Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source
285—06	Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonload-bearingWall Assemblies Containing Combustible Components
286—06	Standard Method of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
288—07	Standard Method of Fire Tests of Floor Fire Door Assemblies Installed Horizontally in Fire-resistance-rated Floor Systems
409—*11*	Aircraft Hangars
418—06	Standard for Heliports
484—*09*	Combustible Metals
654—06	Prevention of Fire & Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids
655—07	Prevention of Sulfur Fires and Explosions
664—07	Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities
701—*10*	Standard Methods of Fire Tests for Flame-propagation of Textiles and Films
704—07	Standard System for the Identification of the Hazards of Materials for Emergency Response
1124—06	Manufacture, Transportation and Storage of Fireworks and Pyrotechnic Articles
2001—08	Clean Agent Fire Extinguishing Systems

Precast Prestressed Concrete Institute
175 W. Jackson Boulevard, Suite 500
Chicago, IL 60604-6938

PCI
Standard

reference number	Title
MNL 124—89	Design for Fire Resistance of Precast Prestressed Concrete
MNL 128—01	Recommended Practice for Glass Fiber Reinforced Concrete Panels

Post-Tensioning Institute
8601 North Black Canyon Highway, Suite 103
Phoenix, AZ 85021

PTI Standard reference number	Title
PTI—*2008*	Standard Requirements for Analysis of Shallow Concrete Foundations on Expansive Soils, Third Edition
PTI—*2008*	Standard Requirements for Design of Shallow Post-tensioned Concrete Foundation on Expansive Soils, Second Edition

Rack Manufacturers Institute
8720 Red Oak Boulevard, Suite 201
Charlotte, NC 28217

RMI Standard reference number	Title
ANSI/MH16.1—08	Specification for Design, Testing and Utilization of Industrial Steel Storage Racks

Steel Deck Institute,
P. O. Box 25
Fox River Grove, IL 60021

SDI Standard reference number	Title
ANSI/NC1.0—06	Standard for Noncomposite Steel Floor Deck

ANSI/RD1.0—06	Standard for Steel Roof Deck

Steel Joist Institute,
1173B London Links Drive
Forest, VA 24551

SJI Standard reference number	**Title**
CJ-1.0—06	Standard Specification for Composite Steel Joists, CJ-series
JG-1.1—05	Standard Specification for Joist Girders
K-1.1—05	Standard Specification for Open Web Steel Joists, K- series
LH/DLH-1.1—05	Standard Specification for Longspan Steel Joists, LH-series and Deep Longspan Steel Joists, DLH-series

Single-Ply Roofing Institute,
411 Waverly Oaks Road, Suite 331B,
Waltham, MA 02452

SPRI Standard reference number	**Title**
SPRI/ANSI/ES-1—03	Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems
RP-4—02	Wind Design Guide for Ballasted Single-ply Roofing Systems

Telecommunications Industry Association
2500 Wilson Boulevard
Arlington, VA 22201-3834

TIA Standard reference number	**Title**

TIA-222-G—*09*	Structural Standards for Steel Antenna Towers and Antenna Supporting Structures including-Addendum 1, 222-G-1, Dated 2007

The Masonry Society,
3970 Broadway, Unit 201-D,
Boulder, CO 80304-1135

TMS Standard reference number	**Title**
0216—*07*	Standard Method for Determining Fire Resistance of Concrete and Masonry Construction Assemblies
0302—07	Standard Method for Determining the Sound Transmission Class Rating for Masonry Walls
402—08	Building Code Requirements for Masonry Structures
602—08	Specification for Masonry Structures

Truss Plate Institute,
218 N. Lee Street, Suite 312
Alexandria, VA 22314

TPI Standard reference number	**Title**
TPI 1—2007	National Design Standards for Metal-plate-connected Wood Truss Construction

Underwriters Laboratories, Inc.
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard reference number	**Title**
9—*09*	Fire Tests of Window Assemblies
10A—*09*	Tin Clad Fire Doors
10B—*08*	Fire Tests of Door Assemblies

10C—*09*	Positive Pressure Fire Tests of Door Assemblies
14B—*08*	Sliding Hardware for Standard Horizontally-mounted Tin Clad Fire Doors
14C—06	Swinging Hardware for Standard Tin Clad Fire Doors Mounted Singly and in Pairs
103—*10*	Factory-built Chimneys, for Residential Type and Building Heating Appliances
127—*08*	Factory-built Fireplaces
199E—04	Outline of Investigation for Fire Testing of Sprinklers and Water Spray Nozzles for Protection of Deep Fat Fryers.
217—06	Single and Multiple Station Smoke Alarms
263—03	Standard for Fire Test of Building Construction and Materials
268—*09*	Smoke Detectors for Fire Protective Signaling Systems
300—05	Fire Testing of Fire Extinguishing Systems for Protection of Restaurant Cooking Areas
305—*97*	Panic Hardware
325—02	Door, Drapery, Gate, Louver and Window Operations and Systems—with Revisions through February 2006
555—2006	Fire Dampers
555C—2006	Ceiling Dampers
555S—99	Smoke Dampers—with Revisions through July 2006
580—2006	Test for Uplift Resistance of Roof Assemblies
641—95	Type L Low-temperature Venting Systems
710B—04	Recirculating Systems—with Revisions through April 2006
723—*08*	Standard for Test for Surface Burning Characteristics of Building Materials
790—04	Standard Test Methods for Fire Tests of Roof Coverings
793—*08*	Standards for Automatically Operated Roof Vents for Smoke and Heat
864—03	Standards for Control Units and Accessories for Fire Alarm Systems—with Revisions through March 2006
924—06	Standard for Safety Emergency Lighting and Power Equipment
1040—96	Fire Test of Insulated Wall Construction—with Revisions through June 2001
1256—02	Fire Test of Roof Deck Construction—with Revisions through January 2007
1479—03	Fire Tests of Through-penetration Firestops—with Revisions through April 2007
1482—*10*	Solid-fuel-type Room Heater

1715—97	Fire Test of Interior Finish Material—with Revisions through March 2004
1777—*07*	Chimney Liners
1784—01	Air Leakage Tests of Door Assemblies—with Revisions through December 2004
1897—04	Uplift Tests for Roof Covering Systems
1975—06	Fire Test of Foamed Plastics Used for Decorative Purposes
1994—04	Standard for Luminous Egress Path Marking Systems—with Revisions through February 2005
2017—*08*	Standards for General-purpose Signaling Devices and Systems
2079—04	Tests for Fire Resistance of Building Joint Systems—with Revisions through March 2006
2200—*98*	Stationary Engine Generator Assemblies

Underwriters Laboratories of Canada,
7 Underwriters Road,
Toronto, Ontario, Canada M1R3B4

ULC Standard reference number	**Title**
CAN/ULC S102.2—*2010*	Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies—with 2000 Revisions

United States Code,
c/o Superintendent of Documents
U.S. Government Printing Office,
Washington, DC 20402-9325

USC Standard reference number	**Title**
10 U.S.C. Sections 18233(A)(1) and 18237-1994	
18 USC Part 1, Ch.40	Importation, Manufacture, Distribution and Storage of Explosive Materials

Window and Door Manufacturers Association
1400 East Touhy Avenue #470
Des Plaines, IL 60018

WDMA Standard reference number	**Title**
AAMA/WDMA/CSA 101/I.S.2/A440—08	Specifications for Windows, Doors and Unit Skylights

Wire Reinforcement Institute, Inc.
942 Main Street, Suite 300
Hartford, CT 06103

WRI Standard reference number	**Title**
WRI/CRSI—81	Design of Slab-on-ground Foundations—with 1996 Update

Effective: 01/01/2015

Five Year Review (FYR) Dates: 11/01/2016

CERTIFIED ELECTRONICALLY

Certification

11/20/2014

Date

Promulgated Under: 119.03
Statutory Authority: 3781.10(A)
Rule Amplifies: 3781.10, 3781.11, 3791.04
Prior Effective Dates: 9/1/92, 2/1/93, 7/1/95, 7/1/97, 3/1/98, 7/1/98, 1/1/99, 12/1/00, 1/1/02, 3/1/05, 9/6/05, 3/1/06, 7/1/07, 1/1/08, 3/31/08 (Emer.), 6/24/08, 1/1/09, 11/1/11, 3/15/12, 3/1/13