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CODE CORNER

ABOUT CODE CORNER

CCFS would like to remind you to check with your local “Authority Having Jurisdiction (AHJ)” for questions and opinions concerning your local Fire and Building Codes. The information contained in this article is supplied as a courtesy by the International Code Council (ICC) and is based on the International Fire and Building Codes and their respective commentaries. Your local codes or ordinances may vary.

SECTION 314—INDOOR DISPLAYS

314.1 General. Indoor displays constructed within any occupancy shall comply with Sections 314.2 through 314.4.

∩ *Indoor displays of merchandise and the display of all manner of vehicles inside of buildings can create a number of hazards to building occupants, including blocked egress and rapid fire buildup. This section describes reasonable measures to reduce the hazards associated with indoor displays without prohibiting them.*

314.2 Fixtures and displays. Fixtures and displays of goods for sale to the public shall be arranged so as to maintain free, immediate and unobstructed access to exits as required by Chapter 10.

∩ *The reason for maintaining free and unobstructed access to exits in public shopping spaces is, of course, personal safety in times of emergency. Chapter 10 contains the requirements, criteria and guidelines for this purpose.*

314.3 Highly combustible goods. The display of highly combustible goods, including but not limited

to fireworks, flammable or *combustible liquids*, liquefied flammable gases, oxidizing materials, pyroxylin plastics and agricultural goods, in main *exit access aisles, corridors*, covered malls, or within 5 feet (1524 mm) of entrances to *exits* and exterior *exit doors* is prohibited when a fire involving such goods would rapidly prevent or obstruct egress.

∩ *As stated in Chapter 10, all elements of the means of egress of any occupancy open to the public must be kept clear of obstructions and other hazards that could prevent the occupants from exiting the premises quickly in an emergency. Displaying the hazardous materials itemized in this section where their involvement in a fire would block exit pathways is prohibited for this reason. The hazards associated with each of the materials mentioned in the section are discussed in Chapters 27 through 44.*

314.4 Vehicles. Liquid- or gas-fueled vehicles, boats or other motorcraft shall not be located indoors except as follows:

1. Batteries are disconnected.
2. Fuel in fuel tanks does not exceed one-quarter tank or 5 gallons (19 L) (whichever is least).

3. Fuel tanks and fill openings are closed and sealed to prevent tampering.

4. Vehicles, boats or other motorcraft equipment are not fueled or defueled within the building.

⚡ *It has become commonplace for covered malls and larger retail stores to have various types of gas- or liquid- fueled vehicles on inside display, such as for promotional events or fire apparatus displays during Fire Prevention Week (see Figure 314.4). Because the hazards of such displays in a public building are similar to those in residential buildings, Section 314.4 parallels Section 313.1, Exception 2 (see commentary, Section 313.1).*

SECTION 315

MISCELLANEOUS COMBUSTIBLE MATERIALS STORAGE

315.1 General. Storage, use and handling of miscellaneous combustible materials shall be in accordance with this section. A permit shall be obtained in accordance with Section 105.6.

⚡ *This section contains regulations for the management of inside and outside miscellaneous combustible materials storage not regulated elsewhere in the code and establishes the requirement for obtaining permits for storage, use and handling of these materials (see commentary, Sections 105.6 and 301.2).*

315.2 Storage in buildings. Storage of combustible materials in buildings shall be orderly. Storage shall be separated from heaters or heating devices by distance or shielding so that ignition cannot occur.

⚡ *Throughout the code, the use of fire-resistance-rated construction and spatial separation distances to minimize fire hazards and fire spread is stated as a requirement for a variety of different materials. This section deals with the requirements for storage of miscellaneous combustible materials inside of buildings. Combustible fibers are discussed in Chapter 29, while control of combustible waste is covered in Sections*

304.2 and 304.3. These requirements should be studied in detail. The types of miscellaneous combustible materials envisioned in Section 315 are the types of materials that require an operational permit for storage based on Section 315.1 and as enumerated in Section 105.6.29, e.g. "...in excess of 2,500 cubic feet (71 m³) gross volume of combustible empty packing cases, boxes, barrels or similar containers, rubber tires, rubber, cork or similar combustible material." The storage of such materials can easily fall into disarray, present a fire load out of proportion to the surroundings and be susceptible to ready ignition and rapid, uncontrolled combustion. Conversely, the orderly storage of mercantile stocks and goods, business records, etc., on shelving or in casework cabinets, for example, is not considered to be within the scope of Section 315.

315.2.1 Ceiling clearance. Storage shall be maintained 2 feet (610 mm) or more below the ceiling in nonsprinklered areas of buildings or a minimum of 18 inches (457 mm) below sprinkler head deflectors in sprinklered areas of buildings.

⚡ *If the space is not equipped with sprinklers, the clearance between the stored materials and the ceiling must be 2 feet (610 mm) to allow manual hose streams to effectively reach the top of a burning pile as well as to project over and beyond adjacent piles to reach burning materials. Where sprinklers are installed, the 18-inch (457 mm) clearance permits timely activation of the sprinklers and allows unobstructed water distribution over the storage pile. Materials stored too close to sprinklers can not only prevent the heat of a fire from reaching the sprinkler fusible link but also inhibit water from reaching the seat of a fire once the sprinklers are activated. In sprinklered areas of buildings, the question often arises as to whether storage on shelving can be installed on a wall not directly below sprinklers, with the storage extending above the level of a horizontal plane located 18 inches (457 mm) below the ceiling sprinkler deflector. Typically, the storage on the shelving mounted on a wall functions the same as a wall with respect to its relationship to the automatic sprinklers installed at ceiling level and the relative obstruction it poses. As long as the storage is not directly below the sprinklers, the sprinkler clearance provisions of Section 315.2.1 would not apply. This is consistent with NFPA 13 annex notes on this*

topic. Certain newer types of automatic sprinklers, because of their design or operating characteristics, may require greater clearance distances than the 18 inch (457 mm) minimum prescribed in this section. NFPA 13 and the sprinkler manufacturer's data should be consulted for specific information on the characteristics of the many different types of sprinklers that may be installed in a given building.

315.2.2 Means of egress. Combustible materials shall not be stored in exits or exit enclosures.

∩ As was stated in Section 314.3, all elements of the means of egress must be kept free of obstructions that could block an exit pathway and, thus, jeopardize occupants of the affected space. Chapter 10 offers more guidance on means of egress.

315.2.3 Equipment rooms. Combustible material shall not be stored in boiler rooms, mechanical rooms or electrical equipment rooms.

∩ The intent of this section is to keep the ignition sources inherent in the use of the indicated rooms from coming into contact with combustible materials that might be stored in the rooms and to increase the likelihood that authorized personnel will be able to easily reach critical controls, such as electrical circuit disconnects, in case of an emergency. For additional discussion of requirements applicable to these and other specific occupancy rooms, see Section 302 of the IBC. Further discussion of the hazards of storage in boiler rooms can be found in Section 304 of the IMC.

315.2.4 Attic, under-floor and concealed spaces. Attic, under-floor and concealed spaces used for storage of combustible materials shall be protected on the storage side as required for 1-hour fire-resistance-rated construction. Openings shall be protected by assemblies that are self-closing and are of noncombustible construction or solid wood core not less than 13/4 inches (44.5 mm) in thickness. Storage shall not be placed on exposed joists.

Exceptions:

1. Areas protected by approved automatic sprinkler systems.
2. Group R-3 and Group U occupancies.

∩ This section recognizes the reality that attics, crawl spaces and similar unoccupied concealed spaces in buildings are attractive to building occupants for storage of all kinds of combustible materials. Storage in such unattended and out-of-the-way spaces creates a hazardous condition by introducing a higher fire load to spaces that were neither designed nor intended for such a high-intensity use and in which a fire could rapidly develop unobserved until it had gained a considerable hold on the building. Placing stored combustibles on exposed joists also could hasten collapse of the joists in a fire, which could lead to flaming debris being dropped into the building space below the joists and possible collapse of all or part of the building structure.

The code provides alternatives to using such spaces for storage and, if they are used for storage, how they can be constructed to isolate the higher fire loads created. Since the intent is to protect against a fire in the storage area from endangering the other occupied areas of the building, the required 1-hour fire-resistance rating need only be achieved from the storage side. While any access openings in the 1-hour fire-resistant construction need not be rated, they must be self-closing and of either noncombustible construction or a minimum 13/4 inch (44 mm) thickness of solid wood core.

Consistent with Section 102.4 of the code, any construction in connection with the concealed spaces regulated by this section must be in accordance with the IBC, especially Section 302. Exception 1 recognizes the efficiency and reliability of automatic sprinklers as a trade-off for 1-hour fire-resistance-rated construction. This exception only requires the sprinkler system in the attic, under-floor or concealed space. Complete sprinkler protection throughout the building is not required in order to be in compliance with the exception. Exception 2 exempts Group R-3 and U occupancies from the requirements of this section. In Group R-3, the level of familiarity and control exercised by the building occupants is recognized as offsetting the hazards of

storage in concealed spaces. Because Group U occupancies are generally unoccupied, the hazards of miscellaneous storage are of little or no consequence to the few occupants that might be in such buildings. For further information on Group U occupancies, see Section 312 of the IBC and its commentary.

315.3 Outside storage. Outside storage of combustible materials shall not be located within 10 feet (3048 mm) of a property line.

Exceptions:

1. The separation distance is allowed to be reduced to 3 feet (914 mm) for storage not exceeding 6 feet (1829 mm) in height.
2. The separation distance is allowed to be reduced when the *fire code official* determines that no hazard to the adjoining property exists.

⚡ *Outside storage of combustible materials, such as raw materials for production, idle pallets, dunnage and packaging, must be neat and compact. The requirement for a 10-foot (3048 mm) separation is consistent with storage area aisle width requirements throughout the code, often expressed as “one-half the pile height or 10 feet, whichever is greater.” The requirement of this section is consistent with that concept as is Section 315.3.2, which limits pile height to 20 feet (6096 mm). The intent of this section is to provide fire suppression access on all sides of storage arrangements and reduce the likelihood of the spread of fire to adjacent properties in the event of a pile collapse. Pile collapses will generally not involve a full-height topple-over of a pile but rather only a partial collapse. Accordingly, Exception 1 allows a reduction in separation distance where the pile height is substantially less than the separation requirement. Exception 2 allows the fire code official to grant separation reductions when the combustibles are judged to be no threat to adjoining property. Examples of such conditions could include storage where the combustible materials are enclosed in noncombustible containers, the presence of an impervious property line barrier or the provision of fixed fire protection equipment, such as deluge monitors, especially designed for rapid fire suppression and exposure protection.*

315.3.1 Storage beneath overhead projections from buildings. Where buildings are protected by automatic sprinklers, the outdoor storage, display and handling of combustible materials under eaves, canopies or other projections or overhangs is prohibited except where automatic sprinklers are installed under such eaves, canopies or other projections or overhangs.

⚡ *The storage or display of combustible materials beneath unsprinklered canopies or other building projections attached to an otherwise fully sprinklered building could lead to a rapidly developing fire in the stored material, which could gain sufficient headway beyond the capability of the building sprinkler system to suppress it, should it spread into the building’s interior. This section reinforces the requirements of NFPA 13 concerning the use of areas beneath building projections, such as eaves or canopies, for the storage or display of combustible materials where those locations are exempt from sprinkler protection as allowed in Section 8.15.7 of NFPA13. NFPA13 mandates that the scope of required sprinkler protection include canopies or roofed-over areas attached to sprinklered buildings, unless these projections are constructed of noncombustible materials and the areas are not used for the storage, handling or display of combustible materials. Because NFPA13 is a design standard and cannot be enforced as a maintenance document, this section essentially restates the NFPA 13 design requirement exception conditions in enforceable terms. Also note that, in the event that Appendix B of the code is adopted by a jurisdiction, areas used for the storage of combustible materials beneath a building’s horizontally projecting elements must be included in the building area for purposes of determining the required fire flow.*

315.3.2 Height. Storage in the open shall not exceed 20 feet (6096 mm) in height.

⚡ *Storage pile height limitations are a means of controlling the size of potential fires and reducing the tip-over potential as well as a way to facilitate the manual fire suppression process by keeping the top of the pile within reach of conventional fire-fighting and overhaul tools, such as the ground ladders carried by*

an engine company or the long pike poles carried by ladder companies. The 20-foot (6096 mm) storage pile height limitation also correlates with Section 315.3 and helps reduce the likelihood that a fire would jeopardize adjacent properties in the event of a pile collapse.

315.4 Storage underneath high-voltage transmission lines. Storage located underneath high-voltage transmission lines shall be in accordance with Section 316.5.2.

⚡ *High-voltage transmission lines are a special hazard that requires specific regulations to prevent them from being exposed to fire conditions that could cause them to fail or fall to the ground. This general section directs the code user to the section containing more specific requirements for this topic.*

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