

## Chapter 11

# Contents of Buildings and Structures

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### Section 1100.0 Scope

**Sec. 1100.1 General:** This chapter shall govern the types of contents permitted and protection requirements for contents of spaces in buildings or structures located in Special Flood Hazard Areas.

**Sec. 1100.1.1:** The contents of an improvement consist of all items situated or placed within the confines of a space not permanently and structurally integral with the improvement. Electrical and mechanical equipment that is installed as a building services feature and/or required to be in operation during a flood is covered in Chapters 12 and 13. Contents are restricted by these Regulations whenever they are or potentially may be:

- (1) Hazardous to the general public welfare due to the possibility of spreading highly flammable, explosive, corrosive, or otherwise harmful substances in the event of a flood-induced spill.
- (2) Hazardous to the welfare of other Owners due to the creation of projectiles which could cause damage by impact.
- (3) Hazardous as in (1) or (2) above when stockpiled in quantity, although such items may be permitted if stored in lesser amounts for isolated or occasional use.
- (4) Hazardous to the health or safety of the Owner or to other persons occupying or in the vicinity of the improvement due to the possibility of explosion or electric shock caused by floodwater contact with operating mechanical or electrical equipment.
- (5) Vulnerable as a loss to the Owner, necessitating replacement, extensive repair, and/or excessive period of inoperation resulting from prolonged exposure to moisture, clean water, floodwater, or the unmitigated effects of flooding.

### Section 1101.0 Classes of Contents

**Sec. 1101.1 Applicability:** Contents are divided into seven classes according to the degree of flood proofing required to protect them from becoming hazards or losses as defined above.

- (1) **Class XX** items are extremely hazardous or vulnerable to flood conditions and require their prohibition in Special Flood Hazard Areas at all times.
- (2) **Class X** items are sufficiently hazardous or vulnerable to require their prohibition in all spaces below the RFD, i.e., requiring their placement at least one floor level above the RFD.
- (3) **Class 1** items require the protection assured by W1 spaces.
- (4) **Class 2** items require the protection assured by W2 spaces.
- (5) **Class 3** items require only the protection assured by W3 spaces.
- (6) **Class 4** items are generally not damageable by floodwaters moving at low velocities and require the minimum protection given by W4 spaces.
- (7) **Class 5** items are sufficiently non-hazardous and non-vulnerable to permit their placement in spaces exposed to unmitigated flooding conditions.

**Sec. 1101.2 Waiver of Restriction:** Upon approval of the Owner's Contingency Plan, which shall include plans for temporary movement of items to a place of safe refuge above the RFD or in spaces below the RFD where these items are permitted, the Building Official may waive specific content restrictions for non-W1 spaces on non-hazardous items that are movable or for which the degree of waterproofing required by the flood proofing class can be achieved upon receipt of a flood warning or alert. This waiver of restriction, however, shall not apply to residences and their ancillary spaces; to firms, businesses, or institutions with fewer than 10 permanent employees and their ancillary spaces; or to any spaces which are or would be unoccupied and unattended in their foreseeable normal yearly operation for periods greater than 72 hours; and in no case shall a waiver of restriction be construed to permit the creation of spaces for human habitation.

**Sec. 1101.3 Contents Classes for Typical Items:** The following chart is intended as an aid to the Owner, Architect/Engineer, and the Building Official in assessing the hazard potential and vulnerability to loss of typical contents of an improvement with respect to criteria listed in 1100.1.1(1-5). In disputes arising over the classification of particular items or of items not listed below, the Building Official shall be guided by and decide on the basis of those criteria. In no case, however, shall changes of classification for items listed in Classes X and XX be permitted.

**Sec. 1101.3.1:** Contents of a given class may be situated or placed in any space for which a lower-numbered class is permitted by these Regulations. For example, items which are listed in Class 3 may also be placed in any spaces in which Class 1 or Class 2 contents are permitted.

**Sec. 1101.3.2:** Temporary placement of items of a given contents class in a space with a higher-numbered flood proofing class may be permitted in those cases where contingent removal is approved by the Building Official, and in conformance with 1101.2. Temporary placement may be permitted for certain items, subject further to the restrictions of 1101.2 as indicated by numbers in parenthesis in the list; in each case, the number in parenthesis is that of the highest-numbered flood proofing class in which temporary placement may be considered.

	Class
Acetone	XX
Acetylene gas containers	X
Ammonia	XX
Animals (pets, livestock, laboratory specimens)	X(5)
Appliances, electrical	
Washers, dryers, unit air conditioners, lamps, refrigerators, sewing machines, electric clocks, etc.	2
Art works (paintings, sculpture, etc.)	1
Barrels, buoyant (empty or non-hazardous contents)	2
Constrained and/or without tops or lids	4
Benzene	XX
Books, magazines, publications	1(3)
Cabinets	
Solid wood or veneer	2
Metal	4
Calcium carbide	XX
Carbon disulfide	XX
Cardboard boxes	1
Carpeting and floor rugs	1(3)
Celluloid	XX
Chlorine	XX
Clothing	2(3)
Cotton (loose) wadding or waste	2
Curtains and drapes	
Fabric (Nonfast dyes)	2

	Class
Fabric (Fast dyes)	3
Plastics	4
Drugs - in quantity	X
Electrical distribution equipment (Storage only)	
Waterproof or submersible types	4
Nonwaterproof	2
Protected contingently (B)	4
Electronic equipment (Storage only)	
Television, stereo equipment, radios	2(3)
Computers, etc.	1
Fabrics (Textile Raw Materials)	
Non water-soluble dyes	3
Otherwise	2
Food Products	X
Furniture	
Upholstered	1
Unupholstered	
Wood construction (A)	2
Metal construction, painted	4
Gasoline	X
Hydrochloric acid	XX
Hydrocyanic (Prussic) acid	XX
Magnesium	XX
Matches and sulfur products (in quantity)	X
Mattresses & box springs	1(2)
Musical instruments	
Pianos, organs, violins, etc.	1
All other types	2(3)
Nitric acid, oxides of nitrogen	XX
Oxygen	2(3)
Paints, enamels, varnishes (in quantity)	2
Paper or paper products <sup>1</sup>	
Petroleum products storage (unless buried and constrained)	X
Phosphorous	XX
Potassium	XX
Recreation equipment	
Sports gear, toys	2(3)
Pool tables	1
Scrap metal, constrained	5
Soaps, detergents (in quantity)	X
Sodium	XX
Sulphur	XX
Tires	
(Open storage)	X
constrained	4
Wood products, raw or finished (in quantity)	X

Notes: (A) Solid wood construction with pinned joints, reinforced corners, and lacquered or factory-baked finishes.

(B) Contingent protection shall be protection equal to that of 6 mils of polyethylene sealed to be watertight or "moth-balled."

**Sec. 1101.4 Underground Storage Tanks:** The exclusion of Class X and XX contents from interior spaces of buildings below the RFD recognizes that residual flood hazards may exist when a structure is only protected to the RFD. However, a properly designed and constructed underground storage tank and dispensing system

for Class X contents can be developed in a Special Flood Hazard Area, if such development is the only practicable alternative and it is not contained within a flood proofed structure. In addition to design criteria required by the tank manufacturers and applicable fire and safety codes, the tank assemblies should be designed assuming groundwater levels fully at the ground surface, buoyant soils above the tanks, and the tanks empty. They should also be designed assuming the tanks full with groundwater below the tanks. The tanks should be set on and anchored to reinforced concrete pads. All vents should be above all possible floodwater entry levels. The filling stack piping caps should be equipped with watertight seals if below the RFD and the dispensers should be placed above the RFD.