

A SunCam online continuing education course

2024 International Building Code (IBC) Occupancy Changes

by

Mark Ludwigson, P.E.



Course Outline:

IBC Overview
2024 IBC Contents
Chapter 3 Occupancy Classification and Use - Contents
Chapter 3 Occupancy Classification and Use - Changes
Helpful References
Examination

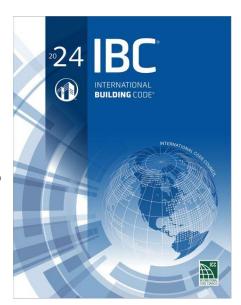


IBC Overview

The International Building Code (IBC) by the International Code Council (ICC) is a detailed set of regulations that are used to govern construction and design standards. The main objective of the IBC code is to protect public health, welfare, and safety by establishing minimum quality standards for building improvements. The code also helps ensure that important features such as bathrooms are accessible to everyone including those in wheelchairs.

When the IBC was formed in 2000, it was a merging of the following codes which are now discontinued:

- Uniform Building Code (UBC)
- BOCA National Building Code (BOCA/NBC)
- Standard Building Code (SBC)



The IBC is adopted in all 50 states, Canada, and many other countries. Most states adopt the latest IBC with amendments for additional requirements. Often it takes a few years for the latest IBC to be officially adopted by a state.

The IBC is updated every three years (2018, 2021, 2024, 2027, etc.). This course covers the changes between the 2021 to 2024 editions.



The IBC is part of a larger collection of volumes by the International Code Council (ICC). The full collection of (15) ICC volumes include the following:

- 2024 International Building Code (IBC)
- 2024 International Residential Code without Energy (IRC)
- 2024 International Fire Code (IFC)
- 2024 International Plumbing Code (IPC)
- 2024 International Mechanical Code (IMC)
- 2024 International Fuel Gas Code (IFGC)
- 2024 International Existing Building Code (IEBC)
- 2024 International Property Maintenance Code (IPMC)
- 2024 International Zoning Code (IZC)
- 2024 International Swimming Pool and Spa Code (ISPSC)
- 2024 International Private Sewage Disposal Code (IPSDC)
- 2024 International Wildland Urban Interface Code (IWUIC)
- 2024 ICC Performance Code for Buildings and Facilities (ICCPC)
- 2024 International Green Construction Code (IgCC)
- 2024 International Energy Conservation Code (IECC)

All codes are available online at this ICC website, although a subscription is required to be able to select and copy-paste the code text:

https://www.iccsafe.org/about/2024-i-code-upd



The covers of the nine IBC volumes/books are shown in Figure 1, with the volumes addressed in this course circled in red.



Figure 1: Covers of the full collection of 2024 ICC volumes/books, with the IBC volume addressed in this course circled in red.

Source: https://codes.iccsafe.org/codes/i-codes/2024-icodes



2024 IBC Contents

The following is the 2024 IBC table of contents with the chapter covered by this course in **bold**:

Overview

Copyright

Preface

Arrangement and Format of the 2021 IBC

Chapter 1 Scope and Administration

Chapter 2 Definitions

Chapter 3 Occupancy Classification and Use

Chapter 4 Special Detailed Requirements Based on Occupancy and Use

Chapter 5 General Building Heights and Areas

Chapter 6 Types of Construction

Chapter 7 Fire and Smoke Protection Features

Chapter 8 Interior Finishes

Chapter 9 Fire Protection and Life Safety Systems

Chapter 10 Means of Egress

Chapter 11 Accessibility

Chapter 12 Interior Environment

Chapter 13 Energy Efficiency

Chapter 14 Exterior Walls

Chapter 15 Roof Assemblies and Rooftop Structures

Chapter 16 Structural Design

Chapter 17 Special Inspections and Tests

Chapter 18 Soils and Foundations

Chapter 19 Concrete

Chapter 20 Aluminum

Chapter 21 Masonry

Chapter 22 Steel

Chapter 23 Wood

Chapter 24 Glass and Glazing

Chapter 25 Gypsum Board, Gypsum Panel Products and Plaster

Chapter 26 Plastic

Chapter 27 Electrical

Chapter 28 Mechanical Systems



Chapter 29 Plumbing Systems

Chapter 30 Elevators and Conveying Systems

Chapter 31 Special Construction

Chapter 32 Encroachments Into the Public Right-Of-Way

Chapter 33 Safeguards During Construction

Chapter 34 Reserved

Chapter 35 Referenced Standards

Appendix A Employee Qualifications

Appendix B Board of Appeals

Appendix C Group U—Agricultural Buildings

Appendix D Fire Districts

Appendix E Supplementary Accessibility Requirements

Appendix F Rodentproofing

Appendix G Flood-Resistant Construction

Appendix H Signs

Appendix I Patio Covers

Appendix J Grading

Appendix K Administrative Provisions

Appendix L Earthquake Recording Instrumentation

Appendix M Tsunami-Generated Flood Hazards

Appendix N Replicable Buildings

Appendix O Performance-Based Application

Index



Chapter 3 Occupancy Classification and Use - Contents

The contents of Chapter 3 are pasted below, with those in **bold** with changes in 2024.

Chapter 3 Occupancy Classification and Use

Section 301 Scope

Section 302 Occupancy Classification and Use Designation

Section 303 Assembly Group a

Section 304 Business Group B

Section 305 Educational Group E

Section 306 Factory Group F

Section 307 High-Hazard Group H

Section 308 Institutional Group I

Section 309 Mercantile Group M

Section 310 Residential Group R

Section 311 Storage Group S

Section 312 Utility and Miscellaneous Group U



Chapter 3 Occupancy Classification and Use - Changes

The following is a paste of all Chapter 3 changes from 2021 to 2024, with the text changes highlighted yellow.

302.1 Occupancy Classification

2021 IBC:

302.1 Occupancy classification. [2]

Occupancy classification is the formal designation of the primary purpose of the building, structure or portion thereof. Structures shall be classified into one or more of the occupancy groups specified in this section based on the nature of the hazards and risks to building occupants generally associated with the intended purpose of the building or structure. An area, room or space that is intended to be occupied at different times for different purposes shall comply with all applicable requirements associated with such potential multipurpose. Structures containing multiple occupancy groups shall comply with Section 508. Where a structure is proposed for a purpose that is not specified in this section, such structure shall be classified in the occupancy it most nearly resembles based on the fire safety and relative hazard. Occupied roofs shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with Section 503.1.4.

- 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.

2024 IBC:

302.1 Occupancy classification. [2]

Occupancy classification is the formal designation of the primary purpose of the *building, structure* or portion thereof. *Structures* shall be classified into one or more of the occupancy groups specified in this section based on the nature of the hazards and risks to *building* occupants generally associated with the intended purpose of the *building* or *structure*. An area, room or space that is intended to be occupied at different times for different purposes shall comply with all applicable requirements associated with such potential multipurpose. *Structures* containing multiple occupancy groups shall comply with <u>Section 508</u>. Where a *structure* is proposed for a purpose that is not specified in this section, such *structure* shall be classified in the occupancy it most nearly resembles based on the fire safety and relative hazard. *Occupiable roofs* shall be classified in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with <u>Section 503.1.4</u>.

- 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.



304.1 Business Group B

2021 IBC:

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 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 including higher education laboratories

Electronic data processing

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m^2) in area

Laboratories: testing and research

Motor vehicle showrooms

. . .

2024 IBC:

304.1 Business Group B. [2]

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 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 including higher education laboratories

Electronic data entry

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m^2) in area

Laboratories: testing and research

Lithium-ion or lithium metal battery testing, research and development

Motor vehicle showrooms

. . .



306.2 Moderate-hazard factory industrial, Group F-1

2021 IBC:

306.2 Moderate-hazard factory industrial, Group F-1.

Factory industrial uses that 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

Energy storage systems (ESS) in dedicated use buildings

Engines (including rebuilding)

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities more than 2,500 square feet (232 m^2) in area

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

Water/sewer treatment facilities

Wood; distillation

Woodworking (cabinet)



2024 IBC:

306.2 Moderate-hazard factory industrial, Group F-1. [2]

Factory industrial uses that 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 20-percent alcohol content

Bicycles

Boats

Brooms or brushes

Business machines

Cameras and photo equipment

Canvas or similar fabric

Carpets and rugs (includes cleaning)

Clothina

Construction and agricultural machinery

Dry cleaning and dyeing

Electric generation plants

Electronics

Energy storage systems (ESS) in dedicated use buildings

Energy storage systems (ESS) and equipment containing lithium-ion or lithium metal batteries

Engines (including rebuilding)

Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities more than 2,500 square feet (232 m^2) in area

Furniture

Hemp products

Jute products

Laundries

Leather products

Lithium-ion batteries

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

Vehicles powered by lithium-ion or lithium metal batteries

Water/sewer treatment facilities

Wood; distillation



306.3 Low-hazard factory industrial, Group F-2

2021 IBC:

306.3 Low-hazard factory industrial, Group F-2. [2]

Factory industrial uses that involve the fabrication or manufacturing of noncombustible materials that 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)

2024 IBC:

306.3 Low-hazard factory industrial, Group F-2. [2]

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

Beverages: up to and including 20-percent alcohol content

Brick and masonry

Ceramic products

Foundries

Glass products

Gypsum

Ice

Metal products (fabrication and assembly)



307.1 High-hazard Group H

2021 IBC:

[F] 307.1 High-hazard Group H. [2]

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 *International 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 *International Fire Code*.

2024 IBC:

[F] 307.1 High-hazard Group H. P CDP

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 *International Fire Code*. Hazardous materials stored or used on top of roofs or *canopies* shall be classified as rooftop storage or use and shall comply with the *International Fire Code*.



307.1(1) Max Allowable Quantity of Physical Hazard Table

The 2021 IBC is not shown here since the 2024 changes are only new footnotes as highlighted in yellow.

2024 IBC:

[F]TABLE 307.1(1)

MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A PHYSICAL HAZARDa, c, i, I, m

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 dust	NA	H-2	See Note	NA	NA	See Note	NA	NA	See Note	NA
Combustible	Loose		(100)	NA	NA	(100)	NΑ	NΙΔ	(20)	NA
fiber 0	Baled	H-3	(1,000)	NA	NA	(1,000)	NA	NA	(200)	
0 1 611	II	H-2 or H-3		120 ^{d, e} 330 ^{d, e}	NA	NA	120 ^d	NA	NA	30 ^d
Combustible liquid ⁿ	IIIA	H-2 or H-3	NA				330 ^d			80 ^d
nqara	IIIB	NA		13,200 ^{e, f}			13,200 ^f			3,300 ^f
Cryogenic flammable	NA	H-2	NA	45 ^d	NA	NA	45 ^d	NA	NA	10 ^d
Cryogenic inert	NA	NA	NA	NA	NL	NA	NA	NL	NA	NA
Cryogenic oxidizing	NA	H-3	NA	45 ^d	NA	NA	45 ^d	NA	NA	10 ^d
	Division 1.1	H-1	1 ^{e, g}	(1) ^{e, g}		0.25 ^g	(0.25) ^g	NA	0.25 ^g	(0.25) ^g
	Division 1.2	H-1	1 ^{e, g}	(1) ^{e, g}			(0.25) ^g		0.25 ^g	(0.25) ^g
	Division 1.3	H-1 or H-2	5 ^{e, g}	(5) ^{e, g}		19	(1) ^g		1 ^g	(1) ^g
Explosives	Division 1.4	H-3	50 ^{e, g}	(50) ^{e, g}	NA	50 ^g	(50) ^g		NA	NA
	Division 1.4G	H-3	125 ^{e, k}	NA		NA	NA		NA	NA
	Division 1.5	H-1	1 ^{e, g}	(1) ^{e, g}		0.259	(0.25) ^g		0.25 ^g	(0.25) ^g
	Division 1.6	H-1	1 ^{e, g}	NA		NA	NA		NA	NA



	Gaseous									
Flammable	1A and 1B (High BV) ^p				1,000 ^{d, e}	00 ^{d, e}		1,000 ^{d, e}		
	1B (Low BV) ^p H-2	NA	NA	162,500 ^d ,	NA	NA	162,500 ^d , e	NA	NA	
	Liquefied				NA			NA ,		
	1A and 1B (High BV) ^p			(150) ^{d, e}			(150) ^{d, e}			
	1B (Low BV) ^p			(10,000) ^{d,} e			(10,000) ^{d,} e			
Flammable	IA	H-2 or H-3	NA	30 ^{d, e}	NA	NIA	30 ^d	NΙΔ	NA	10 ^d
liquid n	IB and IC	H-2 01 H-3	INA	120 ^{d, e}	INA	NA	120 ^d	NA		30 ^d
Flammable liquid, combination (IA, IB, IC) ⁿ	NA	H-2 or H-3	NA	120 ^{d, e, h}	NA	NA	120 ^{d, h}	NA	NA	30 ^{d, h}
Inert gas	Gaseous	NA	NA	NA	NL	NA	NA	NL	NA	NA
	Liquefied	NA	NA	NA	NL	NA	NA	NL	NA	NA
	UD	H-1	1 ^{e, g}	(1) ^{e, g}		0.25 ^g	(0.25) ⁹	NA	0.25 ^g	(0.25) ^g
	I	H-2	5 ^{d, e}	(5) ^{d, e}		1 ^d	(1) ^d		1 ^d	(1) ^d
Organic	II	H-3	50 ^{d, e}	(50) ^{d, e}	NA	50 ^d	(50) ^d		10 ^d	(10) ^d
peroxide	III	H-3	125 ^{d, e}	(125) ^{d, e}	INA	125 ^d	(125) ^d		25 ^d	(25) ^d
	IV	NA	NL	NL		NL	NL		NL	NL
	V	NA	NL	NL		NL	NL		NL	NL
	4	H-1	1 ⁹	(1) ^{e, g}		0.25 ^g	(0.25) ⁹	NA	0.25 ^g	$(0.25)^9$
Ovidizor	3 ^j	H-2 or H-3	10 ^{d, e}	(10) ^{d, e}	NA	2 ^d	(2) ^d		2 ^d	(2) ^d
Oxidizer	2	H-3	250 ^{d, e}	(250) ^{d, e}	NA	250 ^d	(250) ^d		50 ^d	(50) ^d
	1	NA	4,000 ^{e, f}	(4,000) ^{e, f}		4,000 ^f	(4,000) ^f		1,000 ^f	(1,000)
Oxidizing gas	Gaseous	11.0		NA	1,500 ^{d, e}	b i A	NA	1,500 ^{d,e}	NIA	A.I.A.
	Liquefied	H-3	NA	(150) ^{d, e}	NA	NA	(150) ^{d,e}	NA	NA	NA
Pyrophoric	NA	H-2	4 ^{e, g}	(4) ^{e, g}	50 ^{e, g}	1 ⁹	(1) ^g	10 ^{e, g}	0	0
Unstable (reactive)	4	H-1	1 ^{e, g}	(1) ^{e, g}	10 ^{e, g}	0.25 ^g	(0.25)9	2 ^{e, g}	0.259	(0.25) ⁹
	3	H-1 or H-2	5 ^{d, e}	(5) ^{d, e}	50 ^{d, e}	1 ^d	(1) ^d	10 ^{d, e}	1 ^d	(1) ^d
	2	H-3	50 ^{d, e}	(50) ^{d, e}	750 ^{d, e}	50 ^d	(50) ^d	750 ^{d, e}	10 ^d	(10) ^d
	1	NA	NL	NL	NL	NL	NL	NL	NL	NL
	3	H-2	5 ^{d, e}	(5) ^{d, e}		5 ^d	(5) ^d		1 ^d	(1) ^d
Water reactive	2	H-3	50 ^{d, e}	(50) ^{d, e}	NA	50 ^d	(50) ^d	NA	10 ^d	(10) ^d
	1	NA	NL	NL		NL	NL		NL	NL



NL = Not Limited: NA = 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 maximum allowable quantity for storage, including applicable increases.
- c. For hazardous materials in Group B higher education laboratory occupancies, see Section 428 of this code and Chapter 38 of the International Fire Code.



- 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, gas rooms or exhausted enclosures or in listed safety cans in accordance with Section 5003.9.10 of the International Fire Code. Where Note d also applies, the increase for both notes shall be applied accumulatively.
- f. Quantities shall not be limited in a building equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.
- g. Allowed 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.



- Quantities in parentheses indicate quantity units in parentheses at the head of each column.
- j. A maximum quantity of 220 pounds of solid or 22 gallons of liquid Class 3 oxidizers is allowed when such materials are necessary for maintenance purposes, operation or sanitation of equipment when the storage containers and the manner of storage are approved.
- k. 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.
- 1. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2 of the International Fire Code.
- m. For oxidizers, unstable (reactive) materials, and water-reactive materials stored or displayed in Group M occupancies or stored in Group S occupancies, see Section 414.2.5.1.
- n . For flammable and combustible liquid storage in Group M occupancy wholesale and retail sales uses, see Section 414.2.5.2.



- Where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3.
- p. "High BV" Category 1B flammable gas has a burning velocity greater than 3.9 inches per second (10 cm/s). "Low BV" Category 1B flammable gas has a burning velocity of 3.9 inches per second (10 cm/s) or less.



307.1(2) Max Allowable Quantity of Health Hazard Table

The 2021 IBC is not shown here since the 2024 changes are only new footnotes as highlighted in yellow.

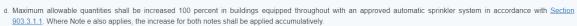
2024 IBC:

[F]TABLE 307.1(2) MAXIMUM ALLOWABLE QUANTITY PER CONTROL AREA OF HAZARDOUS MATERIALS POSING A HEALTH HAZARD^{a, c, h, i}

		STORAGE			USE-CLOSED SY	USE-OPEN SYSTEMS ^b		
MATERIAL	Solid pounds ^{d, e, f}	Liquid gallons (pounds) ^{d, e, f}	Gas cubic feet at NTP (pounds) ^d	Solid pounds ^d	Liquid gallons (pounds) ^d	Gas cubic feet at NTP (pounds) ^d	Solid pounds ^d	Liquid gallons (pounds) ^d
Ci	Corrosives 5,000	500	Gaseous 810 ^e	5,000	500	Gaseous 810 ^e	1,000	100
Corrosives			Liquefied (150)			Liquefied (150)		
Highly	10	(10)	Gaseous 20 ^g	10	(10)	Gaseous 20 ^g	3	(3)
Toxic			Liquefied (4) ^g			Liquefied (4) ^g		
T	T : 500	00 (500)	Gaseous 810 ^e	500	(500)	Gaseous 810 ^e	405	(425)
Toxic 500	500 (500)	Liquefied (150) ^e	500	(500)	Liquefied (150) ^e	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. The aggregate quantity in use and storage shall not exceed the maximum allowable quantity for storage, including applicable increases
- c. For hazardous materials in Group B higher education laboratory occupancies, see Section 428 of this code and Chapter 38 of the International Fire Code.



e. Maximum allowable quantities shall be increased 100 percent where stored in approved storage cabinets, gas cabinets or exhausted enclosures as specified in the International Fire Code. Where Note d also applies, the increase for both notes shall be applied accumulatively.

- f. For corrosive, highly toxic and toxic materials stored or displayed in Group M occupancies or stored in Group S occupancies, see Section 414.2.5.1.
- g. Allowed only where stored in approved exhausted gas cabinets or exhausted enclosures as specified in the International Fire Code.
- h. Quantities in parentheses indicate quantity units in parentheses at the head of each column.
- i. For gallons of liquids, divide the amount in pounds by 10 in accordance with Section 5003.1.2 of the International Fire Code



307.1.1 Occupancy Exemptions

2021 IBC:

[F] 307.1.1 Uses other than Group H. [2]

An occupancy that stores, uses or handles hazardous materials as described in one or more of the following items shall not be classified as Group H, but shall be classified as the occupancy that it most nearly resembles.

- 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 *International Fire Code*.
- 2. Wholesale and retail sales and storage of flammable and combustible liquids in mercantile occupancies conforming to the International 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 711, 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.

. . .

2024 IBC:

[F] 307.1.1 Occupancy Exemptions. P CDP

-

Storage, use and *handling* of *hazardous materials* in accordance with <u>Table 307.1.1</u> shall not be counted as contributing to Maximum Allowable Quantities and shall not cause classification of an occupancy to be Group H. Such storage, use and *handling* shall comply with applicable provisions of the <u>International Fire Code</u>.

TABLE 307.1.1 HAZARDOUS MATERIALS EXEMPTIONS^a

-

MATERIAL CLASSIFICATION	OCCUPANCY OR APPLICATION	EXEMPTION
Combustible fiber	Baled cotton	Densely packed baled cotton shall not be classified as combustible fiber, provided that the bales comply with the packing requirements of <u>ISO 8115</u> .
	Building materials	The quantity of commonly used building materials that are classified as corrosive materials is not limited.
	Personal and household products	The quantity of personal and household products that are classified as corrosive materials is not limited in retail displays, provided that the products are in original packaging.
Corrosive	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited.
		To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
	Groups B, F, M and S	Storage of special industrial explosive devices is not limited.
Explosives	Groups M and R-3	Storage of black powder, smokeless propellant and small arms primers is not limited.
	Aerosols	Buildings and structures occupied for the storage of aerosol products, aerosol cooking spray products, or plastic aerosol 3 products shall be classified as Group S-1.



	Alcoholic beverages	The quantity of alcoholic beverages in distilling or brewing of beverages is not limited.
		The storage quantity of beer, distilled spirits and wines in barrels and casks is not limited.
		The quantity of alcoholic beverages in retail and wholesale sales occupancies is not limited. To qualify for this allowance, beverages shall be packaged in individual containers not exceeding 1.3 gallons.
	Cleaning establishments with combustible liquid solvents	The quantity of combustible liquid solvents used in closed systems and having a flash point at or above 140°F is not limited. To qualify for this allowance, equipment shall be listed by an approved testing agency and the occupancy shall be 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 711, or both
		The quantity of combustible liquid solvents having a flash point at or above 200°F is not limited.
	Closed piping systems	The quantity of flammable and combustible liquids and gases utilized for the operation of machinery or equipment is not limited.
Flammable and combustible liquids and	Fuel	The quantity of liquid or gaseous fuel in fuel tanks on vehicles or motorized equipment is not limited.
gases		The quantity of gaseous fuels in piping systems and fixed appliances regulated by the <u>International Fuel Gas Code</u> is not limited.
		The quantity of liquid fuels in piping systems and fixed appliances regulated by the <u>International</u> <u>Mechanical Code</u> is not limited.
	Flammable finishing operations using flammable and combustible liquids	Buildings and structures occupied for the application of flammable finishes shall comply with Section 416.
	Fuel oil	The quantity of fuel oil storage complying with <u>Section 605.4.2</u> of the <i>International Fire Code</i> is not limited.
	Hand sanitizer	The quantity of alcohol-based hand rubs (ABHR) classified as Class I or II liquids in dispensers installed in accordance with <u>Sections 5705.5</u> and <u>5705.5.1</u> of the <i>International Fire Code</i> is not limited. The location of the ABHR dispensers shall be provided in the construction documents.
	Retail and wholesale sales occupancies with flammable and combustible liquids	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited.
		To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.
Highly toxic and toxic materials	Retail and wholesale sales occupancies	The quantity of medicines, foodstuffs or consumer products, and cosmetics containing not more than 50 percent by volume of water-miscible liquids, with the remainder of the solutions not being flammable, is not limited.
	occupantions	To qualify for this allowance, such materials shall be packaged in individual containers not exceeding 1.3 gallons.



	Agricultural materials	The quantity of agricultural materials stored or utilized for agricultural purposes on the premise not limited.				
		The quantity of hazardous materials in stationary storage battery systems is not limited.				
Any	Energy storage	The quantity of hazardous materials in stationary fuel cell power systems is not limited.				
		The quantity of hazardous materials in capacitor energy storage systems is not limited.				
	Refrigeration Systems	The quantity of refrigerants in refrigeration systems is not limited.				

For SI: 1 gallon = 3.785L, °C = (°F - 32)/1.8.

Exempted materials and conditions listed in this table are required to comply with applicable provisions of the <u>International Fire</u>
 <u>Code</u>.

307.3.1 Occupancies containing explosives not classified as H-1

2021 IBC:

[F] 307.3.1 Occupancies containing explosives not classified as H-1.

The following occupancies containing explosive materials shall be classified as follows:

- 1. Division 1.3 *explosive* 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.
- Articles, including articles packaged for shipment, that are not regulated as a Division 1.4 explosive under Bureau of Alcohol, Tobacco, Firearms and Explosives 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.

2024 IBC:

[F] 307.3.1 Occupancies containing explosives not classified as H-1. [2]

The following occupancies containing *explosive* materials shall be classified as follows:

- 1. Division 1.3 explosive 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 Group H-2 occupancies.
- 2. Division 1.4 explosive materials shall be allowed in Group H-3 occupancies
- 3. Articles, including articles packaged for shipment, that are not regulated as a Division 1.4 explosive under Bureau of Alcohol, Tobacco, Firearms and Explosives regulations, or unpackaged articles used in process operations that do not propagate a detonation or deflagration between articles shall be allowed in Group H-3 occupancies.



307.4 High-hazard Group H-2

2021 IBC:

[F] 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 that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa).

Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3.

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 pounds per square inch gauge (103 kPa).

Pyrophoric liquids, solids and gases, nondetonable.

Unstable (reactive) materials, Class 3, nondetonable.

Water-reactive materials, Class 3.

2024 IBC:

[F] 307.4 High-hazard Group H-2. [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 that are used or stored in normally open containers or systems, or in closed containers or systems pressurized at more than 15 pounds per square inch gauge (103.4 kPa).

Combustible dusts where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3.

Cryogenic fluids, flammable.

Category 1Aflammable gases.

Category 1B flammable gases having a burning velocity greater than 3.9 inches per second (10 cm/s)

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 pounds per square inch gauge (103 kPa).

Pyrophoric liquids, solids and gases, nondetonable.

Unstable (reactive) materials, Class 3, nondetonable.

Water-reactive materials, Class 3.



307.5 High-hazard Group H-3

2021 IBC:

[F] 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, where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3

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

2024 IBC:

[F] 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, where manufactured, generated or used in such a manner that the concentration and conditions create a fire or explosion hazard based on information prepared in accordance with Section 414.1.3

Consumer fireworks, 1.4G (Class C, Common)

Cryogenic fluids, oxidizing

Category 1B flammable gases having a burning velocity of 3.9 inches per second (10 cm/s) or less

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



310.2 Residential Group R-1

2021 IBC:

310.2 Residential Group R-1.

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

Boarding houses (transient) with more than 10 occupants

Congregate living facilities (transient) with more than 10 occupants

Hotels (transient)

Motels (transient)

2024 IBC:

310.2 Residential Group R-1. [2]

Residential Group R-1 occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily *transient* in nature, including:

Boarding houses (transient) with more than 10 occupants

Congregate living facilities (transient) with more than 10 occupants

Hotels (transient)

Motels (transient)

Lodging houses with more than five guestrooms



310.3 Residential Group R-2.

2021 IBC:

310.3 Residential Group R-2.

Residential Group R-2 occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily permanent in nature, including:

Apartment houses

Congregate living facilities (nontransient) with more than 16 occupants

Boarding houses (nontransient)

Convents

Dormitories

Fraternities and sororities

Monasteries

Hotels (nontransient)

Live/work units

Motels (nontransient)

Vacation timeshare properties

2024 IBC:

310.3 Residential Group R-2. [2]

Residential Group R-2 occupancies containing *sleeping units* or more than two *dwelling units* where the occupants are primarily permanent in nature, including:

Apartment houses

Congregate living facilities (nontransient) with more than 16 occupants

Boarding houses (nontransient)

Convents

Dormitories

Emergency services living quarters

Fraternities and sororities

Monasteries

Hotels (nontransient) with more than five guest rooms

Live/work units

Motels (nontransient) with more than five guest rooms

Vacation timeshare properties



310.4 Residential Group R-3.

2021 IBC:

310.4 Residential Group R-3.

Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

Buildings that do not contain more than two dwelling units

Care facilities that provide accommodations for five or fewer persons receiving care

Congregate living facilities (nontransient) with 16 or fewer occupants

Boarding houses (nontransient)

Convents

Dormitories

Fraternities and sororities

Monasteries

Congregate living facilities (transient) with 10 or fewer occupants

Boarding houses (transient)

Lodging houses (transient) with five or fewer guest rooms and 10 or fewer occupants

2024 IBC:

310.4 Residential Group R-3. [2]

Residential Group R-3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, R-4 or I, including:

Buildings that do not contain more than two dwelling units

Care facilities that provide accommodations for five or fewer persons receiving care

Congregate living facilities (nontransient) with 16 or fewer occupants

Boarding houses (nontransient)

Convents

Dormitories

Emergency services living quarters

Fraternities and sororities

Monasteries

Congregate living facilities (transient) with 10 or fewer occupants

Boarding houses (transient)

Lodging houses with five or fewer guest rooms

Hotels (nontransient) with five or fewer *guest rooms*

Motels (nontransient) with five or fewer *guest rooms*



310.4.2 Lodging houses.

2021 IBC:

310.4.2 Lodging houses. [2]

Owner-occupied *lodging houses* with five or fewer *guest rooms* and 10 or fewer total occupants shall be permitted to be constructed in accordance with the *International Residential Code*, provided that an *automatic sprinkler system* is installed in accordance with Section 903.3.1.3 or Section P2904 of the *International Residential Code*.

2024 IBC:

310.4.2 Lodging houses. [2]

Owner-occupied lodging houses with five or fewer guest rooms shall be constructed in accordance with this code or the <u>International</u>

Residential Code, provided that facilities constructed using the <u>International Residential Code</u> are protected by an automatic sprinkler system installed in accordance with <u>Section P2904</u> of the <u>International Residential Code</u>.



311.2 Moderate-hazard storage, Group S-1

2021 IBC:

311.2 Moderate-hazard storage, Group S-1. [2]

Storage Group S-1 occupancies are buildings occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosol products, Levels 2 and 3

Aircraft hangar (storage and repair)

Bags: cloth, burlap and paper

Bamboos and rattan

Baskets

Belting: canvas and leather

Beverages over 16-percent alcohol content

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 specified in Table 307.1(1) (see Section 406.8)

Photo engravings

Resilient flooring

Self-service storage facility (mini-storage)

Silks

Soaps

Sugar

Tires, bulk storage of

Tobacco, cigars, cigarettes and snuff

Upholstery and mattresses

Wax candles



2024 IBC:

311.2 Moderate-hazard storage, Group S-1.

Storage Group S-1 occupancies are *buildings* occupied for storage uses that are not classified as Group S-2, including, but not limited to, storage of the following:

Aerosol products, Levels 2 and 3, aerosol cooking spray, plastic aerosol 3 (PA3)

Aircraft hangar (storage and repair)

Bags: cloth, burlap and paper

Bamboos and rattan

Baskets

Belting: canvas and leather

Beverages over 20-percent alcohol content

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

Lithium-ion or lithium metal batteries

Lumber

Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials specified in <u>Table 307.1(1)</u> (see <u>Section 406.8</u>)

Photo engravings

Resilient flooring

Self-service storage facility (mini-storage)

Silks

Soaps

Sugar

Tires, bulk storage of

Tobacco, cigars, cigarettes and snuff

Upholstery and mattresses

Vehicle repair garages for vehicles powered by lithium-ion or lithium metal batteries

Wax candles



311.3 Low-hazard storage, Group S-2

2021 IBC:

311.3 Low-hazard storage, Group S-2. [2]

Storage Group S-2 occupancies include, 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

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

2024 IBC:

311.3 Low-hazard storage, Group S-2. [2]

Storage Group S-2 occupancies include, 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 20-percent alcohol

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



Helpful References

2021 IBC:

https://codes.iccsafe.org/content/IBC2021P2

2024 IBC:

https://codes.iccsafe.org/content/IBC2024P1

2024 IBC, Chapter 3:

https://codes.iccsafe.org/content/IBC2024P1/chapter-3-occupancy-classification-and-use#IBC2024P1_Ch03

2024 IBC Significant Non-structural Changes

https://www.iccsafe.org/wp-content/uploads/Session-30-and-58-2024-IBC-Significant-Changes.pdf

Significant Changes to 2024 International Codes:

https://www.larimer.gov/building/2024-building-codes-are-coming/significant-changes-2024-international-codes