

Section 3.2. Indoor Storage

3.2.1. Scope

3.2.1.1. Application

1) Except as permitted in Sentence (2), this Section shall apply to *buildings* or parts of *buildings* used for the storage of the following products:

- a) Class I, II, III and IV commodities, and Group A, B and C plastics, as defined in NFPA 13, “Installation of Sprinkler Systems” (see Note A-3.2.1.1.(1)(a)),
- b) rubber tires and *combustible fibres*,
- c) packaged Level 1, 2 and 3 aerosols, as described in Subsection 3.2.5.,
- d) *dangerous goods* in packages or containers, as covered in Subsection 3.2.7., or
- e) *closed containers* of *distilled beverage alcohols*.

(See Note A-3.2.1.1.(1).)

2) High *rack* storage warehouses with storage heights greater than 13 m, where conditions exist that must be addressed by design and operational details specific to the hazard, need not conform to this Section, where alternative protection is provided in conformance with Article 1.2.1.1. of Division A.

3.2.2. General

3.2.2.1. Application

1) Unless otherwise specified, this Subsection shall apply to the indoor storage of any product covered in this Section.

3.2.2.2. Access Aisles

(See Note A-3.2.2.2.)

- 1) Adequate access for firefighting purposes shall be provided and maintained to all portions of the storage area.
- 2) Access aisles not less than 1.0 m wide shall be provided to fire department access panels and to fire protection equipment.
- 3) Aisles shall be maintained free of obstruction.
- 4) A storage room or area that is greater than 100 m² shall be provided with at least one main aisle conforming to Sentences (5) to (8).
- 5) Except as permitted in Sentence (6), main access aisles shall have a minimum width of
 - a) 2.4 m for storage heights of not more than 6 m, and
 - b) 3.6 m for storage heights of more than 6 m.
- 6) The width of main access aisles referred to in Sentence (5) need not exceed 2.4 m where the products are stored in *racks* and the *building* is *sprinklered*.
- 7) Main access aisles shall extend
 - a) the length of the storage area where only one main access aisle is provided, or
 - b) the length or width of the storage area where 2 or more main access aisles are provided.
- 8) Main access aisles shall be accessible from at least 2 fire department access points, which shall be located such that, in the event one becomes unusable due to fire, the other will still allow emergency responders to access the *building*.

3.2.2.3. Clearances

1) Wall clearances of not less than 600 mm shall be maintained where stored products may swell or expand with the absorption of water.

- 2) In unsprinklered *buildings*, a clearance of not less than 1 m between the top of storage and the underside of the floor or roof deck shall be maintained. (See Note A-3.2.2.3.(2).)
- 3) If the top of storage in piles, on shelves, in bin boxes or on *racks* is above the lower chords of floor or roof structural framing members, a clear space of not less than 300 mm shall be maintained between the storage and the structural members.
- 4) In *sprinklered buildings*, the clearance between the top of storage and ceiling sprinkler deflectors shall conform to the standard used to design the sprinkler system.
- 5) Clearance between stored products and ducts of exhaust ventilation systems shall be maintained in conformance with NFPA 91, “Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids.” (See Note A-3.2.2.3.(5).)

3.2.2.4. Combustible Pallets

- 1) Except as permitted in Sentences (2) and (3), combustible pallets shall be stored outdoors in conformance with Section 3.3.
- 2) Indoor storage of combustible pallets is permitted in a *building* that is not *sprinklered*, provided
 - a) the height of storage of combustible pallets is not more than 1.2 m,
 - b) the width of an *individual storage area* is not more than 7.5 m, and
 - c) the aggregate area of storage is not more than
 - i) 100 m² for wood or solid deck non-expanded polyethylene pallets, or
 - ii) 50 m² for plastic pallets not designated in Subclause (c)(i).
- 3) In a *sprinklered building*, the storage of combustible pallets is permitted to exceed the values stated in Sentence (2) provided such storage conforms to NFPA 13, “Installation of Sprinkler Systems.” (See Note A-3.2.2.4.(3).)

3.2.2.5. Fire Safety Plan

- 1) A fire safety plan conforming to Section 2.8. and Sentences (2), (3) and (5) shall be prepared.
- 2) The fire safety plan shall identify
 - a) the product classifications, as described in Sentence 3.2.1.1.(1), for each part of the *building* where products of different classification are stored,
 - b) the method of storage, including aisle widths for *rack* storage,
 - c) the maximum permitted height of storage for the *building* or part of the *building*, if different,
 - d) the maximum permitted size of *individual storage areas*, and
 - e) in *sprinklered buildings*, the sprinkler system design criteria, inside and outside hose allowances, and results of the benchmark sprinkler system main drain and water flow tests.
- 3) The storage method and maximum height of storage as described in Clauses (2)(b) and (c) shall be posted in the storage area.
- 4) Signs required in Sentence (3) shall have
 - a) a minimum dimension of 200 mm, and
 - b) letters not less than 25 mm high.
- 5) When the products stored include Group A plastics, rubber products, Level 2 or 3 aerosols, or *dangerous goods*, the fire safety plan shall identify the location and maximum quantity of product that is being stored.

3.2.2.6. Smoking

- 1) Except as provided in Subsection 2.4.2., smoking shall not be permitted in an indoor storage area.

3.2.2.7. Storage Arrangements

- 1) The maximum permitted height of storage in any *individual storage area* shall be determined according to
 - a) its base area and shape, and the stability of the stored products, and
 - b) the height limitations otherwise set in this Section.

3.2.3. General Indoor Storage

3.2.3.1. Application

- 1) This Subsection applies to the indoor storage of Class I to IV commodities, Group A, B or C plastics, and *closed containers of distilled beverage alcohol*, in solid piles, on pallets, on shelves or in bin boxes or *racks*.
- 2) When *flammable liquids* or *combustible liquids* are stored with products covered by this Subsection, the liquids shall meet the requirements of the applicable provisions of Part 4.

3.2.3.2. Individual Storage Areas

- 1) Except as provided in Sentence (2), the size of *individual storage areas* shall not exceed the limits shown in Table 3.2.3.2.
- 2) In a *sprinklered building*, the height of storage in *racks* is permitted to exceed the limits shown in Table 3.2.3.2. (See Note A-3.2.3.2.(2).)

Table 3.2.3.2.
Size Limits for Individual Storage Areas
 Forming Part of Sentences 3.2.3.2.(1) and (2) and Clause 3.2.7.5.(1)(c)

Product Classification	Unsprinklered Buildings		Sprinklered Buildings	
	Area, m ²	Height of Storage, m	Area, m ²	Height of Storage, m
Class I commodities	500	6.5	1 500	9.0
Class II commodities	500	6.5	1 500	9.0
Class III commodities, Group C plastics	250	4.5	1 000	9.0
Closed containers of distilled beverage alcohol	250	4.5	1 000	9.0
Class IV commodities, Group B plastics	250	3.6	1 000	9.0
Group A plastics	250	1.5	500	6.1

3.2.3.3. Sprinkler Systems

- 1) Except as provided in Sentence (2), where a sprinkler system is required to accommodate *individual storage areas* referred to in Article 3.2.3.2., the sprinkler system shall be designed and installed in conformance with NFPA 13, “Installation of Sprinkler Systems.”
- 2) For *closed containers of distilled beverage alcohol*, the sprinkler system referred to in Sentence (1) shall be designed in conformance with good engineering practice. (See Note A-3.2.3.3.(2).)

3.2.4. Indoor Tire Storage

3.2.4.1. Application

- 1) This Subsection shall apply to *buildings* or parts of *buildings* used for the storage of rubber tires.

3.2.4.2. Fire Separations

- 1) A tire storage area designed to contain more than 375 m³ of rubber tires shall be separated from the remainder of the *building* by a *fire separation* conforming to Article 3.3.6.5. of Division B of the BCBC. (See Note A-3.2.4.2.(1).)

3.2.4.3. Sprinkler Protection

1) *Buildings* regulated by this Subsection shall be *sprinklered* in conformance with NFPA 13, “Installation of Sprinkler Systems,” whenever

- a) the aggregate of *individual storage areas* in the *building* exceeds 500 m²,
- b) any *individual storage area* exceeds 250 m², or
- c) the height of storage is more than 3.6 m, and the total volume of tires in the *building* is more than 375 m³.

3.2.4.4. Portable Extinguishers

1) In addition to the requirements of Part 2, multi-purpose dry chemical portable extinguishers having a rating of 4-A:80-B shall be installed

- a) in every 500 m² of *floor area*, and
- b) so that the travel distance to any extinguisher does not exceed 25 m.

3.2.5. Indoor Storage of Aerosol Products**3.2.5.1. Application**

1) This Subsection shall apply to the indoor storage of packaged aerosol products as classified in Article 3.2.5.2. (See Note A-3.2.5.1.(1).)

3.2.5.2. Classification

1) For the purposes of this Subsection, aerosol products shall be classified as Level 1, 2 or 3 in conformance with NFPA 30B, “Manufacture and Storage of Aerosol Products.” (See Note A-3.2.5.2.(1).)

3.2.5.3. Level 1 Aerosols

1) Packaged Level 1 aerosol products shall be protected as required for Class III commodities, in both palletized and *rack* storage, in conformance with Article 3.2.3.2.

3.2.5.4. Level 2 and 3 Aerosols

1) The storage of packaged Level 2 and 3 aerosol products shall conform to Table 3.2.5.4. and Articles 3.2.5.5. to 3.2.5.8.

2) Where storage of packaged aerosol products is mixed, protection shall be provided for the most hazardous classification present.

Table 3.2.5.4.
Maximum Amount of Packaged Level 2 and 3 Aerosol Products, kg⁽¹⁾
 Forming Part of Sentences 3.2.5.4.(1) and 3.2.5.5.(2)

Product Classification	Type of Dedicated Area Required					
	Uns sprinklered <i>Building</i>			Sprinklered <i>Building</i>		
	None	A ⁽²⁾	B ⁽³⁾	None	A ⁽²⁾	B ⁽³⁾
Level 2 and 3	1 000	5 000	10 000	10 000	50 000	No Limit

Notes to Table 3.2.5.4.:

- (1) One pallet load of packaged aerosols is approximately 1 000 kg.
- (2) See Article 3.2.5.6.
- (3) See Article 3.2.5.7.

3.2.5.5. Sprinkler Systems

1) Where a sprinkler system is required to accommodate the storage limits in Sentence 3.2.5.4.(1), the sprinkler system shall be designed and installed in conformance with Article 3.2.3.3., with additional sprinkler protection provided in conformance with NFPA 30B, “Manufacture and Storage of Aerosol Products,” for areas in which packaged aerosol products are stored.

2) Where the sprinkler system required to accommodate the storage limits in Sentence 3.2.5.4.(1) does not conform to Sentence (1), the storage of packaged Level 2 or 3 aerosol products shall conform to Table 3.2.5.4. for unsprinklered *buildings*.

3.2.5.6. Type A Dedicated Areas

1) Where a Type A dedicated storage area is required to accommodate the storage limits stated in Sentence 3.2.5.4.(1), it shall be separated from the remainder of the *building* by chain link fencing or a noncombustible *partition* that is capable of withstanding the impact of rocketing cans and that extends to the underside of the roof deck or to the ceiling which must also be capable of withstanding the impact of rocketing cans.

2) Chain link fencing referred to in Sentence (1) shall be not lighter than 2.9 mm steel wire woven into a 50 mm diamond mesh.

3.2.5.7. Type B Dedicated Areas

1) Where a Type B dedicated storage area is required to accommodate the storage limits in Sentence 3.2.5.4.(1), it shall be separated from the remainder of the *building* by *partitions*

- a) having not less than a 1 h *fire-resistance rating*,
- b) capable of withstanding the impact of rocketing cans, and
- c) extending to the underside of the roof or to a ceiling of construction equivalent to the *partitions*.

3.2.5.8. Storage Height

1) Except as provided in Sentence (2), the height of storage of packaged Level 2 or 3 aerosols shall be not greater than

- a) 1.75 m where products are in solid piles or on pallets, or
- b) 6.1 m where products are on *racks*.

2) Where the *building* is *sprinklered* in conformance with Article 3.2.5.5., and an enclosure conforming to Articles 3.2.5.6. or 3.2.5.7. is provided, the height of storage of packaged Level 2 or 3 aerosols shall be not greater than

- a) 6.1 m where products are in solid piles or on pallets, or
- b) the height limit determined by the design capacity of the sprinkler system where products are on *racks*.

3.2.5.9. Aisles

1) Aisles separating *racks*, shelves, or piles of packaged Level 2 or 3 aerosol products shall be not less than 2.4 m wide.

3.2.6. Indoor Storage of Combustible Fibres

3.2.6.1. Application

1) This Subsection shall apply to the storage of *combustible fibres* inside *buildings*.

3.2.6.2. Building Construction

1) *Buildings* or parts thereof used for the storage of baled *combustible fibres* shall conform to Article 3.1.2.7. of Division B of the British Columbia Building Code.

3.2.6.3. Loose Combustible Fibres

- 1) Up to 3 m³ of loose *combustible fibres* are permitted to be kept in a *fire compartment* provided they are stored in metal-lined bins equipped with self-closing metal-lined covers.
- 2) Quantities of loose *combustible fibres* exceeding 3 m³ but not exceeding 15 m³ shall be stored in rooms separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* of not less than 1 h.
- 3) Quantities of loose *combustible fibres* exceeding 15 m³ but not exceeding 30 m³ shall be stored in rooms separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* of not less than 2 h.
- 4) Quantities of loose *combustible fibres* that exceed 30 m³ shall be stored in an individual room
 - a) that is *sprinklered* in conformance with NFPA 13, “Installation of Sprinkler Systems,”
 - b) that is separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* of not less than 2 h, and
 - c) except as provided in Sentence (5), with *individual storage areas* not exceeding the design area of the sprinkler system.
- 5) The *individual storage areas* for loose *combustible fibres* described in Sentence (4) shall not exceed 250 m².

3.2.6.4. Baled Combustible Fibres

- 1) Except as permitted in Sentences (2), (3) and (4), baled *combustible fibres* shall be stored so that
 - a) no *individual storage area* exceeds 250 m²,
 - b) the height of storage in an *individual storage area* does not exceed 4.5 m,
 - c) subsidiary aisles within *individual storage areas* are not less than 1 m wide, and
 - d) the clearance between piles and *building* walls is not less than 1 m.
- 2) Except as permitted in Sentence (4), where baled *combustible fibres* are stored in *sprinklered buildings*, the maximum area of any *individual storage area* shall be 500 m².
- 3) Where baled raw pulp is stored in an unsprinklered *building*,
 - a) the maximum area of any *individual storage area* shall be 500 m², and
 - b) the maximum height of storage shall be 6 m.
- 4) Where baled raw pulp is stored in a *sprinklered building*,
 - a) the maximum area of any *individual storage area* shall be 1 000 m², and
 - b) the maximum height of storage shall be 6 m.
- 5) The sides of baled storage piles shall be inclined back from the base of the pile with a slope of not less than 1 m for each 10 m of height.

3.2.6.5. Heating Equipment

- 1) Unless the use of fuel-fired *appliances* and electrical heating elements is controlled in a manner such that they will not create a fire or explosion hazard, they shall not be permitted in a storage area for *combustible fibres*.
- 2) Shields shall be provided that will prevent stored material from coming within 300 mm of any part of a heating system’s heat distribution network.

3.2.7. Indoor Storage of Dangerous Goods

3.2.7.1. Application

- 1) Except as provided in Sentence (2) and Part 4 and except as otherwise specified in this Code, this Subsection applies to *buildings* or parts of *buildings* where *dangerous goods* in packages or containers are stored in a single *fire compartment*.
- 2) Where the amount of stored *dangerous goods* referred to in Sentence (1) does not exceed the amount stated in Column C of Table 3.2.7.1., it shall be exempted from the requirements of this Subsection.

- 3) Where a product has multiple classes, the applicable small quantity exemption referred to in Sentence (2) shall be determined using
- a) Column A of Table 3.2.7.1. based on the class having precedence, as established in Section 2.8 of TC SOR/2008-34, “Transportation of Dangerous Goods Regulations (TDGR),”
 - b) Column B of Table 3.2.7.1. based on the class having precedence, as established in Table A-3.2.7.1.(3)(b), for controlled products under the “Workplace Hazardous Materials Information System (WHMIS)” as classified in Part 7 of HC SOR/2015-17, “Hazardous Products Regulations” (see Note A-3.2.7.1.(3)(b)), or
 - c) when the class having precedence cannot be established, Column C of Table 3.2.7.1. based on the lesser of the two small quantity exemptions.
- (See Note A-3.2.7.1.(3).)

Table 3.2.7.1.
Small Quantity Exemptions for Dangerous Goods
 Forming Part of Sentences 3.2.7.1.(1) and (3), and 3.3.4.1.(2) and (3)

BCFC Class	Column A		Column B	Column C
		TDG Class ⁽¹⁾	WHMIS Class ⁽²⁾	Maximum Exempt Amount of Stored Product
Explosives	1	Explosives	–	See Article 3.1.1.3.
Compressed Gases flammable gases/aerosols non-flammable, non-toxic gases oxidizing gases toxic gases	2	Gases	A	
		Division 1 ⁽³⁾ flammable gases	B1	25 kg ⁽⁴⁾
			B5	See Subsection 3.2.5.
		Division 2 non-flammable, non-toxic gases	A	150 kg
		Division 2 with subsidiary Class 5.1	A+C	75 kg ⁽⁴⁾
		A+D1	0	
		A+D2		
		A+E		
Flammable Liquids	3	Flammable Liquids	B2	See Part 4
			B3	
Flammable Solids Pyrophoric Materials Water-Reactive Substances	4	Flammable Solids	–	
		Division 1 flammable solids	B4	100 kg ⁽⁶⁾
		Division 2 substances liable to spontaneous combustion	–	50 kg
		Division 3 water-reactive substances	B6	
Oxidizing Substances ⁽⁷⁾ oxidizers organic peroxides	5	Oxidizing Substances and Organic Peroxides	–	
		Division 1 oxidizing substances ⁽⁸⁾ Packing Group I Packing Group II Packing Group III	–	250 kg or 250 L
		Division 2 organic peroxides	C ⁽⁹⁾	100 kg or 100 L

Table 3.2.7.1. (continued)
Small Quantity Exemptions for Dangerous Goods
 Forming Part of Sentences 3.2.7.1.(1) and (3), and 3.3.4.1.(2) and (3)

BCFC Class	Column A		Column B	Column C
		TDG Class ⁽¹⁾	WHMIS Class ⁽²⁾	Maximum Exempt Amount of Stored Product
Toxic and Infectious Substances toxic substances	6	Toxic and Infectious Substances	D	
		Division 1 toxic substances ⁽⁶⁾	–	
		Packing Group I	D1A	0
		Packing Group II	D1B	100 kg or 100 L
		Packing Group III	D2A	1 000 kg or 1 000 L
			D2B	
infectious materials		Division 2 infectious substances	D3	0
Radioactive Materials	7	Radioactive Materials	–	See Article 3.1.2.6.
Corrosives	8	Corrosives ⁽⁸⁾	–	
		Packing Group I		500 kg or 500 L
		Packing Group II	E	1 000 kg or 1 000 L
		Packing Group III		2 000 kg or 2 000 L
Miscellaneous Dangerous Goods	9	Miscellaneous Products, Substances or Organisms	–	See Article 3.1.2.1. ⁽¹⁰⁾
Dangerously Reactive Materials	–	–	F	0

Notes to Table 3.2.7.1.:

- (1) The numbers refer to the class and division of *dangerous goods* as defined in TC SOR/2008-34, "Transportation of Dangerous Goods Regulations (TDGR)."
- (2) The categories and subcategories in the "Workplace Hazardous Materials Information System (WHMIS)" refer to controlled products classified in Part 7 of HC SOR/2015-17, "Hazardous Products Regulations." See Note A-Table 3.2.7.1.
- (3) See Article 3.2.8.2.
- (4) See Note A-3.2.8.2.(2).
- (5) See Article 3.2.8.3.
- (6) 50 kg for nitrocellulose-based products; 10 kg for "strike anywhere" matches.
- (7) "Oxidizing substances" refers to solids or liquids, not gases.
- (8) The TDGR define "packing group" as "a group in which dangerous goods are included based on the inherent danger of the dangerous goods." Packing Group I products are more hazardous than Packing Group III products.
- (9) Class C in the WHMIS applies to oxidizing materials. Oxidizers do not usually self-combust but they will feed a fire by supplying oxygen or cause other materials to suddenly ignite. Oxidizers exist in all three states: gas (oxygen, ozone), liquid (nitric acid, perchloric acid solutions) and solid (potassium permanganate, sodium chlorite). Some oxidizers, such as the organic peroxide family, have both combustibility and oxidizing properties, which means they can have strong reactions that can result in an explosion.
The exempt amount listed for oxidizing materials in this Table applies to two categories of oxidizers based on the TDGR classification: oxidizing substances and organic peroxides. Since the WHMIS does not have a corresponding classification for these two categories of oxidizers, it was decided that the exempt amount applicable to Class C should be the more stringent one, thus reducing the potential that large quantities of oxidizing materials with combustibility properties will be stored without implementing the applicable safety measures in Subsection 3.2.7.
- (10) Small quantity exemptions may be determined by other authorities such as the TDGR, the WHMIS and environmental protection legislation.

3.2.7.2. Ignition Sources

1) Heating *appliances* shall not be permitted in a *fire compartment* used for the storage of *dangerous goods* classified as flammable gases, *flammable liquids*, flammable solids, pyrophoric materials, water-reactive substances, oxidizers or organic peroxides, unless they are installed in a manner that will not create a fire or explosion hazard.

2) Smoking shall not be permitted within a *fire compartment* used for the storage of *dangerous goods* and signs shall be posted in conformance with Article 2.4.2.2.

3) Except as provided in Subsection 3.1.3. and in Section 5.2., open flames and spark-producing devices shall not be used in an area where *dangerous goods* are stored. (See Note A-4.1.5.2.(1).)

3.2.7.3. Ambient Conditions

- 1) Rooms or parts of *buildings* used for the storage of *dangerous goods*
 - a) shall be dry and cool, and
 - b) where the products being stored are capable of releasing flammable or toxic gases or vapours under normal ambient conditions, shall be provided with a ventilation system to exhaust such gases or vapours outdoors to an area where they will not return to the *building* (see Note A-3.2.7.3.(1)(b)).

3.2.7.4. Housekeeping

- 1) Areas where *dangerous goods* are stored shall be kept free of waste packaging materials, debris of any kind, or any spilled product.
- 2) Broken packages or containers of *dangerous goods* shall be moved to a safe location and the product repackaged and labelled as soon as possible.

3.2.7.5. Storage Arrangements

- 1) The method of storage of *dangerous goods* shall
 - a) be determined to ensure the physical and chemical stability of the stored products,
 - b) except as provided in Sentences (2) and (5), not exceed the maximum heights of storage shown in Table 3.2.7.5., and
 - c) not exceed the maximum base areas for *individual storage areas* shown in Table 3.2.3.2. (see Note A-3.2.7.5.(1)(c)).
- 2) Storage heights for a protected storage area stated in Table 3.2.7.5. are permitted to be exceeded provided the *dangerous goods* are stored on *racks* or shelves.
- 3) When a storage area is required by this Article to be protected, it shall be *sprinklered* or protected with a special fire suppression system, in conformance with Part 2 and good engineering practice with respect to specific *dangerous goods*. (See Note A-3.2.7.9.(1).)
- 4) Stored *dangerous goods* other than compressed gases shall be kept not less than 100 mm above the floor level.
- 5) *Flammable liquids* and *combustible liquids* shall be stored in conformance with Part 4.

Table 3.2.7.5.
Storage Height Limits for Dangerous Goods, m
 Forming Part of Sentences 3.2.7.5.(1) and (2)

Packing Group(1)	Unprotected Storage	Protected Storage
Packing Group I	1.8	2.4
Packing Group II	2.4	4
Packing Group III	4.5	6

Notes to Table 3.2.7.5.:

(1) See Table 3.2.7.1.

- 6) Except as permitted in Table 3.2.7.6., solid and liquid *dangerous goods* classified as oxidizers or organic peroxides shall be separated from the remainder of the *building* in conformance with Sentence 3.3.6.2.(1) of Division B of the British Columbia Building Code.
- 7) Reactive materials shall be separated from the remainder of the *building* in conformance with Sentence 3.3.6.2.(2) of Division B of the British Columbia Building Code.
- 8) Packages or containers of *dangerous goods* classified as organic peroxides shall not be opened, or the product dispensed, in the same area where it is stored.
- 9) Except where the width of storage of *dangerous goods* is not more than 1.5 m, measured out from the wall, wall clearances of not less than 400 mm shall be maintained.

3.2.7.6. Separation from Other Dangerous Goods

1) Except as required in Sentences (3) and (4), Clause 3.2.8.2.(1)(g) and Sentence 3.2.8.3.(2), *dangerous goods* shall be separated from other *dangerous goods* in conformance with Table 3.2.7.6.

2) The *fire-resistance rating* of the *fire separations* delimiting each *fire compartment* shall be determined in accordance with the applicable requirements of the Code. (See Note A-3.2.7.6.(2).)

3) In addition to the separation requirements in Sentence (1), *dangerous goods* shall be stored in conformance with the information provided in the Safety Data Sheet for the specific *dangerous good*. (See Note A-3.2.7.6.(3).)

4) *Flammable liquids, combustible liquids* and *dangerous goods* classified as corrosives shall not be stored with *dangerous goods* classified as radioactive materials in quantities or in a manner that would constitute an undue risk in the event of a fire.

Table 3.2.7.6.
Separation Chart for Storage of Dangerous Goods⁽¹⁾⁽²⁾
 Forming Part of Sentences 3.2.7.5.(6), 3.2.7.6.(1), 3.2.7.9.(2), 3.3.4.3.(2) and 4.2.2.3.(2)

BCFC Class	TDG Class ⁽³⁾	WHMIS Class ⁽⁴⁾	Flammable Gases/Aerosols	Non-flammable, Non-toxic Gases	Oxidizing Gases	Toxic Gases	Flammable Liquids	Flammable Solids	Pyrophoric Materials	Water-reactive Substances	Oxidizers	Organic Peroxides	Toxic Substances/ Infectious Materials	Corrosives		Dangerously Reactive Materials
			2.1	2.2	2.2 (5.1)	2.3	3	4.1	4.2	4.3	5.1	5.2	6	8		
			B1, B5	A	A+C	A+D, A+E	B2, B3	B4	-	B6	-	C	D	E		
			Acid ⁽⁵⁾		Base ⁽⁶⁾		F									
Dangerously Reactive Materials	-	F	X	X	X	X	X	X	X	X	X	X	X	X	X	P
Corrosives	8	E	X	P	X	1m	1m	1m	1m	X	X	X	1m	P	1m	X
		Acid ⁽⁵⁾														
Toxic Substances/ Infectious Materials	6	D	X	P	1m	DS	DS	DS	DS	DS	1m	X	P	1m	1m	X
Organic Peroxides	5.2	C	X	P	X	X	X	X	X	X	X	P	X	X	1m	X
Oxidizers	5.1		X	P	P	1m	X	X	X	X	P	X	1m	X	1m	X
Water-reactive Substances	4.3	B6	DS	P	X	DS	1m	DS	DS	P	X	X	DS	X	X	X
Pyrophoric Materials	4.2		1m	P	X	1m	1m	1m	P	DS	X	X	DS	1m	1m	X
Flammable Solids	4.1	B4	P	P	X	1m	P	P	1m	DS	X	X	DS	1m	1m	X
Flammable Liquids	3	B2, B3	P	P	X	X	P	P	1m	1m	X	X	DS	1m	1m	X
Toxic Gases	2.3	A+D, A+E	X	P	1m	P	X	1m	1m	DS	1m	X	DS	1m	1m	X
Oxidizing Gases	2.2(5.1)	A+C	X	P	P	1m	X	X	X	X	P	X	1m	X	1m	X
Non-flammable, Non-toxic Gases	2.2	A	P	P	P	P	P	P	P	P	P	P	P	P	P	X
Flammable Gases/Aerosols	2.1	B1, B5	P	P	X	X	P	P	1m	DS	X	X	X	X	X	X

Notes to Table 3.2.7.6.:

- (1) For the purpose of this Table:
 - If a *dangerous good* has both a TDG Class and a WHMIS Class, the TDG Class shall apply.
 - If two *dangerous goods* each have a TDG Class with or without a WHMIS Class, the TDG Class shall apply.
 - If two *dangerous goods* each have a WHMIS Class but no TDG Class, the WHMIS Class shall apply.
 - If a *dangerous good* has more than one WHMIS Class, the Class having precedence shall be determined using Table A-3.2.7.1.(3)(b).
 - If one *dangerous good* has a WHMIS Class but no TDG Class and another *dangerous good* has a TDG Class but no WHMIS Class, the TDG Class and the WHMIS Class in combination shall apply.
- (2) Definitions for entries in this table:
 - X = incompatible *dangerous goods*: these goods shall be stored in separate *fire compartments*.
 - 1m = incompatible *dangerous goods*: these goods shall be separated by a horizontal distance of not less than 1 m.
 - P = permitted *dangerous goods*: these goods are permitted to be stored close together.
 - DS = refer to Safety Data Sheet for these *dangerous goods*. See Note A-Table 3.2.7.6.
 - A+C = controlled products of Class A combined with C

A+D = controlled products of Class A combined with D

A+E = controlled products of Class A combined with E

B2, B3 = controlled products of Class B2 or B3

B1, B5 = controlled products of Class B1 or B5

- (3) The numbers refer to the classes and divisions of *dangerous goods* as defined in TC SOR/2008-34, "Transportation of Dangerous Goods Regulations (TDGR)."
- (4) The letters and numbers refer to the categories and subcategories of controlled products under the "Workplace Hazardous Materials Information System (WHMIS)" as classified in Part 7 of HC SOR/2015-17, "Hazardous Products Regulations." See Note A-Table 3.2.7.1.
- (5) Acid: corrosive materials with a pH below 2 according to the Safety Data Sheet. See Note A-Table 3.2.7.6.
- (6) Base: corrosive materials with a pH above 11.5 according to the Safety Data Sheet. See Note A-Table 3.2.7.6.

3.2.7.7. Corrosion Protection

1) Measures shall be taken to prevent or minimize corrosion or deterioration of shelving, *racks*, and piping system components due to contact with stored *dangerous goods*.

3.2.7.8. Flooring Materials

1) Floors in areas where *dangerous goods* are stored shall be

- a) constructed in conformance with Sentence 3.3.6.7.(1) of Division B of the British Columbia Building Code, and
- b) maintained as an impervious membrane.

2) *Dangerous goods* classified as oxidizers or organic peroxides shall not be stored on combustible floors or platforms.

3.2.7.9. Fire Suppression Systems

1) Except as permitted in Sentences (2) and (3) and in Part 4, *buildings* used for the storage of *dangerous goods* regulated by this Subsection shall be equipped throughout with a sprinkler system or other fire suppression system, designed in conformance with Part 2 and good engineering practice with respect to specific *dangerous goods*. (See Note A-3.2.7.9.(1).)

2) *Buildings* described in Sentence (1) need not be equipped throughout with a sprinkler system or other fire suppression system provided that

- a) the sum of *individual storage areas* in the *building* used for the storage of *dangerous goods*, other than substances classified as miscellaneous *dangerous goods* with no other class and those covered in Part 4, does not exceed 100 m², and
- b) the *dangerous goods* are
 - i) separated in conformance with Table 3.2.7.6., and
 - ii) stored in *fire compartments* separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* of not less than 2 h.

3) *Buildings* described in Sentence (1) need not be equipped throughout with a sprinkler system or other fire suppression system, provided that storage consists only of *dangerous goods* classified as non-flammable, non-toxic gases with no subsidiary class of oxidizing substances.

3.2.7.10. Smoke Venting

1) Where the collective *individual storage areas* for *dangerous goods* exceed 10 m² in a *fire compartment*, means shall be provided for manual or automatic venting of smoke and toxic gases from the storage area under fire conditions. (See Note A-3.2.7.10.(1).)

3.2.7.11. Spill Control

1) Measures to control spilled liquid or solid *dangerous goods* shall be provided in conformance with Subsection 4.1.6.

2) Materials or liquids used in the cleanup of spills and leakages of *dangerous goods* shall be

- a) compatible and non-reactive with the *dangerous goods* being cleaned up, and
- b) disposed of in conformance with Subsection 4.1.6.

3.2.7.12. Fire Department Access

- 1) Except as provided in Sentences (2) and (3), fire department access to *buildings* described in Article 3.2.7.1. shall be in conformance with Section 2.5.
- 2) When the collective *individual storage area* for *dangerous goods* exceeds 10 m², *buildings* regulated by Sentence (1) shall be accessible to fire department vehicles from at least 2 sides for the purpose of firefighting. (See Note A-3.2.7.12.(2).)
- 3) In *buildings* regulated by Sentence (1), access openings to each *storey* provided in conformance with the British Columbia Building Code shall be not less than 750 mm wide by 1 100 mm high. (See Note A-3.2.7.12.(3).)

3.2.7.13. Labels

- 1) Products classified as *dangerous goods* shall display appropriate identifying labels from the time they enter a facility until they are issued as finished products or waste material. (See Note A-3.2.7.13.(1).)

3.2.7.14. Placards

- 1) *Individual storage areas* used for the storage of *dangerous goods* and laboratories where *dangerous goods* are used shall be clearly designated as such by posted placards conforming to TC SOR/2008-34, “Transportation of Dangerous Goods Regulations (TDGR),” and Sentences (2) to (4). (See Note A-3.2.7.14.(1).)
- 2) Where the *dangerous goods* identified in Sentence (1) consist of a single product, only the UN number need be posted.
- 3) Where the *dangerous goods* identified in Sentence (1) consist of multiple products within the same class, the individual class and division placard shall be posted.
- 4) Where the *dangerous goods* identified in Sentence (1) consist of more than one class of products, a placard for each individual class, or the “Danger” placard shown in TC SOR/2008-34, “Transportation of Dangerous Goods Regulations (TDGR),” shall be posted at the entrance to the storage area.
- 5) *Individual storage areas* described in Sentence (1) shall be identified in the fire safety plan as required in Article 3.2.2.5.

3.2.7.15. Training

- 1) In a *building* regulated by this Subsection, at least one person shall be
 - a) trained in conformance with Sentence (2),
 - b) in responsible charge during operating hours, and
 - c) available to respond to a day or night emergency.
- 2) The person in responsible charge specified in Sentence (1) shall be trained in the correct procedures for the handling, storing and offering for transport of *dangerous goods* in accordance with
 - a) the appropriate federal, provincial, or territorial occupational safety and health regulations, or
 - b) in the absence of regulations mentioned in Clause (a),
 - i) TC SOR/2008-34, “Transportation of Dangerous Goods Regulations (TDGR),” or
 - ii) the Hazardous Products Act, Part II, “Workplace Hazardous Materials Information System (WHMIS).”
- 3) All employees involved in the storage and handling of *dangerous goods* shall be trained in safe handling procedures and correct responses to an emergency situation.

3.2.7.16. Unauthorized Access

- 1) An area used for the storage of *dangerous goods* shall be secured against unauthorized access.

3.2.7.17. Separation from Combustible Products

- 1) Except for Class I commodities, *dangerous goods* shall not be stored in the same *individual storage area* with other products listed in Sentence 3.2.1.1.(1).

3.2.7.18. Storage of Oxidizers in Mercantile Occupancies

- 1) This Article applies to *mercantile occupancies*.
- 2) *Dangerous goods* classified as oxidizers that are located within *mercantile occupancies* in quantities not exceeding those permitted by Table 3.2.7.1. shall be separated from ordinary combustible material by a distance of at least 1 m.
- 3) A clear space of not less than 2.4 m shall be maintained between the oxidizing substances identified in Sentence (2) and any other *dangerous goods*. (See Note A-3.1.2.6.)

3.2.8. Indoor Storage of Compressed Gases

3.2.8.1. Application

- 1) Except as provided in Subsection 3.1.1., this Subsection applies to the indoor storage of *dangerous goods* classified as compressed gases.

3.2.8.2. Flammable Gases

- 1) Except as provided in Sentences (2) and (3), cylinders of *dangerous goods* classified as flammable gases stored indoors shall be located in a room that
 - a) is separated from the remainder of the *building* in conformance with Sentence 3.3.6.3.(1) of Division B of the British Columbia Building Code,
 - b) is located on an exterior wall of the *building*,
 - c) can be entered from the exterior, and whose *closures* leading to the interior of the *building* are in conformance with Sentence 3.3.6.3.(1) of Division B of the British Columbia Building Code,
 - d) is designed to prevent critical structural and mechanical damage from an internal explosion in conformance with good engineering practice such as that described in NFPA 68, “Explosion Protection by Deflagration Venting” (see Note A-3.2.8.2.(1)(d)),
 - e) is provided with natural or mechanical ventilation in conformance with Subsection 4.1.7.,
 - f) does not contain fuel-fired *appliances* or high-temperature heating elements, and
 - g) is used for no purpose other than the storage of *dangerous goods* classified as compressed gases.
- 2) Cylinders of *dangerous goods* classified as flammable, lighter-than-air gases are permitted to be stored outside of a room described in Sentence (1), provided the aggregate capacity per *fire compartment* of expanded gas outside of the room is not more than
 - a) 60 m³ in an unsprinklered *building* of *combustible construction*, and
 - b) 170 m³ in a *sprinklered building* or in a *building* of *noncombustible construction*.(See Note A-3.2.8.2.(2).)
- 3) The storage of “single-trip” non-refillable cylinders (i.e. TC-39, TC-2P, and TC-2Q) with water capacities of more than 375 g and less than 1.13 kg located within *mercantile occupancies* shall conform to the British Columbia Gas Safety Regulation.

3.2.8.3. Indoor Storage of Anhydrous Ammonia and Toxic or Oxidizing Gases

- 1) Cylinders of anhydrous ammonia or *dangerous goods* classified as toxic or oxidizing gases stored indoors shall be located in a room that
 - a) is separated from the remainder of the *building* in conformance with Sentence 3.3.6.3.(2) of Division B of the British Columbia Building Code,
 - b) is located on an exterior wall,
 - c) can be entered from the exterior, and whose *closures* leading to the interior of the *building* are in conformance with Sentence 3.3.6.3.(2) of Division B of the British Columbia Building Code, and
 - d) is provided with ventilation to the outdoors.
- 2) Cylinders of gases described in Sentence (1) shall not be stored in a room containing combustible materials.

3.2.9. Indoor Storage of Ammonium Nitrate

3.2.9.1. Application

1) This Subsection shall apply to the storage of ammonium nitrate mixtures (Class 5.1 oxidizing substances) in quantities exceeding 1 000 kg inside *buildings*. (See Note A-3.2.9.1.(1).)

2) The requirements of Subsection 3.2.3. regarding Class II commodities shall also apply to bagged storage of ammonium nitrate. (See Note A-3.2.1.1.(1)(a).)

3.2.9.2. Storage Buildings

1) The *occupancy* classification of *buildings* intended for the storage of ammonium nitrate shall conform to Sentence 3.3.6.6.(1) of Division B of the British Columbia Building Code.

2) The height of *buildings* intended for the storage of ammonium nitrate shall conform to Sentence 3.3.6.6.(2) of Division B of the British Columbia Building Code.

3) *Buildings* intended for the storage of ammonium nitrate shall

- a) conform to Sentence 3.3.6.6.(3) of Division B of the British Columbia Building Code,
- b) have ventilation in conformance with Sentence 3.3.6.6.(4) of Division B of the British Columbia Building Code, and
- c) be designed to prevent the ammonium nitrate from coming into contact with *building* materials that may react with it as described in Sentence 3.3.6.6.(6) of Division B of the British Columbia Building Code.

4) All flooring in storage areas shall be constructed of noncombustible materials, as stated in Sentence 3.3.6.6.(5) of Division B of the British Columbia Building Code.

5) *Buildings* used for the storage of ammonium nitrate shall incorporate spatial separation and exposure protection in conformance with Subsection 3.2.3. of Division B of the British Columbia Building Code. (See Note A-3.2.9.2.(5).)

3.2.9.3. Industrial Trucks

1) In addition to the requirements of Subsection 3.1.3., industrial trucks used or stored within *buildings* where ammonium nitrate is also stored shall be maintained so that fuels or hydraulic fluids do not contaminate the ammonium nitrate. (See Note A-3.2.9.3.(1).)

2) Fuel-dispensing operations shall not be carried out in *buildings* where ammonium nitrate is stored.

3) An internal combustion engine shall not be permitted to remain unattended in a *building* where ammonium nitrate is stored, unless the engine is located in an area that will prevent the spread of a fire originating in the engine.

4) Industrial trucks used for the transportation of ammonium nitrate shall be cleaned of remaining material following use.

3.2.9.4. Portable Extinguishers

1) In addition to the requirements of Part 2, pressurized water portable fire extinguishers having a rating of 2-A or larger shall be installed. (See Note A-3.2.9.4.(1).)