



**“Safety starts with attitude.”**

**Ontario Fire Code Excerpts**

***Flammable or combustible liquid spills***

2.4.1.5. **Flammable** or **combustible liquid** spills in a **building** shall be removed immediately with an absorbent material that will not increase the hazard and shall be disposed of in a safe manner.

***Precautions against spontaneous combustion***

2.4.1.6. Greasy or oily rags or materials subject to spontaneous heating shall be deposited in a receptacle that conforms to Article 2.4.1.9. or removed from the premises.

***Receptacles***

2.4.1.9. Receptacles required by Clause 2.4.1.1.(2)(c) and Articles 2.4.1.6. and 2.4.1.8. shall be constructed of noncombustible materials with a melting point of not less than 650°C, shall have no openings in the sides or bottom, and shall have a self-closing, tightly fitted cover.

2.4.1.10. Receptacles as described in Article 2.4.1.9. shall not be placed closer than 1 m on the sides and top to combustible materials, and if placed on a combustible floor surface, shall be equipped with a flanged bottom or legs at least 50 mm high.

**Note: On January 1, 2007, Subsection 2.4.1. is amended by adding the following Article:**

2.4.1.11. (1) Waste containers in public washrooms and in other public areas in a **hotel establishment** shall be

- (a) **approved**, or
- (b) constructed of noncombustible material and have self-closing covers.

**See: O. Reg. 144/06, ss. 5, 27.**

Exposure to Combustible Materials Subsection 2.4.2.

- 2.4.2.1. Combustible materials shall not be stored on a roof or adjacent to any **building** so as to create a fire hazard to the **building** or its occupants.

*Portable extinguishers*

(3) A 2A:5BC or higher rated portable extinguisher, conforming to the requirements of Section 6.2, shall be available where refueling of **appliances** and containers used for flaming meals or drinks takes place.

- (4) Refueling of **appliances** shall not be carried out in the dining area.

*Portable extinguishers for flaming meals and drinks*

2.4.4.3. A 2A:5BC or higher rated portable extinguisher, conforming to the requirements of Section 6.2, shall be located on the serving cart or table where flaming meals and drinks are being served.

*Commercial cooking equipment*

2.6.1.12. (1) Commercial cooking equipment shall be provided with exhaust and fire protection systems in conformance with NFPA 96, “Ventilation Control and Fire Protection of Commercial Cooking Operations”.

*Instructions in emergency procedures*

2.8.1.2. (1) **Supervisory staff** shall be instructed in the fire emergency procedures as described in the fire safety plan before they are given any responsibility for fire safety.

(2) **Supervisory staff** shall be available on notification of a fire emergency to fulfil their obligation as described in the fire safety plan.

(3) It is not necessary that **supervisory staff** be in the **building** on a continual basis.

**Note: On January 1, 2007, Subsection 2.8.1. is amended by adding the following Article:**

2.8.1.3. (1) Employees in a **hotel establishment** shall be instructed on

(a) the procedures outlined in Article 2.8.2.1., and

(b) the use of fire fighting equipment, including portable fire extinguishers and, where applicable, standpipe and hose systems.

*Posting fire emergency procedures*

2.8.2.5. At least one copy of the fire emergency procedures shall be prominently posted and maintained on each **floor area**.

**Note: On January 1, 2007, Article 2.8.2.5. is revoked and the following substituted:**

***Posting fire emergency procedures***

2.8.2.5. (1) At least one copy of the fire emergency procedures shall be prominently posted and maintained on each **floor area**.

(2) In addition to Sentence (1), in a **hotel establishment**

(a) one copy of the **approved** fire safety plan shall be posted in the main reception area, and

(b) a copy of the emergency procedures, location of **exits** and the fire safety rules shall be posted on the inside of the egress doors of each **guest suite**.

***Spill control***

4.1.6.1. (1) A spill of **flammable** or **combustible liquids** shall be prevented from reaching waterways, sewer systems and potable water sources by

(a) a barrier of **noncombustible construction** of sufficient capacity to contain the spill, or

(b) grading the site or sloping the floor to divert the spill to a drainage system conforming to Article 4.1.6.2.

(2) Where barriers required in Sentence (1) are provided to contain accidental spillage from aboveground **storage tanks**, they shall conform to the requirements for secondary containment in Subsection 4.3.7.

(3) The fire safety plan required in Article 4.1.5.6. shall include measures to be taken to direct overflow of spilled liquids and fire fighting water away from

(a) **buildings**,

(b) isolation valves controlling processes or fire protection systems,

(c) a **means of egress**,

(d) adjoining property,

(e) **fire department** access routes, and

(f) a water supply used for fire fighting.

***Spills and leaks***

4.1.6.3. (1) Maintenance and operating procedures shall be established to prevent the escape of **flammable** or **combustible liquids** to areas where they could create a fire or explosion hazard.

(2) Except as provided in Sentence (3), all reasonable steps shall be taken to recover escaped liquid and to remove or treat contaminated soil, surface water, ground water or aquatic sediments.

(3) Liquid spilled or leaked shall be

(a) flushed to a location conforming to Article 4.1.6.2., or

(b) removed with the aid of an absorbent conforming to Sentence (4), deposited in a receptacle conforming to Subsection 2.4.1. and disposed of in a manner that does not create a fire or explosion hazard.

(4) An absorbent required in Sentence (3) shall

(a) be noncombustible, or

(b) conform to ULC/ORD-C410A, "Absorbents for Flammable and Combustible Liquids".

(5) Clean-up shall conform with Part X (Spills) of the **Environmental Protection Act**.

### ***Spill procedure***

4.1.6.4. (1) A spill control procedure shall be **approved** and implemented for any **occupancy** where **flammable** or **combustible liquids** are stored, handled, processed or used.

(2) The spill control procedure referred to in Sentence (1) shall include

(a) suitable operating procedures to prevent leaks and spills from piping, pumps, **storage tanks** or process vessels,

(b) ventilation,

(c) control of ignition sources,

(d) spill containment and cleanup (such as dikes and spill control agents such as sand),

(e) personal protective clothing or equipment that should be used (such as rubber gloves, rubber boots and self-contained breathing apparatus),

(f) handling and disposal of waste in accordance with the Ministry of Environment and Energy requirements,

(g) chain of command including notification of affected agencies and management,

- (h) a preventive maintenance program, and
- (i) training for new staff within 3 months of their being hired and for experienced staff every 6 months.

(3) Spill control procedures shall be prominently posted and maintained where **flammable** or **combustible liquids** are stored, handled, processed or used.

Outdoor Container Storage Subsection 4.2.11.

***Quantities and clearances***

4.2.11.1. (1) Except as provided in Sentence (2), the quantities and clearances for **flammable** and **combustible liquids** stored in containers in outdoor storage areas shall conform to Table 4.2.11.A.

(2) The clearances required in Sentence (1) do not apply where not more than 5000 L of **flammable** or **combustible liquids** are stored adjacent to a **building** on the same property, and

- (a) the **building** is one **storey** in **building height** and used primarily for the storage or handling of **flammable** or **combustible liquids**, or

- (b) the exposed wall has a **fire-resistance rating** of at least 2 hr and has no openings within 3 m of such outdoor storage.

TABLE 4.2.11.A.

Outdoor Container Storage Forming Part of Article 4.2.11.1.

Class of Liquid	Maximum Total Quantity per Pile, L	Minimum Distance Between Piles, m	Minimum Distance to a Property Line or to a <b>Building</b> on the Same Property, m
Class IA	5000	1.5	6
Class IB or IC	15000	1.5	6
Class II	35000	1.5	6
Class IIIA	85000	1.5	6

***Ventilation measures***

4.1.7.2. (1) Except as permitted in Sentence (2), a room or enclosed space referred to in Article 4.1.7.1. shall be provided with a ventilation system having

- (a) continuous mechanical ventilation where Class I liquids are processed, dispensed or used in a manner that releases flammable vapours into the room or enclosed space, or

- (b) either natural or continuous mechanical ventilation where

(i) Class I liquids are stored, processed, dispensed or used in a manner that does not release flammable vapours into the room or enclosed space, or

(ii) Class II liquids are processed, dispensed or used.

(2) Ventilation referred to in Clause (1)(b) need not be provided for the storage of Class I liquids if

(a) storage consists of only **closed containers**, and

(b) no dispensing operations are performed.

(3) Ventilation required in Sentence (1) shall be sufficient to ensure that flammable vapour concentrations outside the zone identified as Class I, Division I in conformance with Article 4.1.4.1. do not exceed 25 per cent of the **lower explosive limit** of the flammable vapour.

(4) Where a mechanical ventilation system is installed to meet the conditions of Sentence (3), it shall be capable of exhausting at least 18 m<sup>3</sup>/hr per square metre of room area, but not less than 250 m<sup>3</sup>/hr.

(5) Where continuous mechanical ventilation is installed in order to meet the conditions of Sentence (1), it shall

(a) be provided with automatic interlocks so that the activity generating flammable vapours cannot be performed when the ventilation system is not in operation, and

(b) sound an audible alarm in an attended area upon shut down of the ventilation system.

(6) Where ventilation to the exterior environment is required, concentrations shall not exceed point of impingement concentrations as specified in Regulation 346 made under the **Environmental Protection Act**.

(7) Despite Sentences (1) and (2), for those **occupancies** of facilities that are covered by the **Regulations for Industrial Establishments** and the **Regulations for Health Care and Residential Facilities** under the **Occupational Health and Safety Act**, ventilation requirements for a room or enclosed space referred to in Article 4.1.7.1. shall be provided with

(a) continuous mechanical ventilation where Class I liquids are processed, dispensed or used in a manner that releases flammable vapours into the room or enclosed space, and

(b) continuous mechanical or natural ventilation to the outdoors by upper and lower vents where

(i) Class I liquids are stored, or

(ii) Class II liquids are processed, dispensed or used.

## *Containers*

4.2.5.2. (1) **Flammable and combustible liquids in mercantile occupancies** shall be kept in **closed containers**.

(2) **Closed containers** of Class I and II liquids shall not be stacked more than 1.5 m high on floors, or 1 m high on individual fixed shelves.

(3) Class I liquids in **closed containers** are permitted to be stored in **basements of mercantile occupancies**.

## *Storage cabinets*

4.2.10.5. (1) Storage cabinets required in this Part shall

- (a) conform to ULC-C1275, “Storage Cabinets for Flammable Liquid Containers”,
- (b) conform to ULI 1275, “Flammable Liquid Storage Cabinets”,
- (c) be Factory Mutual Research Approved, or
- (d) be **listed** as meeting NFPA 30.

## *General*

4.3.7.1. (1) The area surrounding a **storage tank** or group of **storage tanks** shall be designed to accommodate accidental spillage in conformance with Subsection 4.1.6.

(2) Where barriers described in Sentence 4.1.6.1.(1) are provided to contain accidental spillage from above-ground **storage tanks**, they shall conform to the requirements for secondary containment in this Subsection.

## *Use of secondary containment*

4.3.7.9. The contained space created by a secondary containment shall not be used for storage purposes.

## *Outside aboveground storage tanks*

4.5.2.1. (1) Except as provided in Sentences (2) and (3), the installation of outside aboveground **storage tanks** at **fuel dispensing stations** shall be in conformance with Subsection 4.3.2.

(2) Outside aboveground **storage tanks at fuel dispensing stations** shall have an individual capacity of not more than 50000 L, and their aggregate capacity shall not exceed 150000 L.

(3) Outside aboveground **storage tanks at fuel dispensing stations** shall be provided with

- (a) physical protection against collision damage,
- (b) measures to prevent unauthorized access to the **storage tank** and its ancillary equipment, and
- (c) measures to contain accidental spillage in conformance with Subsection 4.3.7.

#### ***Portable extinguishers***

4.5.10.1. At least 2 portable extinguishers, each having a rating of not less than 10BC, shall be provided at every **fuel dispensing station** in conformance with Section 6.2.

#### ***Absorbent materials***

4.5.10.2. Absorbent material to soak up liquid spillage shall be provided for use by attendants at **fuel dispensing stations** in conformance with Article 4.1.6.3.

5.6.1.2. (1) Cylinders containing **compressed gas** shall be protected against mechanical damage.

(2) Cylinders containing **compressed gas** shall be stored to hold them securely in place

- (a) on racks,
- (b) by nesting, or
- (c) by **approved** methods or devices

#### ***Indoor storage of flammable compressed gases***

5.6.2.4. (1) Except as provided in Sentences (2) and (3), cylinders containing flammable **compressed gas** stored indoors shall be located in a room that

- (a) is separated from the remainder of the **building** by a **fire separation** having a 2-hr **fire-resistance rating**,
- (b) is located on an exterior wall of the **building**,
- (c) can be entered from the exterior,



(d) if it has doors into the interior of the **building**, they are equipped with self-closing and latching devices, have a **fire-protection rating** of at least 1.5 hr and are constructed so as to prevent migration of gases from the room into other parts of the **building**,

(e) is constructed so that an exterior wall provides explosion venting

(i) in the ratio of 0.2 m<sup>2</sup> for each cubic metre of room volume, or

(ii) in the ratio computed in accordance with NFPA 68, “Guide for Venting of Deflagrations”, except in no case less than 650 cm<sup>2</sup> of vent area for each cubic metre of room volume,

(f) has ventilation conforming to Sentence (4),

(g) does not contain fuel fired equipment or high temperature heating elements, and

(h) is used for no purpose other than the storage of **compressed gas**.

***Flammable compressed gases lighter than air***

(2) Cylinders of flammable, lighter than air **compressed gas** may be stored in rooms other than those described in Sentence (1),

(a) in a **building of combustible construction** that is not **sprinklered** where the aggregate capacity of expanded gas is not more than 60 m<sup>3</sup>,

(b) in a **sprinklered building of combustible construction** where the aggregate capacity of expanded gas is not more than 170 m<sup>3</sup>, or

(c) in a **building of noncombustible construction** where the aggregate capacity of expanded gas is not more than 170 m<sup>3</sup>.

***Flammable compressed gases heavier than air***

(3) Cylinders of flammable **compressed gas** which are heavier than air may be stored in rooms other than those described in Sentence (1) if they are stored in a **fire compartment** having a **fire-resistance rating** of at least ¾ hr and

(a) the aggregate capacity does not exceed 100 kg,

(b) the number of cylinders does not exceed 3,

(c) the cylinders are not located in the **basement** or other areas below **grade**, and

(d) the **fire compartment** has ventilation conforming to Sentence (4).

***Ventilation***

- (4) The ventilation required by Clauses (1)(e) and (3)(d) shall be
- (a) mechanical ventilation to the outside that ensures at least 1 air change per hour, or
  - (b) natural ventilation to the outside through non-closeable louvred openings with
    - (i) at least one opening no more than 0.3 m from the ceiling and one opening no more than 0.3 m from the floor,
    - (ii) all openings at ceiling level having an aggregate free opening area of at least 0.2 m<sup>2</sup> per 100 m<sup>2</sup> of the **floor area**,
    - (iii) all openings at floor level having an aggregate free opening area of at least 0.2 m<sup>2</sup> per 100 m<sup>2</sup> of the **floor area**, and
    - (iv) the openings located to ensure cross ventilation.

## SPRAY APPLICATIONS USING FLAMMABLE AND COMBUSTIBLE SECTION 5.12 MATERIALS

### Location Subsection 5.12.1.

5.12.1.1. Spray operations shall be separated from the remainder of the building in conformance with the Building Code, where applicable.

### Construction Subsection 5.12.2.

#### General

5.12.2.1. (1) A spray booth shall consist of a steel frame covered with sheet steel having a minimum thickness of 1.14 mm, or be of equivalent noncombustible construction.

(2) The interior surfaces of a spray booth shall be smooth and continuous.

(3) The floor of a spray booth and the operator's working area shall be of noncombustible materials.

#### Baffle plates

5.12.2.2. (1) Spray booth baffle plates shall be of noncombustible material and be removable or arranged to facilitate cleaning.

(2) Spray booth baffle plates shall not be located in exhaust ducts.

#### Filters in ducts

5.12.2.3. Filters in ducts used to ventilate spraying areas shall be made from noncombustible material or have a rate of combustibility no greater than Class 2 filters conforming to CAN4-S111, "Standard Method of Fire Tests for Air Filter Units".

#### Fan blades and casings

5.12.2.4. (1) Except as permitted in Sentence (2), fan blades and casings in exhaust blowers for spray booths shall be nonferrous.

(2) Ferrous material for the fan blades and casings may be approved if the exhaust blower is designed, constructed and maintained to prevent two ferrous parts from rubbing or striking each other under all operating conditions.

### Ventilation Subsection 5.12.3.

#### Ventilation

5.12.3.1. Ventilation shall be provided in all spraying areas to maintain the concentration of flammable vapours and combustible dusts at or below 25 per cent of their lower explosive limit.

Air velocity

5.12.3.2. Except as provided in Article 5.12.3.3., the exhaust air velocity at the face of the spray booth shall be at least 30 m/min.

5.12.3.3. Electrostatic spraying shall have an exhaust air velocity of at least 18 m/min at the face of the spray booth.

Combined ducting

5.12.3.4. A separate exhaust duct shall be provided for each spray booth, except that a common duct may be used if it serves spray booths having a combined open frontal area of not more than 1.8 m<sup>2</sup>.

Exhaust air

5.12.3.5. Air exhausted from spray operations shall not be recirculated, except where recirculation is acceptable, as described in NFPA 33, "Spray Application Using Flammable and Combustible Materials".

Monitoring air velocity

5.12.3.6. (1) Gauges or alarms that indicate when the air velocity is less than the air velocity required by Article 5.12.3.2. or 5.12.3.3. shall be installed for spray booths.

(2) When the gauge or alarm indicates that the air velocity is less than that required by Article 5.12.3.2. or 5.12.3.3., immediate corrective action shall be taken to remedy the condition that has resulted in the reduction of the ventilation.

Exhaust Ducts Subsection 5.12.4.

Duct support and construction

5.12.4.1. Exhaust ducts for spray booths shall be securely supported and constructed of sheet steel in conformance with Table 5.12.4.A.

TABLE 5.12.4.A.

Forming Part of Article 5.12.4.1.

Maximum Dimension of Duct	Minimum Thickness Of Sheet Steel, mm
Up to 200 mm incl.	0.56
Over 200 mm to 450 mm incl.	0.69
Over 450 mm to 750 mm incl.	0.86
Over 750 mm	1.14
Column 1	2

Clearances

5.12.4.2. Except as provided in Article 5.12.4.3., a clearance of 457 mm shall be maintained between ducts venting spray booths and unprotected combustible material.

Collars

5.12.4.3. (1) Where exhaust ducts pass through combustible roofs or partitions, metal collars shall provide not less than a 100 mm clearance between the duct and combustible material.

(2) The space between the duct and combustible material shall be sealed with noncombustible insulating material.

Access doors

5.12.4.4. Exhaust ducts for spray booths shall be provided with access doors for cleaning purposes.

Exhaust outlet locations

5.12.4.5. (1) Except for water-wash types, the exhaust outlet to atmosphere from spray booths shall

(a) be 1.8 m from any combustible exterior wall or roof, and

(b) be located so that the air does not discharge toward any combustible surface or unprotected opening within 7.5 m.

Electrical Equipment Subsection 5.12.5.

Hazardous locations

5.12.5.1. Electrical equipment within the spraying area including lighting fixtures shall conform to Part 1, Sections 18 and 20 of the Electrical Safety Code made under the Electricity Act, 1998.

Motors for exhaust fans

5.12.5.2. Electric motors for exhaust fans shall not be placed inside spray booths or ducts.

Grounding

5.12.5.3. Metal parts of spray booths, exhaust ducts and piping systems conveying flammable or combustible liquids shall be electrically grounded.

Flammable and Combustible Liquids Subsection 5.12.6.

Storage and handling

5.12.6.1. (1) Flammable and combustible liquids for use in spraying areas shall be stored and handled in an approved manner.

(2) The amount of flammable and combustible liquids in the spraying areas shall not exceed one day's supply.

Paint storage

5.12.6.2. Paint shall be kept in closed containers when not in use.

Thinners and solvents

5.12.6.3. Thinners and solvents shall be dispensed only from listed and labelled safety cans.

Pump discharge relief valves

5.12.6.4. Where flammable liquids are supplied to spray nozzles by positive displacement pumps, the pump discharge line shall be provided with a suitable relief valve discharging to the pump suction or to a safe remote location.

Control of Fire Hazards Subsection 5.12.7.

Interlocks

5.12.7.1. The spraying equipment for a spray booth shall be interlocked to shut down in the event of failure of the ventilation system, failure of the circulating water pump of a water-wash system or failure of the filter roll-down mechanism of a dry spray booth.

Cleaning and residue disposal

5.12.7.2. (1) The inner surface of spray booths shall be cleaned of combustible residue as often as necessary to prevent a fire hazard.

(2) Combustible residue from cleaning operations shall, on the same day as the cleaning operations, be removed from the premises or placed in receptacles conforming to Articles 2.4.1.9. and 2.4.1.10.

#### Filter pads and rolls

5.12.7.3. Discarded filter pads and filter rolls shall be removed to a safe location or placed in a water-filled metal container and disposed of after each day's operation.

#### Filters prohibited

5.12.7.4. A water-wash spray booth shall be used when applying spray material that is susceptible to spontaneous heating.

#### Heating equipment

5.12.7.5. Space-heating appliances, steam pipes and other hot surfaces shall not be located in an area where deposits of combustible residue may accumulate.

#### Ignition sources

5.12.7.6. Open flame or spark producing devices shall not be used within a spraying area, unless separated therefrom by a vapour-tight fire separation having a 1-hr fire-resistance rating.

#### Fire Protection Equipment Subsection 5.12.8.

##### Portable extinguishers

5.12.8.1. Portable extinguishers shall be installed near spraying areas in conformance with Section 6.2.

##### Sprinkler installations

5.12.8.2. (1) Except as permitted in Sentences (2) and (3), automatic sprinkler protection shall be provided in each spraying area, spray booth and spray room in conformance with NFPA 13, "Installation of Sprinkler Systems".

(2) Where spraying operations are confined within a spray booth, fire protection may be provided for the spray booth only, in conformance with NFPA 33, "Spray Application Using Flammable or Combustible Materials".

(3) This Article does not apply where the existing situation is approved and does not endanger life safety, or approved alternative measures to the requirements set out in this Article are taken to provide life safety.

##### Sprinkler head protection

5.12.8.3. (1) Sprinkler heads in spray booths shall be protected with lightweight paper or thin polyethylene bags.

(2) Bags protecting sprinkler heads shall be replaced before they have accumulated excessive deposits.

### *Signs*

6.2.1.5. The location of portable extinguishers shall be prominently indicated by signs or markings in large **floor areas** and in locations where visual obstructions cannot be avoided.

6.2.1.6. Portable extinguishers in proximity to a fire hazard shall be located in a position so as to be accessible without exposing the operator to undue risk.

### *Distance above floor*

6.2.4.2. Portable extinguishers with a gross weight greater than 18 kg shall be installed so that the top of the extinguisher is not more than 1.1 m above the floor when the extinguisher is not equipped with wheels.

6.2.4.3. Portable extinguishers having a gross weight of 18 kg or less shall be installed so that the top of the extinguisher is not more than 1.5 m above the floor.

### *Examination*

6.2.7.2. Portable extinguishers shall be **inspected** monthly.

### *Tags*

6.2.7.4. (1) Each portable extinguisher shall have a tag securely attached to it showing the maintenance or recharge date, the servicing agency and the signature of the person who performed the service.

(2) Sentence (1) does not apply where other **approved** records are maintained that show the maintenance or recharge date, the servicing agency and the signature of the person who performed the service.

### *Maintenance records*

6.2.7.5. A permanent record containing the maintenance date, the examiner's name and a description of any maintenance work or hydrostatic **testing** carried out shall be prepared and maintained for each portable extinguisher.