

## SHIPPING CONTAINERS

### PURPOSE

The purpose of this bulletin is to clarify the application of the Alberta Fire Code 2014 (AFC 2014) to shipping containers (SeaCans) used for storing flammable liquids, combustible liquids, explosives and/or dangerous goods.

### DISCUSSION

Shipping containers present a unique challenge when storing materials and equipment. The structure of the container needs to be considered to ensure it provides proper ventilation and separation of stored goods in conformance with the requirements of the Alberta Building Code 2014 (ABC 2014) and the AFC 2014.

Injuries and fatalities to first responders have occurred where the storage of equipment in shipping containers with small amounts of flammable liquids, including liquids contained within the fuel tanks of hand held power equipment, are subjected to fire conditions.

Inquiries from safety codes officers and the general public regarding the safe storage of flammable liquids, combustible liquids, explosives and or dangerous goods within shipping containers, while used as a temporary or permanent storage building, has prompted this bulletin.

The AFC 2014 provides references to the proper storage of flammable liquids, combustible liquids, explosives and or dangerous goods both inside and outside of buildings. It also outlines the requirement for a fire safety plan to be created and approved by the local Authority Having Jurisdiction (AHJ). The shipping container(s) and their contents should be identified on the fire safety plan.

Shipping containers must also be properly ventilated, to prevent the buildup of explosive gases/fumes, and should be located away from combustible structures or materials and apart from ventilation/HVAC systems.

As a best practice, placarding of the shipping container(s) on the exterior of the container or within the area of which the container is located is recommended. Placards provide necessary information for emergency service personal of the dangerous goods that are located within the area.

The owner of a shipping container and the local AHJ should discuss the requirements and application of the AFC 2014. An owner should also contact the local AHJ to ensure there are no bylaws for that community that prohibits the use of shipping containers used for the storage of flammable liquids, combustible liquids and explosives and/or dangerous goods.

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Unless stated otherwise, all Code references in this STANDATA are to Division B of the Alberta Fire Code 2014.

Issue of this STANDATA is authorized by  
the Provincial Fire Administrator

*[Original Signed]*  
Tina Parker



## CODE REFERENCES

1. Article 3.1.1.1 states:

**Application**

1) This Part applies to the storage of combustible products and *dangerous goods*, both inside and outside of *buildings*. (See Appendix A.)

2. Article 3.1.2.6. states:

**Fire Safety Plan**

1) In addition to the information required in Section 2.8., where *dangerous goods* are stored or handled, the fire safety plan shall include the names, addresses and telephone numbers of persons to be contacted in case of fire during non-operating hours.

2) When the *dangerous goods* referred to in Sentence (1) consist of Class 7 radioactive materials, the fire safety plan shall also include

- a) methods to control a fire emergency and to recover radioactive materials and equipment containing radioactive materials safely and efficiently,
- b) the names, addresses and telephone numbers of primary and alternative sources of expert radiation safety advice and assistance, and
- c) the location of primary and alternative sources of radiation survey instruments.

3. Article 3.2.7.14 states:

**Placards**

1) *Individual storage areas* used for the storage of *dangerous goods* shall be clearly designated as such by posted placards conforming to TC SOR/2001-286, "Transportation of Dangerous Goods Regulations (TDGR)," and Sentences (2) to (4). (See Appendix A.)

2) Where storage consists of a single product, only the UN number need be posted.

3) Where storage consists of multiple products within the same class, the individual class and division placard shall be posted.

4) Where storage consists of more than one class of products, a placard for each individual class, or the "Danger" placard shown in TC SOR/2001-286, "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.

4. Article 4.1.7.1. states:

**Rooms or Enclosed Spaces**

1) Where *flammable liquids* and *combustible liquids* are processed, handled, stored, dispensed or used within rooms or enclosed spaces, ventilation shall conform to this Part and the ABC. (See Appendix A.)

5. Article 4.1.5.5. states:

**Emergency Planning**

1) Except as provided in Sentence (2), emergency planning measures conforming to Section 2.8. shall be provided for all *buildings*, parts of *buildings* and open areas described in Article 4.1.1.1.

2) The fire safety plan required as part of the emergency planning measures in Sentence (1) shall be retained on site for reference by the *authority having jurisdiction* and personnel.

6. Section 4.2. Container Storage and Handling, Article 4.2.1.1. states:

**Application**

- 1) Except as provided in Sentence (2), this Section shall apply to the storage, handling and use of *flammable liquids* or *combustible liquids* that are in
- a) containers conforming to Clauses 4.2.3.1. (1)(a) to (d) having an individual capacity of not more than 230 L,
  - b) portable tanks conforming to Clause 4.2.3.1.(1)(e) having an individual capacity of not more than 2 500 L, or
  - c) intermediate bulk containers conforming to Clause 4.2.3.1.(1)(a) having an individual capacity of not more than 3 000 L.

7. Subsection 4.2.2. General states:

**4.2.2.1. Prohibited Locations**

- 1) *Flammable liquids* or *combustible liquids* shall not be stored in or adjacent to *exits*, elevators or principal routes that provide *access to exits*.

**4.2.2.2. Storage Arrangement**

- 1) In addition to the provisions of this Section, the method of storage of *flammable liquids* and *combustible liquids* shall be determined to ensure the physical and chemical stability of the stored products.

**4.2.2.3. Separation from Other Dangerous Goods**

- 1) Except as provided in Sentence (2), *flammable liquids* and *combustible liquids* shall be separated from other *dangerous goods* in conformance with Sections 3.2. and 3.3.  
2) For the purposes of applying Table 3.2.7.6., Class IIIA liquids shall be treated as Class 3 *dangerous goods*. (See Appendix A.)

8. Article 1.4.1.2. Defined Terms states:

*Approved* means acceptable to the *Chief Fire Administrator*.

*Authority having jurisdiction* means a safety codes officer in the fire discipline exercising authority pursuant to designation of powers and terms of employment in accordance with the *Safety Codes Act*. (See Appendix A.)

*Building* means any structure used or intended for supporting or sheltering any use or *occupancy*.

*Closed container* means a container sealed by means of a lid or other device such that neither liquid nor vapour will escape from it at ordinary temperatures.

*Combustible liquid* means a liquid having a *flash point* at or above 37.8°C and below 93.3°C. (See Subsection 4.1.2. of Division B.)

*Dangerous goods* means those products or substances that are regulated by TC SOR/2001-286, "Transportation of Dangerous Goods Regulations (TDGR)." (See Table 3.2.7.1. of Division B.)

*Flammable liquid* means a liquid having a *flash point* below 37.8°C and having a vapour pressure not more than 275.8 kPa (absolute) at 37.8°C as determined by ASTM D 323, "Vapor Pressure of Petroleum Products (Reid Method)." (See Subsection 4.1.2. of Division B.)

**Disclaimer:**

*The information in this bulletin is not intended to provide professional design advice. If professional expertise is required with respect to a specific issue or circumstance, the services of a professional should be sought.*