



Fuels Safety Program	Ref. No.: FS-143-24
Compressed Gas Code Adoption Document Amendment	Date: July 2, 2024

IN THE MATTER OF:

Technical Standards and Safety Act, 2000, R.S.O. 2000, c. 16,
Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), *and*
Ontario Regulation 214/01 (Compressed Gas)

The Director for the purposes of Ontario Regulation 214/01 (Compressed Gas), pursuant to sections 3(1) and 3(2) of Ontario Regulation 223/01 (Codes and Standards Adopted by Reference) hereby provides notice that the Compressed Natural Gas Code Adoption Document published by Technical Standards and Safety Authority dated June 1, 2001, as amended, is further amended as follows:

All sections of the Compressed Gas Code Adoption Document dated June 1, 2001, are hereby replaced with the following, and all previous amendments thereto are thereby superseded:

Background:

This amendment to the Compressed Gas Code Adoption Document (CAD) revokes and replaces the previous amendment (FS-143-09, published February 18, 2009).

The most significant changes from the previous CAD amendment are the adoption of the following codes:

- New edition of the Compressed Natural Gas Refuelling Stations Installation Code, CSA B108.1:23, published by the Canadian Standards Association group (CSA);
- New edition of the Compressed Natural Gas and Hydrogen Refuelling Station Pressure Piping Systems and Ground Storage Vessels, CSA B51:19 (R2024), Part 3, published by CSA;
- New edition of the Canadian Hydrogen Installation Code, BNQ1784-000/2022, published by the Bureau de Normalisation du Québec;
- New edition of the Compressed Natural Gas Vehicle Installation Code, CSA B109.1-21, published by CSA; and
- New code, Natural Gas Vehicle (NGV) Maintenance Facilities Code, CSA B401.1-21, published by CSA.

Where there is a conflict between this document and a code, standard or publication adopted by this document, this document prevails.

SECTION 1: DEFINITIONS

In this Code Adoption Document Amendment:

"Electrical Safety Code" has the same meaning as in section 1 of Ontario Regulation 164/99 (Electrical Safety Code) made under the *Electricity Act, 1998*, as amended from time to time;

"full-service station" means a refuelling station at which only an operator or a station attendant is permitted to operate the refuelling equipment;

"operator" means a person who is responsible for the day-to-day operation of a refuelling station, whether or not the person is on the premises of the station during hours of operation; and

"Station attendant" means a person present at a refuelling station who is responsible for the supervision of dispensing equipment and dispensing operations at the facility.

SECTION 2: STANDARD FOR COMPRESSED NATURAL GAS PRESSURE PIPING AND STORAGE

The standard CSA B51:19 (R2024), Part 3 entitled "Compressed natural gas and hydrogen refuelling station pressure piping systems and ground storage vessels", is adopted.

SECTION 3: STANDARD FOR NATURAL GAS REFUELLING STATIONS

The standard CSAB108.1:23 entitled "Compressed natural gas refuelling stations installation code" is adopted with the following amendments:

(3.1) Section 3, the title of the definition of "Station" is amended as follows:

Station (includes filling and decanting stations)

(3.2) Section 4.1 is revoked and substituted with the following:

In the event of a discrepancy between this Code and the Electrical Safety Code with respect to the definition of the electrical classified areas for CNG stations, the requirements of this Code shall take precedence.

(3.3) Clause 4.6 is amended to add the following subclauses:

4.6.1

Where the dispensing pressure is controlled by an electronic temperature-compensating pressure limiting device, the licensee shall ensure the system is checked at least once every six months and shall

- a) record the date of the check, the ambient temperature, the dispensing pressure, and the temperature-compensated dispensing pressure;
- b) maintain the record at the site for at least two years after it is made; and
- c) produce the record, upon request, for examination by an inspector.

4.6.2

If the check indicates that the dispenser pressure is more than the approved allowable pressure, the licensee shall immediately

- a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and
- b) cease all dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Code.

4.6.3

The person performing the checks referred to in clause 4.6.1 and 4.6.2 for the licensee shall have a certificate for the purpose.

(3.4) Section 4 is amended by adding the following clause:

4.19 Signs

4.19.1

A sign shall be erected in a conspicuous place at a refuelling station stating the name and telephone number of the local gas utility to be notified in case of emergency and shall be at least 220 mm (9 in) in height and 280 mm (11 in) in width with letters or numbers at least 45 mm (1 3/4 in) in height.

4.19.2

Signs shall be prominently displayed at every self-serve attended station, readily visible to operators of vehicles approaching a natural gas dispenser from any direction, indicating that high profile trucks and vans are not permitted to enter the lane between the dispenser and the kiosk.

(3.5) Clause 6.5 is amended by adding the following subclause:

6.5(c)

A CNG storage facility shall not be located within 6 m (20 ft) of aboveground storage of any liquid fuel.

(3.6) Clause 6.10 is amended by adding the following subclause:

6.10(d)

Where a fence is made of combustible material, the fence shall not be closer than 1.5 m (5 ft) to any container.

(3.7) Clause 7.1(c) of Table 3 is amended to add the following:

7.1(c) Table 3 – Clearances from a CNG dispensing point

The minimum distance between an underground gasoline storage tank vent and a dispensing point shall be 7.5 m (25 ft) measured horizontally.

(3.8) Clause 7.6 is amended to add the following:

7.6.1

The licensee to operate a retail outlet shall ensure that each station attendant in control of the equipment is instructed to meet the following conditions:

- a) use a two-way communication system in operation to communicate with persons at a natural gas dispenser monitored by the station attendant;
- b) has an unobstructed view, at all times, of each natural gas dispenser monitored by the attendant and of persons operating each dispenser;
- c) has been trained in the operation of an emergency shut-down switch that is within easy reach of the console and that can simultaneously shut off all dispensers at the station regardless of the product being dispensed; and
- d) is controlling the refuelling operation from a distance less than 18.5 m (60.7 ft) from any dispenser.

7.6.2

A licensee to operate retail outlet is not required to comply with clause 7.6.1 (b) or (d) if the station is equipped with a system of video monitoring that

- a) provides the station attendant with a continuous view of the dispensing equipment; and
- b) automatically turns off all dispensers monitored by the system if the monitoring system fails.

7.6.3

A station attendant referred to in subsection 7.6.1 at a retail outlet where self-serve dispensing occurs shall

- a) not activate a dispenser unless it is safe to do so;
- b) attend the console at all times while a dispenser is in use;
- c) if a fire, explosion, natural gas release, fuel spill or any other hazardous condition occurs at the station, activate an emergency shut-down switch to shut-off all dispensers at the station, regardless of the product being dispensed, until a safe condition has been restored; and
- d) operate the station in accordance with its operating manual.

(3.9) Clause 7.9.1 is amended to add the following:

7.9.1 (g)

The licensee of a refuelling station shall ensure signage is present at the station stating that vehicle owners are responsible for ensuring that cylinders are periodically inspected, retested, and decommissioned after expiry, and that provides sources for more information.

(3.10) Clause 8.8 is amended to add the following:

8.8.1

Where the dispensing pressure is controlled by a dome-load type system, the licensee shall ensure the dispensing pressure is checked at least once every two weeks and shall

- a) record the date of the check, the ambient temperature, the dispensing pressure, and the temperature-compensated dispensing pressure;

- b) maintain the record at the site for at least two years after it is made; and
- c) produce the record, upon request, for examination by an inspector.

8.8.2

If the check reveals that the dispensing pressure is more than the approved allowable pressure, the licensee shall immediately

- a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and
- b) cease all dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Code.

8.8.3

The person performing these checks referred to in 8.8.1 and 8.8.2 for the licensee shall have a certificate for the purpose.

(3.11) Clause 15.1 is amended to add the following:

15.1.1

Where the dispensing pressure is controlled by an electronic temperature-compensating pressure-limiting device, the licensee shall ensure the system is checked at least once every six months and shall

- a) record the date of the check, the ambient temperature, the dispensing pressure; and the temperature compensated dispensing pressure;
- b) maintain the record at the site for at least two years after it is made; and
- c) produce the record, upon request, for examination by an inspector.

15.1.2

If the check reveals that the dispenser pressure is more than the approved allowable pressure, the licensee shall immediately

- a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and
- b) cease all dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this Code.

15.1.3

The person performing these checks referred to in 15.1.1 and 15.1.2 for the licensee shall have a certificate for the purpose.

(3.12) Annex A is adopted as normative with the following amendments:

3.12.1 Clause A.1.1 (Paragraph 1) is revoked and substituted with the following:

Each CNG operating company shall develop, implement, and maintain written procedures to keep the personnel in its CNG station up to date on the function of the systems, operations and maintenance, fire prevention, and security at the station. The owner and/or operator of the CNG station shall be responsible for the operation, maintenance, and training of personnel and shall meet, at a minimum, the requirements set out in this Code. All maintenance activities that shall be undertaken by the system owner shall be specified, along with their frequency, in an operator's manual and a maintenance logbook shall be kept at each station available for inspection.

3.12.2 Clause A.1.5 is revoked and substituted with the following:

CNG vessels and pressure relief valves shall be inspected at least every five years.

3.12.3 Clause A.2.4 is revoked and substituted with the following

Maintenance shall be undertaken by a person holding a certificate for that purpose.

3.12.4 Clause A.3.8 is modified by revoking the last sentence of the clause and substituting it with

Training shall be conducted prior to dispensing CNG, and retraining shall be conducted as specified in the

manufacturer's instructions.

SECTION 4: STANDARD FOR COMPRESSED HYDROGEN REFUELLING STATION

The National Standard of Canada CAN/BNQ 1784-000/2022 entitled "Canadian Hydrogen Installation Code", is adopted with the following amendments:

(4.1) Clause 4.3.6 is modified by revoking the first sentence and substituting it with the following:

Personnel shall be trained on the safe handling and operation of gaseous and liquid hydrogen systems as per Clause 4.2 of CAN/BNQ 1784-000/2022.

(4.2) Clause 7.4.1.2 is revoked and substituted with the following:

Gaseous hydrogen piping and fittings shall be designed and installed in accordance with the applicable requirements of the documents ASME B31.1, ASME B31.3 or ASME B31.12 and shall be approved by the director prior to being put into use.

(4.3) Clause 7.4.3.1 is modified by revoking the last sentence and substituting with the following:

Aboveground piping shall be supported and anchored in accordance with the documents ASME B31.1, ASME B31.3 or ASME B31.12.

(4.4) Clause 7.4.3.3 is revoked and substituted with the following:

Welding and brazing procedures shall be performed in accordance with the document CSA B51, Part 1. The qualification of welders, welding operators and brazers shall comply with the requirements of Section IX of the document ASME BPVC.

(4.5) Clause 7.8.1.1 is revoked and substituted with the following:

Containers for stationary storage of gaseous hydrogen shall have a Canadian Registration Number (CRN) and comply with Clause 7.8.1.2 or shall comply with Clause 7.8.1.3.

(4.6) Clause 7.8.1.3 is amended by revoking the paragraph after 7.8.1.3(f).

(4.7) Clause 7.12.7.2.5 is revoked and substituted with the following:

Upon completion of an installation, the installer shall inform the system owner, operation personnel and regional mine rescue personnel of the correct and safe use of all mine hydrogen equipment and piping systems and their accessories to a level acceptable by the provincial or territorial mining authority. The installer shall ensure that a copy of the manufacturer's instructions provided with the equipment are left with the system owner, regional mine rescue personnel and mine regulatory authority.

(4.8) Clause 7.15.2.1 is amended to add the following subclauses:

- a) The operator of a hydrogen vehicle shall turn off the engine of the vehicle before refuelling the vehicle at a refuelling station.
- b) No person shall use or possess at a refuelling station a lit smoking or vaping product or any other source of ignition within three metres (10 feet) of the dispensing point of hydrogen, a vehicle refuelling receptacle, or a container being refueled.
- c) No person shall refuel a hydrogen vehicle at a refuelling station unless
 - i) the engine of the vehicle has been turned off; and
 - ii) the main burner and pilot light, if any, of an appliance on the vehicle has been turned off.
- d) The licensee to operate a fast fill hydrogen refuelling station shall prepare or cause to be prepared an

operating manual for the station that sets out the general operating procedures of the station, including procedures for the station regarding security, safety requirements, emergency procedures and routine maintenance.

- e) The licensee to operate a hydrogen fast fill refuelling station shall
 - i) ensure that each station operator and station attendant has read and understands the operating manual for the station;
 - ii) keep the operating manual at the station for use by the operator and the attendant;
 - iii) make the operating manual for the station available, on request, for examination by an inspector; and
 - iv) keep and maintain records at the facility signed by the employee confirming such training.
- f) The licensee to operate a hydrogen retail outlet shall ensure that each station attendant in control of the refuelling equipment is instructed to meet the following conditions:
 - i) has a two-way communication system in operation to communicate with persons at a hydrogen gas dispenser monitored by the station attendant;
 - ii) has an unobstructed view of each hydrogen dispenser monitored by the attendant and of a person operating the dispenser;
 - iii) has been trained in the operation of an emergency shut-down switch that is within easy reach of the console and that can simultaneously shut off all dispensers at the station regardless of the product being dispensed; and
 - iv) is controlling the refuelling operation from a distance less than 18.5 metres (60.7 feet) from any dispenser.
- g) A licensee to operate a hydrogen retail outlet is not required to comply with clause 7.15.2.1(f)(ii) or (iv) if the station is equipped with a system of video monitoring that
 - i) provides the station attendant with a continuous view of the dispensing equipment; and
 - ii) automatically turns off all dispensers monitored by the system if the monitoring system fails.
- h) An attendant referred to in subsection 7.15.2.1(f) at a retail outlet where self-serve dispensing occurs shall
 - i) not activate a dispenser unless safe dispensing can start;
 - ii) be in constant attendance at the console while a dispenser is in use;
 - iii) if a fire, explosion, hydrogen gas release, fuel spill or any other hazardous condition occurs at the station, activate an emergency shut-down switch to shut-off all dispensers at the station, regardless of the product being dispensed, until a safe condition has been restored; and
 - iv) operate the station in accordance with the operating manual for the station.

(4.9) Clause 7.16.1 is modified by revoking the last sentence of the clause and substituting with the following:

The maintenance program shall be provided to the AHJ upon request.

(4.10) Clause 7.16.5 is amended to include the following subclause:

7.16.5(d)

If the check reveals that the dispenser pressure is more than the approved allowable pressure, the licensee shall immediately

- (a) have the temperature-compensating pressure-limiting device of the system checked and serviced; and
- (b) cease all hydrogen dispensing operations at the refuelling station until the device is operating in accordance with the requirements of this code.

7.16.5(e)

The person performing these checks shall have a certificate for the purpose.

SECTION 5: STANDARD FOR CONVERTING VEHICLES TO COMPRESSED NATURAL GAS

The standard CSA B109.1:21 entitled "Compressed natural gas vehicle installation code" is adopted with the following amendments:

(5.1) Clause 4.1.2 is amended by adding:

For OEM vehicles requiring repairs or parts, the repairs or parts shall meet the specifications of the OEM.

(5.2) Clause 4.1.3 (d) is revoked and substituted with the following:

4.1.3(d)

That there is a Canadian registration number (CRN) for the container.

(5.3) Clause 4.2.1 is amended by adding:

For OEM vehicles requiring repairs or parts, the repairs or parts shall meet the specifications of the OEM.

(5.4) Clause 5.3.3.1 is revoked and substituted with the following:

5.3.3.1

Each fuel container or assembly shall be protected by one or more PRDs as required by the fuel container manufacturer and in compliance with CSA/ANSI PRD 1 as specified by the container manufacturer. The installer shall verify that the capability of the PRD system to protect the containers has been tested according to the fire test of NGV2, NGV6.1, or CRN.

(5.5) Clause 5.7.4.1(c) is revoked and substituted with the following:

5.7.4.1(c)

(c) have a Canadian registration number (CRN)

(5.6) Clause 6.2 is amended to add the following subclause:

6.2.7

If a container installed on the exterior of a vehicle is subsequently enclosed, it shall be retested under the requirements of clause 6.2 of CSA B109.1-21.

SECTION 6: STANDARDS FOR VEHICLE CONVERSION CENTRES

The standard CSA B401.1:21 entitled "Natural gas vehicle (NGV) maintenance facilities code" is adopted with the following amendments:

(6.1) Clause 5.8.2.1(i) is revoked and substituted with the following:

5.8.2.1(i)

The gas safety control system shall include a rechargeable source of standby power to maintain the operation of instrumentation, controls, and annunciators for at least 4 hours in standby mode as a minimum. Standby power to operate purge fans is not required.

(6.2) Clause 5.8.4 is revoked and substituted with the following:

5.8.4

Fire-detection and fire-alarm systems and fire suppression systems shall be provided in accordance with local regulations and installed in accordance with the manufacturer's instructions.

This amendment is effective September 2, 2024.

DATED this 2nd day of July 2024.



Kelly Hart

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