



## Alberta Pressure Piping Contractors Association

**To:** Members of our Supply Chain

**From:** Alberta Pressure Piping Contractors Association (APPCA) on behalf of:

- International Pressure Equipment Integrity Association (IPEIA) Integrity Challenges Forum Task Group #4
- Alberta Welding Optimization Committee (AWOC)
- Alberta Refinery and Petrochemical Inspection Association (ARPIA)
- Contract Chief Inspectors Association (CCIA)
- Upstream Chief Inspectors Association (UCIA)
- Saskatchewan Integrity Association (SIA)

**Date:** 2025-January-24

**Subject:** CSA B51:24 and the use of off-the-shelf Carbon Steels for pressure-containing applications

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In April 2024, CSA released the new 2024 edition of CSA B51 (“CSA B51:24”). Alberta’s Jurisdictional Authority, ABSA, has not yet declared CSA B51:24 to be “in force” (see ABSA Information Bulletin No. IB24-002, <https://www.absa.ca/media/2534/ib24-002r5.pdf>), but that could change as early as April 2025. Please note that some provincial Jurisdictional Authorities will be declaring CSA B51:24 in force shortly (e.g., in British Columbia, CSA B51:24 will become in force on December 31, 2024).

While CSA B51:24 underwent a significant re-write, some of the most critical changes are in clauses 6.2.6 and 6.3.7 (please see excerpts on the next page). These clauses require most pressure-containing carbon steels to undergo Charpy V-Notch (CVN) testing even if the material specifications do not require impact testing (e.g., ASTM A105 / ASME SA 105). For pressure vessel carbon steels, CVN test results shall be reported directly on the MTR, while for pressure piping, 3rd party CVN test reports may be used for existing stock material.

If CSA B51:24 becomes “in force” as it is currently written, this could introduce substantial risk to suppliers, fabricators, and End Users when purchasing or using carbon steels for pressure vessels or piping such as:

- Supplemental CVN testing of existing stock materials may cause cost increases and schedule delays.
- Supplemental CVN testing may identify existing batches of regular carbon steels (e.g., A/SA 105, A/SA 106 Gr. B, or A/SA 234 WPB) as being unusable for registered pressure-containing applications.
- Short term demand for low temperature carbon steels (e.g., A/SA 350 LF2, A/SA 333 Gr. 6, or A/SA 420 WPL6) may increase dramatically while industry determines a path forward for purchasing or using carbon steels that don’t by default undergo CVN testing by the original manufacturer.

Please note that suppliers are encouraged to review and compare CSA B51:24 with the previous edition (CSA B51:19) for a full understanding of the changes to technical requirements.

Best regards,

Joel Pepin  
Chair - APPCA



CSA B51:24 para 6.2.6.1 and 6.2.6.2: (applies to all carbon steels intended for use in pressure vessels)

#### **6.2.6.1 Impact testing requirements for carbon steel pipe, fittings, and forgings**

Except as indicated in Clause [6.2.6.2](#), all carbon steel pipe, fittings, and forgings for pressure vessels listed in the applicable code of construction shall comply with the following regardless of an allowable exemption by the applicable code of construction:

- a) The carbon steel shall meet the Charpy V-Notch impact testing requirements and acceptance criteria of the applicable code of construction.
- b) The carbon steel shall be Charpy V-Notch impact tested following the procedures of the applicable code of construction for impact tested materials of the same form. Test specimens, if full size, shall have a minimum average Charpy V-Notch impact energy of 18 J (13 ft-lbf) at the test temperature, with no single test value being less than 14 J (10 ft-lbf). Acceptance criteria for sub-sized specimens, if used, shall follow the requirements of the code of construction. The test temperature for full and sub-sized specimens shall be the lower of 0 °C (32 °F) or the minimum design metal temperature.
- c) Charpy V-Notch impact testing temperature and results shall be reported on the material test reports.

#### **6.2.6.2 Impact testing exemption for pressure vessels**

Impact testing as specified in Clause [6.2.6.1](#) is not required

- a) when the thickness of the component is less than 2.5 mm (0.098 in); or
- b) for MDMT not below -46 °C (-50 °F), when the design analysis shows the stress ratio as defined in the applicable code of construction is equal to or less than 0.3.

CSA B51:24 para 6.3.7.1 and 6.3.7.2: (applies to all carbon steels used for pressure piping)

#### **6.3.7.1 Impact testing requirements for carbon steel pipe, fittings, and forgings**

Except as indicated in Clause [6.3.7.2](#), all carbon steel pipe, fittings, and forgings for pressure piping with minimum design metal temperatures lower than 0 °C and having a stress ratio greater than 0.3, or for materials with a thickness equal to or greater than 2.5 mm (0.098 in), shall comply with the following:

- a) The carbon steel shall meet the Charpy V-Notch impact testing requirements and acceptance criteria of the applicable code of construction.
- b) The carbon steel shall be Charpy V-Notch impact tested following the procedures of the applicable code of construction for impact tested materials of the same form. Test specimens, if full size, shall have a minimum average Charpy V-Notch impact energy of 18 J (13 ft-lbf) at the test temperature, with no single test value being less than 14 J (10 ft-lbf). Acceptance criteria for sub-sized specimens, if used, shall follow the requirements of the code of construction. The test temperature for full and sub-sized specimens shall not be greater than 0 °C (32 °F).
- c) Charpy V-Notch impact testing temperature and results shall be reported
  - i) on the material test reports; or
  - ii) on a stamped and certified supplementary document accompanying the original material test report, which must be retained with quality control records, when the testing is performed on existing stock material.

#### **6.3.7.2 Impact testing exemption for piping**

Impact testing as specified in Clause [6.3.7.1](#) is not required when

- a) the thickness of the component is less than 2.5 mm (0.098 in); or
- b) the design analysis shows the stress ratio as defined in the applicable code of construction is equal to or less than 0.3.