

5230.0220 BIOPROCESS PIPING.

Subpart 1. **ASME BPE.** All bioprocess piping must meet the requirements of ASME BPE. For purposes of this chapter, "ASME BPE" means the 20~~19~~¹⁶ edition of the Bioprocessing Equipment Standard adopted and published by ASME, Two Park Avenue, New York, New York 10016. ASME BPE is incorporated by reference and made part of the code for high pressure piping systems. ASME BPE is not subject to frequent change and a copy of ASME BPE is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

Subp. 2. **Examination of welded pipe joints.** All welds on bioprocess piping systems must comply with the visual examination acceptance standards in sections MJ-8.3 to MJ-8.4 of ASME BPE. When nondestructive examination other than visual examination is required by job specification or by the administrative authority, the welds must comply with the acceptance standards in sections MJ-8.3 to MJ-8.4 of ASME BPE for each type of nondestructive examination required. All costs of nondestructive testing shall be paid by the installing contractor. The contractor shall provide a copy of all examination results to the administrative authority upon request.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

CODE FOR STEAM OR HEATING MEDIA PIPING SYSTEMS

5230.0250 MINIMUM STANDARDS.

Parts 5230.0250 to 5230.0335 form the code for steam or heating media piping systems. This code prescribes minimum requirements for design, manufacture, test, and installation of steam or heating media piping systems.

Statutory Authority: *MS s 326.46; 326B.90; 326B.925*

History: *L 2007 c 140 art 10 s 11; art 13 s 4; 34 SR 145*

Published Electronically: *September 16, 2009*

5230.0260 SCOPE.

Valves, fittings, and piping for boilers, as prescribed in the ASME Code for Power Boilers, are within the scope for this code but provisions of the ASME Code for Power Boilers shall govern where they exceed corresponding requirements of this code. For purposes of this chapter, "ASME Code for Power Boilers" means the ~~2017~~ 2021 edition of the ASME Boiler and Pressure Vessel Code, section I, as adopted and published by ASME, Two Park Avenue, New York, New York 10016. The ASME Code for Power Boilers is incorporated by reference in the code for steam or heating media piping systems. The ASME Code for Power Boilers is not subject to frequent change and a copy is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

Economizers, heaters, tanks, and other pressure vessels are outside the scope of this code, but connecting piping shall conform to the requirements herein specified.

Statutory Authority: *MS s 326.46; 326B.90; 326B.925*

History: *L 2007 c 140 art 10 s 11; art 13 s 4; 34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.0265 ADOPTION OF ASME B31.1 BY REFERENCE.

For purposes of this chapter, "ASME B31.1" means the ~~2016~~ 2020 edition of the standard for power piping, as approved and published by ASME, Two Park Avenue, New York, New York 10016. ASME B31.1 is incorporated by reference and made part of the code for steam or heating media piping systems, except as amended in this chapter. Portions of this chapter reproduce text from ASME B31.1. ASME B31.1 is not subject to frequent change and a copy of ASME B31.1 is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155. ASME B31.1 is copyright by ASME. All rights reserved.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.0270 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.0275 CHAPTER I, SCOPE AND DEFINITIONS.

Subpart 1. **Section 100.1.2.** ~~The first paragraph of part (A) Subparagraph (a)~~ of ASME B31.1, section 100.1.2 is amended to read as follows:

(Aa) This ~~Ce~~ode covers boiler external piping as defined below for power boilers and high-temperature, high-pressure water boilers in which steam or vapor is generated at a pressure of more than 15 ~~p.s.i. gauge~~psig [100 kPa (gage)]; and high-temperature water or other medium used for heating is generated at pressures exceeding 30 ~~p.s.i. gauge~~psig [207 kPa (gage)] and temperatures exceeding 250 degrees Fahrenheit (120 degrees Celsius).

Subp. 2. **Section 100.1.3.** Subparagraph (fF) of ASME B31.1, section 100.1.3, is deleted.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343*

Published Electronically: *September 15, 2015*

5230.0280 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.0285 CHAPTER II, DESIGN.

Subpart 1. **Parts 1 and 2.** Notwithstanding anything to the contrary in ASME B31.1, the following portions of chapter II of ASME B31.1 are recommended rather than mandatory: Part 1, Conditions and Criteria; and Part 2, Pressure Design of Piping Components. The department shall not enforce compliance with Part 1 or Part 2 of chapter II of ASME B31.1

Subp. 2. **Section 122.5.1.** ASME B31.1, section 122.5.1 is amended by adding the following language at the end:

It is mandatory that a pressure gauge be installed on the low-pressure side of a reducing valve. Where two or more reducing valves are installed in series, a pressure gauge shall be installed on the low-pressure side of each pressure-reducing valve.

Subp. 3. **Section 122.7.** ASME B31.1, section 122.7 and all subsections are deleted.

Subp. 4. **Section 122.8.** ASME B31.1, section 122.8 and all subsections are deleted.

Subp. 5. **Section 122.9.** ASME B31.1, section 122.9 is deleted.

Subp. 6. **Section 122.11.2.** ASME B31.1, section 122.11.2 is amended by adding the following language at the end:

The discharge of a high pressure trap shall not empty into a low-pressure receiver unless first run through a flash tank or there is an ample sized vent so a trap failure could not increase the pressure in low-pressure receiver tank.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145*

Published Electronically: *September 16, 2009*

5230.0290 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.0295 CHAPTER III, MATERIALS.

Section 124 is amended by adding a subsection as follows:

124.13. Furnace Butt Welded Pipe

The use of furnace butt welded pipe is prohibited on steam or heating media piping systems.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.0300 [Repealed, 34 SR 145]

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5230.0305 CHAPTER VI, INSPECTION, EXAMINATION, AND TESTING.

Section 136. ASME B31.1, sections 136.1 ~~through~~ 136.3.2 are deleted.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.0310 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.0315 CHAPTER VII, OPERATION AND MAINTENANCE.

Chapter VII of ASME B31.1 is deleted in its entirety.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145*

Published Electronically: *September 16, 2009*

5230.0320 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.0325 APPENDICES.

Notwithstanding anything to the contrary in ASME B31.1, the following "Mandatory Appendices" in ASME B31.1 are recommended rather than mandatory: A, D, G, H, and [JP](#).

The department shall not enforce compliance with "Mandatory Appendices" A, D, G, H, or [J-P](#) of ASME B31.1.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145*

Published Electronically: *September 16, 2009*

5230.0330 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.0335 EXAMINATION OF WELDED PIPE JOINTS.

All welds on steam or heating media piping systems must comply with the visual examination acceptance standards in section 136.4.2 of ASME B31.1. When nondestructive examination other than visual examination is required by job specification or by the administrative authority, the welds must comply with the acceptance standards in sections 136.4.3 ~~to~~[through](#) 136.4.6 of ASME B31.1 for each type of nondestructive examination required. All costs of nondestructive testing shall be paid by the installing contractor. The contractor shall provide a copy of all examination results to the administrative authority upon request.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145*

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5230.0340 [Repealed, 34 SR 145]

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5230.0420 [Repealed, 34 SR 145]

CODE FOR AMMONIA REFRIGERATION SYSTEMS

5230.5000 MINIMUM STANDARDS.

Parts 5230.5000 to 5230.5915 form the code for ammonia refrigeration systems and applies to ammonia piping systems used for closed circuit refrigeration systems. Parts 5230.5000 to 5230.5915 are minimum standards.

Statutory Authority: *MS s 326.46; 326B.90; 326B.925*

History: *17 SR 438; L 2007 c 140 art 10 s 11; art 13 s 4; 34 SR 145*

Published Electronically: *September 16, 2009*

5230.5001 INCORPORATIONS BY REFERENCE.

Subpart 1. **ANSI/IIAR 2.** For purposes of this chapter, "ANSI/IIAR 2" means the ~~2014~~ 2021 revision of the standard for Safe Design of Closed-Circuit Ammonia Refrigeration Systems, as approved by the American National Standards Institute and as published by the International Institute of Ammonia Refrigeration, 1001 North Fairfax Street, Suite 503, Alexandria, Virginia 22314. ANSI/IIAR 2 is incorporated by reference and made part of the code for ammonia refrigeration systems, except as amended in this chapter. Portions of this chapter reproduce text from ANSI/IIAR

2. ANSI/IIAR 2 is not subject to frequent change and a copy of ANSI/IIAR 2 is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin

Commented [WB(1): Year updated to reflect current publication.

Luther King Jr. Blvd., Saint Paul, Minnesota 55155. ANSI/IIAR 2 is copyrighted by the International Institute of Ammonia Refrigeration. All rights reserved.

Subp. 2. **ASME B31.5.** For purposes of this chapter, "ASME B31.5" means the ~~2016~~ [2019](#) revision of the standard for Refrigeration Piping and Heat Transfer Components as approved and published by ASME, Two Park Avenue, New York, New York 10016. ASME B31.5 is incorporated by reference and made part of the code for ammonia refrigeration piping. ASME B31.5 is not subject to frequent change and a copy of ASME B31.5 is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5003 CHAPTER 2, DEFINITIONS.

ANSI/IIAR 2, chapter 2, is amended by adding the following definitions:

brine: Any liquid used for the transmission of heat without a change in its state.

jurisdictional authority: Administrative authority, as defined in Minnesota Rules, part 5230.0005, subpart 2.

liquid line: The parts of the ammonia refrigerating system, at any pressure, intended to be wholly filled with liquid refrigerant.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5005 CHAPTER 13, PIPING.

Subpart 1. **Chapter 13.2.1.1.** ANSI/IIAR 2, chapter 13.2.1.1, is amended to read as follows:

13.2.1.1. Application of materials.

- a. Carbon steel liquid lines must utilize A106 seamless pipe or A333 seamless pipe.
- b. Piping material used in the discharge line of a pressure relief device, when discharging to atmosphere, Type F butt weld pipe is allowed.
- c. Mill test reports must be provided for the inspector at the inspector's discretion to verify heat numbers on the pipe and to verify compliance with this part.

Subp. 2. **Chapter 13.2.2.** ANSI/IIAR 2, chapter 13.2.2, is amended by adding a subsection as follows:

13.2.2.1. Carbon steel, welded.

- a. 1-1/2 inch and smaller - schedule 80.
- b. 2 inch through 10 inch - schedule 40.
- c. 12 inch and larger - standard weight.

Subp. 3. **Chapter 13.2.2.** ANSI/IAR 2, chapter 13.2.2, is amended by adding a subsection as follows:

13.2.2.2. Stainless steel, welded.

- a. 3/4 inch through 6 inch - schedule 40.
- b. 8 inch and larger - schedule 10.

Subp. 4. **Chapter 13.3.** ANSI/IAR 2, chapter 13.3, is amended by adding a subsection as follows:

13.3.8.2.9 Operating speed of control valve actuators shall be considered in the system design. Quarter turn valves (ball valves, butterfly valves, etc.) must utilize an actuator that restricts the time from fully open to fully closed, both directions, to a minimum of 60 seconds.

Commented [WB(2): Section number updated due to renumbering in the Standard.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5006 CHAPTER 14, PACKAGED SYSTEMS AND EQUIPMENT.

ANSI/IAR 2, chapter 14.1.2, is amended by adding a subsection as follows:

14.1.2.1. Installers of packaged systems and equipment must submit a copy of the manufacturer's design specifications of each model to the department for evaluation of compliance with the standards in parts 5230.5000 to 5230.5915 and approval prior to installation.

Statutory Authority: *MS s 326B.925*

History: *42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5007 CHAPTER 15, OVERPRESSURE PROTECTION DEVICES.

Subpart 1. **Chapter 15.2.57.** ANSI/IAR 2, chapter 15.2.57, is amended to read as follows:

15.2.57. Relief valves shall not be located in refrigerated spaces unless precautions are taken to prevent moisture migration into the valve body or relief valve vent line. A drip pocket the size of the discharge pipe and at least 24 inches in length must be installed below a vertical riser in the discharge pipe and must be fitted with a drain plug or valve.

Subp. 2. **Chapter 15.2.68.2.** ANSI/IIAR 2, chapter 15.2.68.2, is amended by adding the following paragraph at the end:

Rupture discs may only be used when installed in series with a pressure relief valve.

Subp. 3. **Chapter 15.3.23.** ANSI/IIAR 2, chapter 15.3.23, is amended by adding a subsection as follows:

15.3.23.1. Where the refrigerant inlet and outlet of air-cooled or evaporative condensers can be isolated, they shall be equipped with overpressure protection.

Subp. 4. **Chapter 15.4.3.** ANSI/IIAR 2, chapter 15.4.3, is amended to read as follows:

15.4.3. The discharge piping from pressure relieving devices to atmosphere shall be a minimum schedule 40 steel for all pipe sizes.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 39 SR 1343; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5009 CHAPTER 5, GENERAL SYSTEM DESIGN REQUIREMENTS.

ANSI/IIAR 2, chapter 5.13.1, is amended by adding a subsection to read as follows:

5.13.1.2. Declaration. A dated declaration of test shall be provided for all systems. The declaration shall give the name of the refrigerant and the field test pressure applied to the high side and the low side of the system. The declaration of test shall be signed by the installer or, if permitted by the administrative authority, by the owner's representative. If a representative of the administrative authority is present at the test, that representative shall also sign the declaration.

Statutory Authority: *MS s 326B.925*

History: *34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5010 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5015 [Repealed, 34 SR 145]

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5230.5020 [Repealed, 34 SR 145]

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5230.5820 [Repealed, 34 SR 145]

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5230.5825 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5915 PIPING JOINTS.

Subpart 1. **Design standards.** Piping joints must be designed for ammonia service. Joints must be designed for the pressure temperature and mechanical strength requirements of ammonia service and items A and B as follows:

A. Threaded pipe must be American Society for Testing and Materials schedule 80 seamless.

B. Unions must be forged steel ground joint unions, and must be used only for three quarters inch and smaller pipe.

Subp. 2. **Branch, run-outs, laterals, and saddles.** When joining carbon steel to carbon steel material, if the main piping is two inches and smaller, or the branch or run-out is two inches and smaller, branch or lateral connections must be forged steel TEE fitting, forged steel reinforced branch fitting, or engineering equivalent of class 3,000 rating. Engineering equivalency must be based on proper documentation signed by a licensed professional engineer. When joining materials other than carbon steel to carbon steel, ASME standard B31.5 must be followed.

Where the main piping exceeds two inches, branch or lateral connections must be made by forged steel TEE fitting, be forged steel reinforced branch fitting, or in cases where the branch exceeds two inches (further providing that a branch lateral or saddle is two pipe sizes smaller than the main piping it is connected to) the connection may be made by the use of a saddle or lateral connection that complies with the requirements of this part.

Branches or run-outs the same size as the main must be connected using forged steel TEE fittings.

Welding of saddles and laterals must comply with the provisions of ASME standard B31.5.

Subp. 3. [Repealed, 34 SR 145]

Subp. 4. [Repealed, 34 SR 145]

Subp. 5. **Components.** The assembly of the various components, whether done in a shop or as a field erection, must be done so that the completely erected piping and equipment conform with the requirements of this chapter.

Subp. 6. **Examination of welded pipe joints.** All welds on ammonia piping systems must comply with the visual examination acceptance standards in section 536.4.1 of ASME B31.5. When nondestructive examination other than visual examination is required by job specification or by the administrative authority, the welds must comply with the acceptance standards in sections 536.6.2 to 536.6.4 of ASME B31.5 for each type of nondestructive examination required. All costs of nondestructive testing shall be paid by the installing contractor. The contractor shall provide a copy of all examination results to the administrative authority upon request.

Statutory Authority: *MS s 326.46; 326B.90; 326B.925*

History: *17 SR 438; L 2007 c 140 art 10 s 11; art 13 s 4; 34 SR 145; 42 SR 1423*

Published Electronically: *May 15, 2018*

5230.5920 QUALIFICATION OF WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS.

Subpart 1. **Scope.** This part applies to welding that is part of any high pressure piping work, except where the welding is regulated by other codes or Minnesota state regulatory bodies, such as the Power Boiler and ~~Unfired~~ Pressure Vessel sections of the ASME Boiler and Pressure Vessel Code.

Commented [KMR1]: "Unfired" has been removed from the name of Section VIII.

Subp. 2. **Incorporation by reference.** For purposes of this chapter, "ASME section IX" means the ~~2017~~2021 edition of section IX of the Boiler and Pressure Vessel Code, as approved and published by ASME, Two Park Avenue, New York, New York 10016. ASME section IX is incorporated by reference and made a part of this chapter. ASME section IX is not subject to frequent change. A copy of ASME section IX is available in the office of the commissioner of labor and industry and at the State Law Library, 25 Rev. Dr. Martin Luther King Jr. Blvd., Saint Paul, Minnesota 55155.

Subp. 3. **Welding qualifications.** Standard qualifications for welding procedures, welders, and welding operators made according to ASME section IX qualify for work under this part.

Subp. 4. **Retest and renewal of welder qualification.** Welders and welding operators must meet the standard requirements for initial welder qualification, welder continuity requirements, and retest and renewal requirements, as set forth in ASME section IX.

Subp. 5. **Weld procedure and qualification requirements.** No welding may be performed on high pressure piping systems without a welding procedure specification and an associated procedure qualification record. Welding performed on high pressure piping systems must be performed using only welders or welding operators properly qualified in accordance with ASME section IX, according to the welding procedure. All welding procedures must meet the requirements of ASME section IX.

Commented [KMR2]: Welders are not necessarily qualified to the welding procedure. They are usually qualified to a welding procedure or set of procedures having a certain set of essential variables which the welder performance qualifications must include.

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Subp. 6. ~~Department e~~**Evaluation standards.** The welding procedure specifications, ~~and~~ procedure qualification records, and welder or welding operator performance qualification and associated continuity records must be objectively evaluated by and acceptable to the administrative authority, in accordance with ASME section IX.

Commented [KMR4]: Remove "welding procedure qualification" ...no such document in Section IX.

Subp. 7. **Documentation required.** Welding performed on high pressure piping systems must be supported by the mandatory documents of the welding procedure specification, ~~welding procedure qualification,~~ and procedure qualification record. These documents, along with support for welder qualification, must be available at the work site, upon request.

Commented [KMR5]: Add "welding operator" as in Subp. 3&4. Add "number, letter.." as identification options to reflect Section IX language. Delete "welding log" ...no such document in Section IX.

Subp. 8. **Welder identification and log requirement.** A welder or welding operator qualified for a project must be assigned an identification number, letter, or symbol unique to that welder. Each weld must be stamped or marked with the welder's unique identifier, identification symbol. ~~A welding log must be maintained as set forth in ASME section IX.~~ Alternatively, the contractor shall maintain records that identify welds made by the welder or welding operator.

Subp. 9. **Contractor responsibility.** The contractor is responsible for establishing and retaining the needed documents to conform to the requirements of this part.

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