

Meeting Minutes: Ammonia Committee – Board of HPPS

Date: February 22, 2022
Time: 1 p.m.
Minutes by: Matt Marquis
Location: WebEx Event

Committee Members Present

1. Todd Green – CO’s Designee
2. Jake Pettit
3. Steve Plieseis
4. Laurent Wickland
5. Mark Worms – Chair
6. Matt Marquis-Secretary

DLI Staff & Visitors

Jeff Lebowski (Gen. Counsel, DLI)
Brittany Wysokinski (Gen. Counsel, DLI)
Lyndy Logan (DLI)
TJ Peterson (DLI)
Chris Savage (Member of the public)

Committee Members Absent

None

1. **Call to Order**

- A. Roll Call – the meeting was called to order at 1:03 p.m. by Chair Worms and roll call was completed by Secretary Marquis – a quorum was met with 6 of 6 voting committee members present electronically.
- B. Announcements/Introductions
 - **Remote Meeting Statement from Chair:** Thank you for joining this remote meeting via WebEx. As the committee chair, I have determined today’s meeting is via the WebEx platform due to the COVID-19 pandemic. Per Minnesota Statutes, section 13D.021, of the Open Meeting Law, electronic meetings are acceptable when an in-person meeting is “not practical or prudent because of a health pandemic or an emergency declared under Chapter 12.” It is not practical or prudent to hold an in-person meeting because, consistent with MDH guidance, the usual meeting place is not open to the public due to the COVID-19 pandemic.
 - Committee members and attendees present on this WebEx are able to hear all discussions.
 - All handouts discussed and WebEx instructions are posted on the Committee’s website at: <http://www.dli.mn.gov/about-department/boards-and-councils/ammonia-committee>
 - All votes will be by roll call.
- C. WebEx instruction /procedures were read aloud.

2. **Approval of Meeting Agenda**

A motion was made by Petit, seconded by Marquis, to approve the agenda as presented. The roll call vote was unanimous with 6 votes in favor; the motion carried.

3. **Approval of Previous Meeting Minutes**

A motion was made by Petit, seconded by Plieseis, to approve the previous meeting minutes as presented. The roll call was unanimous with 6 votes in favor; the motion carried.

4. **Approval of Expense Reports**

Electronic expense reports will be sent by Lyndy to Financial Services for payment.

5. **Special Business**

Minnesota High Pressure Piping Code: Ammonia

- Green—went through current rule draft at Worms’ direction
- Worms—Asked to share materials about three questions related to the rule changes **(Attachment B)**
- Worms—Asked about the requirements surrounding liquid lines and whether suction lines should have to meet the same requirements, in particular seamless piping.
- Savage—Suggested that more research may be useful
- Marquis—asked whether there is a safety concern regarding the current suction line requirements.
- Worms—There haven’t been any safety concerns to his knowledge, so therefore suggested that no change to the current language is needed at this time
- Petit—Asked why the rules specify carbon steel liquid lines and not stainless steel?
- Green—He does not know why stainless steel is not included and is not aware of any issues with stainless steel as a material.
- Savage—Noted that he is not sure of the properties of stainless vs. carbon steel, but would recommend additional research before making a change
- Worms—Suggested that no change to the current language is needed at this time
- Worms—Noted that temporary hoses is now listed in the model rules in one instance
- TJ—confirmed that he was not aware of any other mentions of temporary hoses in the model rules
- Worms—Suggested that no additional changes needed to be made.

A motion was made by Marquis, seconded by Petit, to accept proposed amendments to the Ammonia Rules as they appear in the draft presented by Green (Attachment A) and bring forward to the Board. The vote was unanimous with 6 votes in favor; the motion carried.

6. **Board Discussion**

7. **Announcements**

8. **Adjournment**

A motion made by Marquis, seconded by Plieseis, to adjourn the meeting at 2:04 p.m. The roll call vote was unanimous with 6 votes in favor; the motion carried.

Respectfully Submitted,

Matt Marquis
Committee Secretary

Green meeting practices

The State of Minnesota is committed to minimizing in-person environmental impacts by following green meeting practices. DLI is minimizing the environmental impact of its events by following green meeting practices. DLI encourages you to use electronic copies of handouts or to print them on 100% post-consumer processed chlorine-free paper, double-sided.

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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5230.5025 [Repealed, 34 SR 145]

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5230.5250 [Repealed, 34 SR 145]

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- 5230.5300** [Repealed, 34 SR 145]
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- 5230.5350** [Repealed, 34 SR 145]
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- 5230.5400** [Repealed, 34 SR 145]
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- 5230.5605** [Repealed, 34 SR 145]
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- 5230.5610** [Repealed, 34 SR 145]
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- 5230.5615** [Repealed, 34 SR 145]
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- 5230.5620** [Repealed, 34 SR 145]
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- 5230.5625** [Repealed, 34 SR 145]
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- 5230.5630** [Repealed, 34 SR 145]
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- 5230.5635** [Repealed, 34 SR 145]
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- 5230.5640** [Repealed, 34 SR 145]
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- 5230.5645** [Repealed, 34 SR 145]
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- 5230.5650** [Repealed, 34 SR 145]
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- 5230.5655** [Repealed, 34 SR 145]
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- 5230.5660** [Repealed, 34 SR 145]
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- 5230.5665** [Repealed, 34 SR 145]
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- 5230.5675** [Repealed, 34 SR 145]
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5230.5680 [Repealed, 34 SR 145]

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5230.5690 [Repealed, 34 SR 145]

Published Electronically: *September 16, 2009*

5230.5700 [Repealed, 34 SR 145]

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5230.5710 [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*

2022 Minnesota Possible Amended Rule Changes

- Chapter 2 Definitions
 - Liquid line: The parts of ammonia refrigeration system, at any pressure, intended to be wholly filled with liquid refrigerant
 - Proposed change – Liquid line: The parts of ammonia refrigeration system, at any pressure, that are designed to contain liquid refrigerant in its entirety or any mixture or combination of liquid and vapor.

- 13.2.1.1 Application of Materials
 - a. Carbon steel liquid lines must utilize A106 seamless or A333 seamless pipe
 - Add Stainless steel liquid lines must utilize A312 seamless pipe

- In regards to permanent hoses I believe I have found researched and found an example. In dog food chilling equipment they use flex hoses on the liquid feed to the plate freezers. The plate freezers are basically ice cube trays that move. After a hot gas application they are hydraulically open and closed and are moved in that process.
 - All in all I would motion to not make any amendment to IAR 2 section 13.2.5 Hoses and Corrugated Metal Fittings