



COLORADO
Department of Agriculture

NOTICE OF PUBLIC RULEMAKING HEARING

FOR AMENDMENTS TO

Rules Pertaining to “Storage and Handling of Anhydrous Ammonia” 8 CCR 1202-5, Parts 1.3, 1.4, 2.6, 2.7, 3.1, 6.4, 7.3, 8, 8.3, 9, 9.3, 11.3, and 14.3

Notice is hereby given pursuant to § 24-4-103 C.R.S. that the Department of Agriculture will hold a public rulemaking hearing:

DATE: October 1, 2020
TIME: 10:30 am
LOCATION: This hearing will be held by telephone.
CALL INFORMATION: 1-617-675-4444 PIN: 433 812 868 5986#

In order to maintain a proper hearing record you are encouraged to pre-register by completing this [Google form](#). If you do not have access to Google you may send your name and telephone number to Jenifer.Gurr@state.co.us. Pre-registration is not required to participate in the hearing.

The purpose of this rulemaking is to update the language that incorporates regulations and standards by reference; and to make non-substantive typographical and grammatical edits.

The statutory authority for these rules is § 35-13-103 C.R.S.

Any interested party may file written comment with the Commissioner's office prior to the hearing, or present at the aforementioned hearing written data, views or arguments. Emailed comments should be sent to the hearing officer at Jenifer.Gurr@state.co.us. A copy of the proposed rule is available on the Department of Agriculture's website at www.colorado.gov/ag or may be obtained by calling 303-869-9004. The proposed rule shall be available for public inspection at the Colorado Department of Agriculture at 305 Interlocken Parkway, Broomfield, Colorado during regular business hours.



COLORADO DEPARTMENT OF AGRICULTURE

Inspection and Consumer Services Division

STORAGE AND HANDLING OF ANHYDROUS AMMONIA

8 CCR 1202-5

SECTION 1. INTRODUCTION

1.3. Standards Incorporated by Reference

1.3.1. The following standards are hereby incorporated by reference in these Rules:

- 1.3.1.1. U.S. Department of Transportation (DOT) Regulations referring to Hazardous Materials Regulations of the Department of Transportation, including specifications for shipping containers, Code of Federal Regulations, 49 CFR parts 171 to 190, October 1, 2011 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.2. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code parts UW-1 through UW-65, Section VIII, Division 1, Titled "Part UW: Requirements for Pressure Vessels Fabricated by Welding," 2015 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.3. Unfired Pressure Vessel Code of the American Society of Mechanical Engineers (Sections VIII of the ASME Boiler Construction Code), 1952, 1956, 1959, 1962, 1965, 1968, 1971, 1978, 1983, 1989, 1996, 1997, 2001, 2007, 2008, 2010 and 2015 editions. This rule does not adopt any later amendments or editions.
- 1.3.1.4. National Electrical Code, NFPA 70 (ANSI-C1), for Class I, Group D locations, 2014 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.5. American Petroleum Institute, API Standard 620, Twelfth edition, 2013. This rule does not adopt any later amendments or editions.
- 1.3.1.6. Portable U.S. Department of Transportation (DOT) Containers, Code of Federal Regulations 49 CFR 173.32 October 1, 2011 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.7. Compressed Gas Association Publication P-1, 2015 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.8. U.S. Department of Transportation (DOT) Regulation referring to systems utilizing cylinders, portable tanks (DOT-51), Code of Federal Regulations 49 CFR Part 173.32, October 1, 2011 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.9. U.S. Department of Transportation (DOT) Regulations referring to systems utilizing "Ton Containers" (DOT-106A, DOT-110A) Code of Federal Regulations 49 CFR Parts 179.300-179.301, October 1, 2011 edition. This rule does not adopt any later amendments or editions.
- 1.3.1.10. The American National Standards Institute's Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1, 1954 edition. This rule does not adopt any later amendments or editions.

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1.3.1.11. U.S. Department of Transportation (DOT) Regulations referring to safety relief device requirements, Code of Federal Regulations 49 CFR Part 173.315, October 1, 2011 edition. This rule does not adopt any later amendments or editions.

1.3.2. ~~Interested parties may inspect the referenced incorporated materials, or obtain copies thereof at a reasonable cost, by contacting the anhydrous ammonia inspection program manager, Colorado Department of Agriculture, Inspection and Consumer Services, 2331 West 31st Avenue, Denver, CO 80211, Phone: 303-477-0076 and/or the State Depository Libraries. A copy of the Official Publications of the above incorporated Standards shall be kept on file at the Colorado Department of Agriculture, located at 305 Interlocken Parkway, Broomfield Colorado 80021, and shall be open to public inspection, and available for copying, during normal business hours.~~

A copy of the official publication of the U.S. Department of Transportation (DOT) regulations shall also be kept at the U.S. Department of Transportation, 1200 New Jersey Avenue SE, Washington D.C. 20590 and is available online at: transportation.gov/regulations.

A copy of the official publication of the American Society of Mechanical Engineers shall be kept on file at the Colorado Department of Agriculture, located at 305 Interlocken Parkway, Broomfield Colorado 80021, and shall be open to public inspection, and available for copying, during normal business hours. A copy of the official publication of the American Society of Mechanical Engineers shall also be kept at the ASME Headquarters, Two Park Avenue, New York NY 10016-5990 and is available online at: ASME.org

A copy of the official publication of The National Electrical Code shall be kept on file at the Colorado Department of Agriculture, located at 305 Interlocken Parkway, Broomfield Colorado 80021, and shall be open to public inspection, and available for copying, during normal business hours. A copy of the official publication of the National Electrical Code shall also be kept at The National Fire Protection Association, 1 Batterymarch Park, Quincy Massachusetts 02169-7471 and is available online at: NFPA.org

A copy of the American Petroleum Institute Standards shall be kept on file at the Colorado Department of Agriculture, located at 305 Interlocken Parkway, Broomfield Colorado 80021, and shall be open to public inspection, and available for copying, during normal business hours. A copy of the official publication of the American Petroleum Institute Standards shall also be kept at the American Petroleum Institute, 200 Massachusetts Avenue NW, suite 1100, Washington D.C., 20001-5571 and is available online at: API.org.

A copy of the Compressed Gas Association Publication shall be kept on file at the Colorado Department of Agriculture, located at 305 Interlocken Parkway, Broomfield Colorado 80021, and shall be open to public inspection, and available for copying, during normal business hours. A copy of the official publication of the Compressed Gas Association shall also be kept at 14501 George Carter Way, suite 103, Chantilly, VA 20151 and is available online at: CGANET.com.

A copy of the American National Standards Institute's standards Publication shall be kept on file at the Colorado Department of Agriculture, located at 305 Interlocken Parkway, Broomfield Colorado 80021, and shall be open to public inspection, and available for copying, during normal business hours. A copy of the official publication of the American National Standards Institute's Standards shall also be kept at ANSI headquarters, 1899 L Street NW, Washington D.C. 20036 and is available online at: ANSI.org.

~~1.3.3. The code incorporated by reference herein does not include later amendments or editions.~~

1.4. Definitions

The following definitions are used for the purpose of these Rules:

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- 1.4.1. "Approved" means:
 - 1.4.1.1. Listed by a recognized testing laboratory, or
 - 1.4.1.2. Recommended by the manufacturer as suitable for use with anhydrous ammonia and so marked, or
 - 1.4.1.3. Accepted by the Commissioner.
- 1.4.2. "Appurtenance" refers to all devices such as safety relief devices, liquid level gauging devices, valves, pressure gauges, fittings, metering or dispensing devices.
- 1.4.3. "ASME" means American Society of Mechanical Engineers.
- 1.4.4. "Backflow check valve" means a device designed to prevent ammonia from flowing in the wrong direction within a pipe or tube.
- 1.4.5. "Capacity" refers to the total volume of the container measured in U.S. gallons, unless otherwise specified.
- 1.4.6. "Chemical-splash goggles" and "splash proof goggles" means flexible-fitting chemical-protective goggles, with a hooded, indirect ventilation system that provides protection to the eyes and eye sockets from the splash of hazardous liquids. This term shall not include direct vented goggles.
- 1.4.7. "Cylinder" means a container of 1000 pounds water capacity or less.
- 1.4.8. The "Code" refers to the Unfired Pressure Vessel Code of the American Society of Mechanical Engineers (Section VIII of the ASME Boiler Construction Code), 2015 edition~~1952, 1956, 1959, 1962, 1965, 1968, 1971, 1978, 1983, 1989, 1996, 1997, 2001, 2007, 2008 and 2010 editions.~~
- 1.4.9. "Container" includes all vessels, tanks, cylinders or spheres used for transportation, storage or application of anhydrous ammonia.
- 1.4.10. "Data plate" means a piece of non-corroding metal permanently attached by the manufacturer to the surface of a container.
- 1.4.11. "Densely populated area" means any location with either one or more multifamily housing units or eight or more single-family dwellings located within a quarter section.
- 1.4.12. "Design Pressure" is identical to the term "Maximum Allowable Working Pressure" used in the Code.
- 1.4.13. "Emergency shutoff valve" means a valve that stops the flow of product by spring closure, gravity, or pressure and can be activated by an outside means including a cable pull, hose pull, air assists, electrical closure or back pressure.
- 1.4.14. "Excess-flow valve" means a device placed in a line that is designed to close when the flow of vapor or liquid flowing through the line exceeds the amount for which the valve is rated.
- 1.4.15. An "Implement of Husbandry" is a farm wagon-type tank vehicle of not over 3000 gallons capacity, used as a field storage "nurse tank" supplying the fertilizer to a field applicator and moved on highways for bringing the fertilizer from a local source of supply to farms or fields or from one farm or field to another.

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- 1.4.16. "Filling Density" means the percent ratio of the weight of the gas in a container to the weight of water at 60°F that the container will hold. For determining the water capacity of the tank in pounds, the weight of a gallon (231 cubic inches) of water at 60°F in air shall be 8.32828 pounds.
- 1.4.17. "Gas" refers to anhydrous ammonia in either the gaseous or liquefied state.
- 1.4.18. "DOT Regulations" refer to Hazardous Materials Regulations of the U.S. Department of Transportation (Title 49-Transportation, Code of Federal Regulations, Parts 171 to 190), including Specifications for Shipping Containers.
- 1.4.19. "Mobile container" means any container that is not installed as a permanent storage container.
- 1.4.20. "Non-code welding" means welding that does not comply with parts UW-1 through UW-65 of the ASME Boiler and Pressure Vessel Code, Sections VIII, Division 1, Titles "Parts UW: Requirements for Pressure Vessels Fabricated by Welding," ~~2015~~2007 edition.
- 1.4.21. "Permanent storage container" means a stationary container having a volume of at least 3,000 water gallons.
- 1.4.22. "Permanent storage facility" means a site that includes one or more permanent storage containers and their connections and appurtenances.
- 1.4.23. "Place of public assembly" means any building, structure or facility established to accommodate groups of people for commercial, civic, political, religious, recreational, educational, or other purposes. This term shall include buildings or structures used for medical care, including hospitals, assisted care facilities, and prisons.
- 1.4.24. "Systems" as used in these Rules refers to an assembly of equipment consisting essentially of the container or containers, appurtenances, pumps, compressors, and interconnecting piping.
- 1.4.25. The abbreviations "psig" and "psia" refer to pounds per square inch gauge and pounds per square inch absolute, respectively.
- 1.4.26. The terms "charging" and "filling" are used interchangeably and have the same meaning.
- 1.4.27. "Trailer" as used in these Rules refers to every vehicle designed for carrying persons or property while being drawn by a motor vehicle and so constructed that no part of its weight except the towing device rests upon the towing vehicle.
- 1.4.28. "Tank Motor Vehicle" means any motor vehicle designed or used for the transportation of anhydrous ammonia in any tank designed to be permanently attached to any motor vehicle or any container not permanently attached to any motor vehicle which by reason of its size, construction or attachment to any motor vehicle must be loaded and/or unloaded without being removed from the motor vehicle.
- 1.4.29. "Semi-trailer" refers to every vehicle designed for carrying persons or property while being drawn by a motor vehicle and so constructed that some part of its weight and that of its load rests upon or is carried by another vehicle.
- 1.4.30. "Safety Relief Valve" refers to an automatic spring loaded or equivalent type pressure activated device for gas or vapor service characterized by pop action upon opening, sometimes referred to as a pop valve.
- 1.4.31. "Hydrostatic Relief Valve" refers to an automatic pressure activated valve for liquid service characterized by throttle or slow weep opening (non-pop action).

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SECTION 2. DESIGN OF ANHYDROUS AMMONIA SYSTEMS

2.6. Hose Specification

- 2.6.1. Hoses used in ammonia service and subject to container pressure shall conform to the specification set forth in Appendix B of this Rule, which are based on The Rubber Manufacturers Association and The Fertilizer Institute "Hose Specifications for Anhydrous Ammonia".
- 2.6.2. Hose subject to container pressure shall be designed for a minimum working pressure of 350 psig and a minimum burst pressure of 1750 psig. Hose assemblies, when made up, shall be capable of withstanding a test pressure of 500 psig.
- 2.6.3. Hose and hose connections located on the low pressure side of flow control or pressure reducing valves on devices discharging to atmospheric pressure shall be designed for the maximum low side working pressure. All connections shall be designed, constructed, and installed so that there will be no leakage when connected.
- 2.6.4. Where liquid transfer hose is not drained of liquid upon completion of transfer operations, such hose shall be equipped with an approved shut-off valve at the discharge end. Provision shall be made to prevent excessive hydrostatic pressure in the hose. (See Rule 2.7.16.).
- 2.6.5. On all hose one-half inch O.D. and larger, used for the transfer of anhydrous ammonia liquid or vapor, there shall be etched, cast, or impressed at five-foot intervals the following information:
 - 2.6.5.1. "Anhydrous Ammonia";
 - 2.6.5.2. xxx psig (Maximum working pressure);
 - 2.6.5.3. Manufacturer's Name or Trademark;
 - 2.6.5.4. Year of Manufacture; and
 - 2.6.5.5. The date specified by the manufacturer on which the hose is to be removed from service (Manufacturer's removal date).
- 2.6.6. Each hose shall be replaced before or upon the expiration of the manufacturer's removal date.
- 2.6.7. A hose shall be removed from service prior to the manufacturer's removal date if a visual examination reveals any of the following:
 - 2.6.7.1. Illegibility of any of the markings required in subsection 2.6.5;
 - 2.6.7.2. Cuts exposing reinforcing fabric;
 - 2.6.7.3. Soft spots or bulges in the hose;
 - 2.6.7.4. A blistering or loose outer covering;
 - 2.6.7.5. Kinking or flattening;
 - 2.6.7.6. Stretch marks;
 - 2.6.7.7. Slippage at any coupling; or
 - 2.6.7.8. Any other damage that could compromise the integrity of the safe use of the hose.

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2.7. Safety Relief Devices

- 2.7.1. Every container used in systems covered by Sections 7, 9, 10 and 11 shall be provided with one or more safety relief valves of the spring-loaded or equivalent type. The discharge from safety relief valves shall be vented away from the container, upward and unobstructed to the atmosphere. All safety relief valve discharge openings shall have suitable rain caps that will allow free discharge of the vapor and prevent the entrance of water. Provision shall be made for draining condensate which may accumulate. The rate of the discharge shall be in accordance with the provisions of Appendix A of this Rule.
- 2.7.2. Container safety relief valves shall be set to start-to-discharge as follows, based on the design pressure of the container:

CONTAINERS	MINIMUM	MAXIMUM*
ASME-U-68, U-69	110%	125%
ASME-U-200, U-201	95%	100%
ASME 1952, 1956, 1959, 1962, 1965, 1968 OR 1971	95%	100%
API-ASME	95%	100%
U.S. COAST GUARD	[AS REQUIRED BY USCG REGULATIONS]	
DOT	[AS REQUIRED BY DOT REGULATIONS]	

* NOTE: A RELIEF VALVE MANUFACTURER'S TOLERANCE OF PLUS 10% IS PERMITTED.

- 2.7.3. Safety relief devices used in systems covered by Sections 7, 9, 10 and 11 shall be constructed to discharge at not less than the rates required in 2.7.1 before the pressure is in excess of 120% (not including the 10% tolerance referred to in 2.7.2) of the maximum permitted start-to-discharge pressure setting of the device.
- 2.7.4. Safety relief valves shall be so arranged to minimize the possibility of tampering. If the pressure setting adjustment is external, the relief valves shall be provided with means for sealing the adjustment.
- 2.7.5. Shut-off valves shall not be installed between the safety relief valves and the containers or systems described in Sections 7, 9, 10 and 11, except that a shut-off valve may be used where the arrangement of this valve is such as always to afford required capacity flow through the relief valves.

NOTE: The above exception is made to cover such cases as a three-way valve installed under two safety relief valves, each of which has the required rate of discharge and is so installed as to allow either of the safety relief valves to be closed off, but does not allow both safety valves to be closed off at the same time. Another exception to this may be where two separate relief valves are installed with individual shut-off valves. In this case, the two shut-off valve stems shall be mechanically interconnected in a manner which will allow full required flow of one safety relief valve at all times. Still another exception is a safety relief valve manifold which allows one valve of two, three, four or more to be closed off and the remaining valve or valves will provide not less than the rate of discharge shown on the manifold nameplate.

- 2.7.6. Safety relief valves shall have direct communication with the vapor space of the container.
- 2.7.7. Each safety relief valve used with systems described in Sections 7, 9, 10 and 11 shall be plainly and permanently marked as follows:
- 2.7.7.1. With the letters "AA" or the symbol "NH3".

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2.7.7.2. The pressure in pounds per square inch gauge (psig) at which the valve is set to start-to-discharge.

2.7.7.3. The rate of discharge of the valve in cubic feet per minute of air at 60°F and atmospheric pressure (14.7 psia).

2.7.7.4. The manufacturer's name and catalog number.

For example, a safety relief valve marked AA-250-4200 (air) would mean that this valve is suitable for use on an anhydrous ammonia container; that it is set to start-to-discharge at 250 psig; and that its rate of discharge (see Sections 2.7.1, 2.7.2, and 2.7.3) is 4200 cubic feet per minute of air.

2.7.8. Each pressure-relief valve shall be manufactured for use with anhydrous ammonia and be installed, maintained, and replaced according to the manufacturer's instructions.

2.7.9. Unless otherwise specified by the manufacturer, a pressure-relief valve shall not be used for more than five years after the date of manufacture of the pressure relief device.

2.7.10. Each safety valve shall be replaced if the valve meets any of the following conditions:

2.7.10.1. Fails to meet applicable requirements;

2.7.10.2. Shows evidence of damage, corrosion, or foreign matter; or

2.7.10.3. Does not have functional weep holes that permit moisture to escape.

2.7.11. If moisture accumulation could occur in a vent, suitable provision shall be made to drain the moisture from the vent.

2.7.12. The flow capacity of the safety relief valve shall not be restricted by any connection to it on either the upstream or downstream side.

2.7.13. Vent pipes or tubing used to channel releases from safety relief valves shall not be restricted or smaller in size than the safety relief valve outlet connection.

2.7.14. Vent pipes may be connected and channeled into a common header if the cross-sectional area of the header is at least equal to the sum of the cross-sectional areas of each of the individual vent pipes.

2.7.15. The manufacturer or supplier of a safety relief valve manifold shall publish complete data showing the flow rating through the combined assembly of the manifold with safety relief valves installed. The manifold flow rating shall be determined by testing the manifold with all but one valve discharging. If one or more openings have restrictions not present in the remaining openings, the restricted opening or openings or those having the lowest flow shall be used to establish the flow rate marked on the manifold nameplate. The marking shall be similar to that required in 2.7.7 for individual valves.

2.7.16. A hydrostatic relief valve shall be installed between each pair of valves in the liquid ammonia piping or hose where liquid may be trapped so as to release into the atmosphere at a safe location.

2.7.17. Discharge from safety relief devices shall not terminate in or beneath any building.

SECTION 3. CONSTRUCTION OF ANHYDROUS AMMONIA SYSTEMS

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3.1. Requirements for New Construction and Original Test of Containers, Including Skid Containers

- 3.1.1. Each container shall be constructed and tested in accordance with the Code and shall have a minimum design pressure of 250 psig.
- 3.1.2. Containers used with systems covered in Sections 7, 9, 10 and 11 shall be constructed and tested in accordance with the ASME1971 edition (and subsequent amendments thereto) of the Unfired Pressure Vessel Code ~~of the ASME~~ except that construction under Table UW 12 at a basic joint efficiency of under 80% is not authorized.
 - 3.1.2.1. Containers built according to the Code do not have to comply with paragraphs UG 125 through UG 128 inclusive, and paragraphs UG 132 and UG 133.
- 3.1.3. Containers exceeding 36 inches in diameter or 250 gallons capacity shall be constructed to comply with one or more of the following additional requirements:
 - 3.1.3.1. Containers shall be stress relieved after fabrication in accordance with the Code, or
 - 3.1.3.2. Cold formed heads, when used shall be stress relieved, or
 - 3.1.3.3. Hot formed heads shall be used.
- 3.1.4. Welding to the shell, head, or any other part of the container subject to internal pressure shall be done in compliance with the Code under which the container was fabricated and shall be performed by a person or company that has a current certificate of authorization from the National Board of Boiler and Pressure Vessel Inspections. Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the container manufacturer.
- 3.1.5. All records of inspections and welding on the container shall:
 - 3.1.5.1. Be maintained by the owner of the container;
 - 3.1.5.2. Be made available to the Commissioner upon request; and
 - 3.1.5.3. Be transferred with change of ownership of the container.
- 3.1.6. All containers shall be inspected by a person having a current certificate of competency from the National Board of Boiler and Pressure Vessel Inspectors.
- 3.1.7. The provisions of 3.1.2 shall not be construed as prohibiting the continued use or reinstallation of containers constructed and maintained in accordance with the ASME1949, 1950, 1952, 1956, 1959, 1962, 1965 and 1968 editions of the Unfired Pressure Vessel Code ~~Code of the ASME or any revisions thereof in effect at the time of fabrication.~~

SECTION 6. OPERATION OF ANHYDROUS AMMONIA SYSTEMS

6.4. Transfer of Liquids

- 6.4.1. Anhydrous ammonia shall always be at a temperature suitable for the material of construction and design of the receiving containers and shall comply with ~~See~~ Appendix R of API Standard 620 "Recommended Rules for Design and Construction of Large Welded Low-Pressure Storage Tanks" for materials for low temperature service.

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- 6.4.2. At least one attendant shall supervise the transfer of liquids from the time the connections are first made until they are finally disconnected.
- 6.4.3. Flammable gases or gases which will react with ammonia (such as air) shall not be used to unload tank cars or transport trucks.
- 6.4.4. Containers shall be charged or used only upon authorization of the owner.
- 6.4.5. Containers shall be gauged and charged only in the open atmosphere or in buildings approved for that purpose.
- 6.4.6. Pumps used for transferring ammonia shall be recommended and labeled for ammonia service by the manufacturer.
 - 6.4.6.1. Pumps shall be designed for at least 250 psig working pressure.
 - 6.4.6.2. Positive displacement pumps shall have installed, off the discharge port, a constant differential relief valve discharging into the suction port of the pump through a line of sufficient size to carry the full capacity of the pump at relief valve setting, which setting and installation shall be according to pump manufacturer's recommendations.
 - 6.4.6.3. On the discharge side of the pump, before the relief valve line, there shall be installed a pressure gauge graduated from 0 to 400 psig.
 - 6.4.6.4. Plant piping shall contain shut-off valves located as close as practical to pump connections.
- 6.4.7. Compressors used for transferring or refrigerating ammonia shall be recommended and labeled for ammonia service by the manufacturer.
 - 6.4.7.1. Compressors shall be designed for at least 250 psig working pressure. Crank cases of compressors not designed to withstand system pressure shall be protected with a suitable safety relief valve.
 - 6.4.7.2. Plant piping shall contain shut-off valves located as close as practical to compressor connections.
 - 6.4.7.3. A safety relief valve large enough to discharge the full capacity of the compressor shall be connected to the discharge before any shut-off valve.
 - 6.4.7.4. Compressors shall have pressure gauges at suction and discharge graduated to at least one and one-half times the maximum pressure that can be developed.
 - 6.4.7.5. Where necessary to minimize entry of liquid into the compressor, adequate means, such as drainable liquid trap, shall be provided on the suction side of the compressor.
 - 6.4.7.6. Where necessary to prevent contamination, an oil separator shall be provided on the discharge side of the compressor.
- 6.4.8. Loading and unloading systems shall be protected by suitable devices to prevent emptying of the storage container or the container being loaded or unloaded in the event of severance of the hose. Backflow check valves or properly sized excess flow valves shall be installed where necessary to provide such protection. In the event that such valves are not practical, remotely operated shut-off valves may be installed.

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6.4.9. Meters used for the measurement of liquid anhydrous ammonia shall be recommended and labeled for ammonia service by the manufacturer and meet the requirements of The Measurement Standards Act, §§ 35-14-101 through 134, C.R.S.

6.4.9.1. Liquid meters shall be designed for a minimum working pressure of 250 psig.

6.4.9.2. The metering system shall incorporate devices that will prevent the inadvertent measurement of vapor.

SECTION 7. SYSTEMS UTILIZING STATIONARY, PIER-MOUNTED OR SKID-MOUNTED ABOVEGROUND OR UNDERGROUND

7.3. Safety Relief Devices

7.3.1. Every container shall be provided with one or more safety relief valves of spring-loaded or equivalent type and shall comply with the following:

7.3.1.1. The discharge from safety relief valves shall be directed away from the container upward and unobstructed to the open air. Vent pipes shall not be restrictive or smaller in size than the safety relief valve outlet connection. All safety relief valve discharges shall have suitable rain caps that will allow free discharge of the vapor and prevent the entrance of water. Suitable provision shall be made for draining condensate which may accumulate.

7.3.1.2. If desired, vent pipes from two or more safety relief devices located on the same unit, or similar lines from two or more different units, may be run into a common header, provided the cross-sectional area of such header is at least equal to the sum of the cross-sectional areas of the individual vent pipes.

7.3.2. The rate of discharge of spring-loaded safety relief valves installed on underground containers may be reduced to a minimum of 30 per cent of the rate of discharge specified in Appendix A of this Rule. Containers so protected shall not be uncovered after installation until the liquid ammonia has been removed. Containers which may contain liquid ammonia before being installed underground and before being completely covered with earth are considered aboveground containers when determining the rate of discharge requirements of the safety relief valves.

7.3.3. On underground installations where there is a probability of the manhole or housing becoming flooded, the discharge from vent lines shall be located above the high water level. All manholes or housings shall be provided with ventilated louvres or their equivalent, the area of such openings equaling or exceeding combined discharge areas of safety relief valves and vent lines which discharge their content into the manhole housing.

SECTION 8. SYSTEMS UTILIZING PORTABLE DOT CONTAINERS

This Section 8 incorporates by reference the specification of the U.S. Department of Transportation~~applies specifically to~~ systems utilizing cylinders, portable tanks (DOT-51) 49 CFR 173.32, or "ton containers" (DOT-106A, DOT-110A 49 CFR 179.300-179.301), dated October 1, 2011~~which shall be constructed in accordance with Department of Transportation Specifications~~. All General Rules of Section 2 apply to this Section 8, unless otherwise noted.

8.3. Safety Relief Devices

8.3.1. Containers shall be provided with safety relief devices as required by Department of Transportation Regulations 49 CFR Part 173.315(i), October 1, 2011.

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SECTION 9. SYSTEMS MOUNTED ON TRUCKS, SEMI-TRAILERS, AND TRAILERS FOR TRANSPORTATION OF AMMONIA

This Section applies specifically to systems mounted on trucks, semi-trailers and trailers (other than those covered under Sections 10 and 11) used for the transportation of ammonia. All General Rules of Section 2 apply to this Section 9 unless otherwise noted.

9.3. Container Appurtenances

- 9.3.1. Non-recessed container fittings and appurtenances shall be protected against physical damage by either: (1) a protected location, (2) the vehicle frame or bumper, or (3) a protective housing. The protective housing, if used, shall comply with the requirements under which the containers are fabricated with respect to design and construction, and shall be designed to withstand static loadings in any direction equal to twice the weight of the container and attachments when filled with the lading using a safety factor of not less than 4, based on the ultimate strength of the material to be used. The protective housing if used shall be protected with a weather cover, if necessary, to ~~E~~ensure proper operation of valves and safety relief devices.
- 9.3.2. All connections to containers, except filling connections (see 9.3.3), safety relief devices, and liquid level and pressure gauge connections, shall be provided with suitable automatic excess flow valves, or in lieu thereof, may be fitted with quick-closing internal valves, which shall remain closed except during delivery operations. The control mechanism for such valves may be provided with a secondary control remote from the delivery connections and such control mechanism shall be provided with a fusible section (melting point 208°F to 220°F) which will permit the internal valve to close automatically in case of fire.
- 9.3.3. Filling connections shall be provided with automatic back-pressure check valves, excess-flow check valves, or quick-closing internal valves, to prevent back-flow in case the filling connection is broken. Where the filling and discharge connect to a common opening in the container shell and that opening is fitted with a quick-closing internal valve as specified in 9.3.2, the automatic valve shall not be required.
- 9.3.4. All containers shall be equipped for spray loading (filling in the vapor space) or with an approved vapor return valve of adequate capacity.
- 9.3.5. All containers shall be equipped with a fixed maximum liquid level gauge.
- 9.3.6. All containers shall be equipped with a pressure-indicating gauge having a dial graduated from 0-400 psig.

SECTION 11. SYSTEMS MOUNTED ON FARM EQUIPMENT (IMPLEMENTS OF HUSBANDRY) FOR THE APPLICATION OF AMMONIA

11.3. Container Valves and Appurtenances

- 11.3.1. Each container shall have a fixed maximum liquid level gauge.
- 11.3.2. The filling connection shall be fitted with combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shut-off valve in conjunction with either an internal back-pressure check valve or an internal excess-flow valve.
- 11.3.3. An excess-flow valve is not required in the vapor connection, provided the controlling orifice is not in excess of seven sixteenths (7/16) of an inch in diameter and the valve is a hand-operated (attached hand wheel or equivalent) shut-off valve. To assist in filling applicator tanks, it is permissible to bleed vapors to the open air, providing the preceding requirements are met.

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11.3.4. Metering devices may be connected directly to the tank withdrawal valve. A union type connection is permissible between the tank valve and metering device. Remote mounting of metering devices is permissible using hose which meets with specifications set out in Appendix B of this Rule. When the applicator tank is trailed and the metering device is remotely mounted, such as on the tractor tool bar, an automatic break-a-way type, self-closing, coupling must be used.

11.3.5. No excess-flow valve is required in the liquid withdrawal line provided the controlling orifice between the contents of the container and the outlet of the shut-off valve (see 2.5.5) does not exceed 7/16 inch in diameter.

SECTION 14. STATEMENTS OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE

The Statement of Basis, Specific Statutory Authority and Purpose for rulemaking activity from 1992 is no longer in the Department's files.

14.3. Adopted October 14, 2020 – Effective December 15, 2020

Statutory Authority

The Commissioner's authority for the adoption of this permanent Rule amendment is set forth in § 35-13-103 C.R.S.

Purpose

The purpose of this rulemaking is to update the language that incorporates regulations and standards by reference so as to comply with the new requirements in §24-4-103(12.5), C.R.S.

Factual and Policy Basis

This rulemaking updates the language and citations within the rule to properly incorporate regulations and standards by reference. More specifically, it provides the proper address for the Colorado Department of Agriculture, which changed in 2018, and provides the addresses of the agencies and organizations issuing the incorporated regulations and standards. This rulemaking also updates the edition for each incorporation.