

ANSI/ASABE S620 MAR2017
Safety for Anhydrous Ammonia Application Equipment



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ANSI/ASABE S620 MAR2017

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Safety for Anhydrous Ammonia Application Equipment

Developed by the X620 Standards development committee, approved by the ASABE Machinery Systems Technical Community; approved by ASABE March 2017; approved by ANSI as an American National Standard March 2017.

Keywords: anhydrous ammonia, safety, NH₃, nitrogen, hitching, nurse tanks, toolbars, nurse tank wagons, break-away couplers, toolbars, applicators, distribution system, controls, fertilizer

1 Purpose and scope

1.1 The purpose of this standard is to establish the safety requirements for implements of husbandry used in the local transport and application of anhydrous ammonia for agricultural fertilizer.

1.2 This standard does not cover bulk storage and handling equipment, manufacture of, or over-the-road bulk transport equipment (other than implements of husbandry) for anhydrous ammonia.

1.3 This standard is applicable to new equipment manufactured and assembled after the publication of this standard.

2 Definitions

Where possible, the terms and definitions used in this standard are aligned with ANSI/CGA G-2.1.

2.1 anhydrous ammonia (NH₃). The compound formed by the chemical combination of the elements nitrogen and hydrogen in molar proportion of one part nitrogen and three parts hydrogen. This relationship is shown by the chemical formula NH₃. On a weight basis, the ratio is 14 parts nitrogen to three parts hydrogen, or approximately 82% nitrogen to 18% hydrogen. Ammonia may exist in either gaseous, liquid or solid state. It is not to be confused with aqua ammonia (ammonium hydroxide) which is a solution of ammonia in water (ANSI/CGA G-2.1).

2.2 anhydrous ammonia application unit (NH₃ applicator). An implement of husbandry used to apply NH₃ below soil surface. The nurse tank is typically attached to a separate implement (see 2.10). The shortened term "NH₃ applicator" is used throughout this standard.

2.3 back pressure check valve. A device that allows liquid or gas to flow in only one direction.

2.4 break-away coupler. An automatic, self-closing device designed to disconnect NH₃ hoses in case the nurse tank wagon(s) becomes detached.

2.5 excess flow valve. A device designed to automatically shut off the flow of NH₃ at a designated flow rate.

2.6 liquid withdrawal valve. A valve designed for a nurse tank's liquid withdrawal port.

2.7 mechanically secure point. Connection point affixed to the nurse tank or nurse tank wagon and affixed to the towing implement for the attachment of the nurse tank hose(s). The mechanically secure point provides

resistance allowing the break-away coupler to operate in the event of detachment of the nurse tank wagon from the towing implement.

2.8 nurse tank. A pressure vessel on nurse tank wagons used exclusively for local transport and field application of anhydrous ammonia.

2.9 nurse tank hose. The anhydrous ammonia hose(s) between the mechanically secure point on the nurse tank or nurse tank wagon and the break-away coupler on the towing implement.

2.10 nurse tank wagon. A carrier of nurse tanks defined per 2.8. Nurse tank wagons are normally classified as bulk carrier equipment (ABC) per ANSI/SAE S390.

2.11 rear hitch. A hitch point located at the rear of an implement of husbandry for attachment of a nurse tank wagon or other implement of husbandry.

2.12 swivel, pivot, or articulation point (of a break-away coupler). The location where the break-away coupler bends or swivels. Anything that allows the device to swivel so that it disconnects the nurse tank hose, even when at an angle, is considered a swivel/pivot/articulation point. It may be a bracket, but is not limited to brackets.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ANSI/ASABE AD11684, Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles

ANSI/SAE AD6489-3 Agricultural vehicles — Mechanical connections between towed and towing vehicles — Part 3: Tractor drawbar

ANSI/SAE EP363, Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manual — Content and format

ANSI/SAE S279, Lighting and Marking of Agricultural Equipment on Highways

ANSI/SAE S318, Safety for Agricultural Field Equipment

ANSI/SAE S338, Field Equipment for Agriculture — Safety Chain for Towed Equipment

ANSI/SAE S390.5, Definitions and Classifications of Agricultural Field Equipment

ANSI/ASABE ISO 21244, Agricultural equipment — Mechanical connections between towed and towing vehicles — Implement hitch rings and attachment to tractor drawbars

SAE S360, Test Procedure and Performance Criteria for the Under-carriage Load Carrying Ability of Farm Materials Transport Equipment

ANSI/SAE S365, Braking System Test Procedures and Braking Performance Criteria for Agricultural Field Equipment

ANSI/ASABE 625 Drawbar Pin Dimensions and Requirements for Towed Equipment