

1. Identification

Product identifier Ammonia, anhydrous

Other means of identification

MSDS Number KFC_NH3_US_EN

Synonyms Ammonia, 82-00-0, NH3

Recommended use Fertilizer.

Recommended restrictions Use in accordance with supplier's recommendations.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier Koch Fertilizer Canada ULC
 1400 17th Street East
 Brandon, MB
 R7A 7C4, Canada
 204-729-2900

Emergency For Chemical Emergency
 Call CHEMTREC day or night
 USA/Canada - 1.800.424.9300
 Mexico - 1.800.681.9531
 Outside USA/Canada - 1.703.527.3887
 (collect calls accepted)

2. Hazard(s) identification

Physical hazards Flammable gases Category 2
 Gases under pressure Liquefied gas

Health hazards Acute toxicity, oral Category 4
 Acute toxicity, inhalation Category 3
 Skin corrosion/irritation Category 1B
 Serious eye damage/eye irritation Category 1

Environmental hazards Hazardous to the aquatic environment, acute hazard Category 1

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement Flammable gas. Contains gas under pressure; may explode if heated. Harmful if swallowed. Toxic if inhaled. Causes severe skin burns and eye damage. Very toxic to aquatic life.

Precautionary statement

Prevention Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not breathe gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling. Avoid release to the environment.

Response	Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. If swallowed: Rinse mouth. Do NOT induce vomiting. Call a poison center/doctor if you feel unwell. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center/doctor. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Collect spillage.
Storage	Protect from sunlight. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Ammonia		7664-41-7	99-99.8
Water		7732-18-5	0.2-1

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. This Safety Data Sheet is not a guarantee of product specification or NPK value(s). NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.

4. First-aid measures

Inhalation	Move injured person into fresh air and keep person calm under observation. For breathing difficulties, oxygen may be necessary. If breathing stops, provide artificial respiration. Get medical attention immediately.
Skin contact	Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If frostbite occurs, immerse affected area in warm water (not exceeding 105°F/41°C). Keep immersed for 20 to 40 minutes. Get medical attention immediately. Chemical burns must be treated by a physician.
Eye contact	Flush thoroughly with water for at least 15 minutes. Get immediate medical assistance. If medical assistance is not immediately available, flush an additional 15 minutes. If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 15 minutes. If easy to do, remove contact lenses.
Ingestion	Call a physician or poison control center immediately. DO NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration. This material is a gas under normal atmospheric conditions and ingestion is unlikely.
Most important symptoms/effects, acute and delayed	Contact with this material will cause burns to the skin, eyes and mucous membranes. Cough, shortness of breath, headache, nausea, vomiting.
Indication of immediate medical attention and special treatment needed	Signs and symptoms of CNS depression, confusion and convulsions should be considered in the assessment and treatment of victims of exposure. Be aware that symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure.
General information	Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

5. Fire-fighting measures

Suitable extinguishing media	Carbon dioxide (CO2). Water. Dry powder.
Unsuitable extinguishing media	Not applicable.
Specific hazards arising from the chemical	Flammable gas - may cause flash fire. Contents under pressure. Pressurized container may explode when exposed to heat or flame.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Chemical protective clothing is needed if contact with vapor or liquid is anticipated.

Fire fighting equipment/instructions

Evacuate area. Cool containers exposed to flames with water until well after the fire is out. Do not get water inside container. Remove pressurized gas cylinders from the immediate vicinity. Close the valve if no risk is involved. Do not extinguish a leaking gas fire unless leak can be stopped. If leak cannot be stopped and no danger to surrounding area allow the fire to burn out. Fight fire from a protected location.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

If leakage cannot be stopped, evacuate area. Avoid contact with cold gas. Avoid inhalation and contact with skin and eyes. In aqueous solution: Avoid contact with spilled material. Wear appropriate personal protective equipment. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Remove sources of ignition. Beware of the explosion danger. Ventilate well, stop flow of gas or liquid if possible. Allow gas to evaporate. Vapor can be controlled using a water fog. Use water spray to reduce vapors or divert vapor cloud drift. Do not put water directly on leak, spill area or inside container. Collect runoff for disposal as potential hazardous waste. Stop leak if you can do so without risk. In aqueous solution: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas.

Environmental precautions

In aqueous solution: Avoid release to the environment. Do not contaminate water.

7. Handling and storage

Precautions for safe handling

Avoid inhalation and contact with skin and eyes. Do not get in eyes, on skin, on clothing. Do not breathe gas. Use only with adequate ventilation. Open valve slowly. Ensure that cylinders are not exposed to heat. When using, do not eat, drink or smoke. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death. Observe good industrial hygiene practices. Avoid containers, piping and fittings made of brass, bronze or other copper containing alloys or galvanized metals. Avoid using containers, pipes and fittings made of zinc-clad or copper bearing alloys.

Conditions for safe storage, including any incompatibilities

Compressed gas storage. Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. Store in a cool and well-ventilated place. Secure cylinders in an upright position at all times, close all valves when not in use. Secure cylinders from falling or being knocked over.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ammonia (CAS 7664-41-7)	PEL	35 mg/m ³ 50 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Ammonia (CAS 7664-41-7)	STEL	35 ppm
	TWA	25 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Ammonia (CAS 7664-41-7)	STEL	27 mg/m ³ 35 ppm
	TWA	18 mg/m ³ 25 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

Follow standard monitoring procedures.

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. An eye wash and safety shower must be available in the immediate work area.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear approved, tight fitting indirect vented or non-vented safety goggles where splashing is probable. Use of full face respirator with a canister or cartridge approved for NH₃ is best practice.

Skin protection**Hand protection**

Wear appropriate chemical resistant gloves. Thermally protective gloves are recommended. Suitable gloves can be recommended by the glove supplier.

Other

Wear appropriate chemical resistant clothing to prevent any possibility of skin contact.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Selection and use of respiratory protective equipment should be in accordance with OSHA General Industry Standard 29 CFR 1910.134; or in Canada with CSA Standard Z94.4. Respirator type: Chemical respirator with specific cartridge and full facepiece providing protection against the compound of concern. Seek advice from local supervisor.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Handle in accordance with good industrial hygiene and safety practice. When using, do not eat, drink or smoke. Wash hands after handling.

9. Physical and chemical properties

Appearance**Physical state**

Gas compressed, liquefied.

Form

Compressed liquefied gas.

Color

Colorless.

Odor

Pungent. Irritating.

Odor threshold

5 ppm

pH

11.7 approximate (1% aqueous solution)

Melting point/freezing point

-30.82 °F (-34.9 °C) (20% solution)

Initial boiling point and boiling range

-28.12 °F (-33.4 °C)

Flash point

Not available.

Evaporation rate

Not available.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits**Flammability limit - lower (%)**

16 %

Flammability limit - upper (%)

28 %

Explosive limit - lower (%)

Not available.

Explosive limit - upper (%)

Not available.

Vapor pressure

124 psi @ 20 °C (68 °F)

Vapor density

0.6 @ 0 °C (Air = 1)

Relative density

0.633 @ 4 °C (Water=1)

Solubility(ies)**Solubility (water)**

34 % @ 20 °C

Partition coefficient (n-octanol/water)

Not available.

Auto-ignition temperature

1203.8 °F (651 °C)

Decomposition temperature

Not available.

Viscosity

0.27 cP @ -34 °C

Other information**Bulk density**

620 kg/m³ @ 16 °C

Molecular formula

N-H3

Molecular weight

17.03 g/mol

Percent volatile

100 %

10. Stability and reactivity

Reactivity

Contact with acids will cause evolution of heat.

Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous reactions	May react with evolution of heat on contact with water. Hazardous polymerization does not occur.
Conditions to avoid	Heat, sparks, flames, elevated temperatures. Heat may cause the containers to explode. May form explosive mixtures with air. Contact with acids will cause evolution of heat.
Incompatible materials	Acids. Halogens. Oxidizing agents. Mercury, silver oxide or hypochlorite can form explosive compounds. Zinc.
Hazardous decomposition products	Upon decomposition, this product may yield poisonous gases including oxides of nitrogen, hydrogen gas and ammonia. Decomposition temperature may be lowered to 575 °F (302 °C) by contact with certain metals, such as nickel.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Toxic by inhalation.
Skin contact	Causes skin burns.
Eye contact	Causes serious eye damage.
Ingestion	This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Symptoms related to the physical, chemical and toxicological characteristics Contact with this material will cause burns to the skin, eyes and mucous membranes. Cough, shortness of breath, headache, nausea, vomiting.

Information on toxicological effects

Acute toxicity	Toxic if inhaled. Harmful if swallowed. Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.
Skin corrosion/irritation	Causes severe skin burns. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Serious eye damage/eye irritation	Causes severe eye damage. Direct contact with liquefied gas may cause eye damage from frostbite.
Respiratory or skin sensitization	
Respiratory sensitization	No data available.
Skin sensitization	No data available.
Germ cell mutagenicity	No data available.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA. Not classified.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	No data available.
Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	Not available.
Further information	Be aware that symptoms of lung edema (shortness of breath) may develop up to 24 hours after exposure.

12. Ecological information

Ecotoxicity In aqueous solution: Very toxic to aquatic organisms.

Components	Species	Test Results
Ammonia (CAS 7664-41-7)		
Aquatic		
Fish	LC50 Chinook salmon (Oncorhynchus tshawytscha)	0.43 - 0.47 mg/l, 96 hours
Persistence and degradability	Not relevant.	
Bioaccumulative potential	Not relevant.	
Mobility in soil	Not available.	
Mobility in general	The Gas will disperse in the air.	

Other adverse effects None known.

13. Disposal considerations

Disposal instructions The packaging should be collected for reuse. Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

Hazardous waste code D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]

Waste from residues / unused products Dispose in accordance with all applicable regulations.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN number UN1005

UN proper shipping name Ammonia, anhydrous

Transport hazard class(es)

Class 2.2

Subsidiary risk -

Label(s) 2.2

Packing group -

Environmental hazards

Marine pollutant Yes

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Special provisions 13, T50

Packaging exceptions None

Packaging non bulk 304

Packaging bulk 314, 315

IATA

UN number UN1005

UN proper shipping name AMMONIA, ANHYDROUS

Transport hazard class(es)

Class Forbidden

Subsidiary risk -

Label(s) -

Packing group -

Environmental hazards -

ERG Code -

Special precautions for user Passenger and Cargo Aircraft Quantity limitation: Forbidden.

IMDG

UN number UN1005

UN proper shipping name AMMONIA, ANHYDROUS

Transport hazard class(es)

Class 2.3

Subsidiary risk 8

Label(s) 2.3, 8

Packing group -

Environmental hazards

Marine pollutant Yes

EmS F-C, S-U

Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Ammonia (CAS 7664-41-7) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Immediate Hazard - Yes
 Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - Yes
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Ammonia	7664-41-7	100	500		

SARA 311/312 Hazardous chemical
 Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Ammonia	7664-41-7	99-99.8

Other federal regulations**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Ammonia (CAS 7664-41-7)

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)
 Hazardous substance

Safe Drinking Water Act (SDWA)
 Not regulated.

US state regulations
 This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List

Ammonia (CAS 7664-41-7)

US. New Jersey Worker and Community Right-to-Know Act

Ammonia (CAS 7664-41-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Ammonia (CAS 7664-41-7)

US. Rhode Island RTK

Ammonia (CAS 7664-41-7)

US. California Proposition 65

Not Listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	25-June-2015
Revision date	-
Version #	01
Further information	HMIS® is a registered trade and service mark of the NPCA.
HMIS® ratings	Health: 3* Flammability: 1 Physical hazard: 0

NFPA ratings



References

ACGIH
EPA: Acquire database
NLM: Hazardous Substances Data Base
US. IARC Monographs on Occupational Exposures to Chemical Agents

Disclaimer

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