

**1. Identification**

**Product identifier** Ammonia, anhydrous

**Other means of identification**

**MSDS Number** KF\_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**

**Company Name** Koch Fertilizer, LLC  
4111 E 37th Street North  
PO Box 2219  
Wichita, KS, 67201-2219  
kochmsds@kochind.com  
1-316-828-7672

**Emergency** For Chemical Emergency  
Call CHEMTREC day or night  
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.

<b>Response</b>	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.
<b>Storage</b>	Protect from sunlight. Store in a well-ventilated place. Keep container tightly closed. Store locked up.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Hazard(s) not otherwise classified (HNOC)</b>	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

<b>Inhalation</b>	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.
<b>Skin contact</b>	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.
<b>Eye contact</b>	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.
<b>Ingestion</b>	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.
<b>Most important symptoms/effects, acute and delayed</b>	Contact with this material will cause burns to the skin, eyes and mucous membranes. Cough, shortness of breath, headache, nausea, vomiting.
<b>Indication of immediate medical attention and special treatment needed</b>	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.
<b>General information</b>	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

<b>Suitable extinguishing media</b>	Carbon dioxide (CO2). Water. Dry powder.
<b>Unsuitable extinguishing media</b>	Not applicable.
<b>Specific hazards arising from the chemical</b>	Flammable gas - may cause flash fire. Contents under pressure. Pressurized container may explode when exposed to heat or flame.
<b>Special protective equipment and precautions for firefighters</b>	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/m3
		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/m3
		35 ppm
	TWA	18 mg/m3 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.

<b>Skin protection</b>	
<b>Hand protection</b>	Wear appropriate chemical resistant gloves. Thermally protective gloves are recommended. Suitable gloves can be recommended by the glove supplier.
<b>Other</b>	Wear appropriate chemical resistant clothing to prevent any possibility of skin contact.
<b>Respiratory protection</b>	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.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.
<b>General hygiene considerations</b>	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

<b>Physical state</b>	Gas compressed, liquefied.
<b>Form</b>	Compressed liquefied gas.
<b>Color</b>	Colorless.
<b>Odor</b>	Pungent. Irritating.
<b>Odor threshold</b>	5 ppm
<b>pH</b>	11.7 approximate (1% aqueous solution)
<b>Melting point/freezing point</b>	-30.82 °F (-34.9 °C) (20% solution)
<b>Initial boiling point and boiling range</b>	-28.12 °F (-33.4 °C)
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.

### Upper/lower flammability or explosive limits

<b>Flammability limit - lower (%)</b>	16 %
<b>Flammability limit - upper (%)</b>	28 %
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	124 psi @ 20 °C (68 °F)
<b>Vapor density</b>	0.6 @ 0 °C (Air = 1)
<b>Relative density</b>	0.633 @ 4 °C (Water=1)
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	34 % @ 20 °C
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	1203.8 °F (651 °C)
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	0.27 cP @ -34 °C
<b>Other information</b>	
<b>Bulk density</b>	620 kg/m <sup>3</sup> @ 16 °C
<b>Molecular formula</b>	N-H3
<b>Molecular weight</b>	17.03 g/mol
<b>Percent volatile</b>	100 %

## 10. Stability and reactivity

<b>Reactivity</b>	Contact with acids will cause evolution of heat.
-------------------	--

<b>Chemical stability</b>	Stable under normal temperature conditions and recommended use.
<b>Possibility of hazardous reactions</b>	May react with evolution of heat on contact with water. Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	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.
<b>Incompatible materials</b>	Acids. Halogens. Oxidizing agents. Mercury, silver oxide or hypochlorite can form explosive compounds. Zinc.
<b>Hazardous decomposition products</b>	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

<b>Inhalation</b>	Toxic by inhalation.
<b>Skin contact</b>	Causes skin burns.
<b>Eye contact</b>	Causes serious eye damage.
<b>Ingestion</b>	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

<b>Acute toxicity</b>	Toxic if inhaled. Harmful if swallowed. Contact with liquefied gas can cause damage (frostbite) due to rapid evaporative cooling.
<b>Skin corrosion/irritation</b>	Causes severe skin burns. Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
<b>Serious eye damage/eye irritation</b>	Causes severe eye damage. Direct contact with liquefied gas may cause eye damage from frostbite.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	No data available.
<b>Skin sensitization</b>	No data available.
<b>Germ cell mutagenicity</b>	No data available.
<b>Carcinogenicity</b>	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.

<b>Reproductive toxicity</b>	No data available.
<b>Specific target organ toxicity - single exposure</b>	No data available.
<b>Specific target organ toxicity - repeated exposure</b>	No data available.
<b>Aspiration hazard</b>	Not available.
<b>Further information</b>	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)		
<b>Aquatic</b>		
Fish	LC50 Chinook salmon (Oncorhynchus tshawytscha)	0.43 - 0.47 mg/l, 96 hours
<b>Persistence and degradability</b>	Not relevant.	
<b>Bioaccumulative potential</b>	Not relevant.	
<b>Mobility in soil</b>	Not available.	
<b>Mobility in general</b>	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	26-February-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

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Safety Data Sheet (SDS) and was prepared pursuant to Government regulation(s) that identify specific types of information to be provided. This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided herein with respect to any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. No responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product specifically should advise all of their employees, agents, contractors and customers who will use the product of this (M)SDS.