

**1. Identification**

**Product identifier** Ammonia, anhydrous

**Other means of identification**

**SDS Number** KF\_NH3\_CA\_EN

**Synonyms** Ammonia, 82-00-0, NH3

**Recommended use** Fertiliser.

**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 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

**Label elements****Signal word**

Danger

**Hazard statement**

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

**Precautionary statement****Prevention**

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

<b>Response</b>	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor. Wash contaminated clothing before reuse. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources. Collect spillage.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Protect from sunlight.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Other hazards</b>	None known.
<b>Supplemental information</b>	None.

### 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>	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTRE or doctor/physician.
<b>Skin contact</b>	Take off immediately all contaminated clothing. If frostbite occurs, immerse involved area in warm water (between 38 °C/100 °F and 43 °C/110 °F, not exceeding 44 °C/112 °F). Keep immersed for 20 to 40 minutes. Seek medical assistance. Rinse skin with water/shower. Call a physician or poison control centre immediately. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.
<b>Eye contact</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control centre immediately. If frostbite occurs, immediately flush eyes with plenty of warm water (not exceeding 105°F/41°C) for at least 15 minutes.
<b>Ingestion</b>	Not likely, due to the form of the product. Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
<b>Most important symptoms/effects, acute and delayed</b>	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Cough, shortness of breath, headache, nausea, vomiting.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. 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. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

### 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions**

In case of fire and/or explosion do not breathe fumes. DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED. In case of fire: Stop leak if safe to do so. Do not move cargo or vehicle if cargo has been exposed to heat. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Move containers from fire area if you can do so without risk. Do not direct water at source of leak or safety devices as icing may occur. Use water spray to cool unopened containers. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

**Specific methods**

Use standard firefighting procedures and consider the hazards of other involved materials. Cool containers exposed to flames with water until well after the fire is out.

**General fire hazards**

Flammable gas. Contents under pressure. Pressurised container may explode when exposed to heat or flame.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing gas. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

**Methods and materials for containment and cleaning up**

Stop leak if you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapours or divert vapour cloud drift. Isolate area until gas has dispersed. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). This product is miscible in water. Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

**Environmental precautions**

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

**7. Handling and storage**

**Precautions for safe handling**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. All equipment used when handling the product must be grounded. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Suck back of water into the container must be prevented. Do not allow backfeed into the container. Purge air from system before introducing gas. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. 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. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid breathing gas. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

**Conditions for safe storage, including any incompatibilities**

Store locked up. Keep away from heat, sparks and open flame. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Stored containers should be periodically checked for general condition and leakage. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

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

#### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Ammonia (CAS 7664-41-7)	STEL	24 mg/m3
		35 ppm
	TWA	17 mg/m3
		25 ppm

#### Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

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

#### Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

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

#### Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

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

#### Canada. Quebec OELs. (Ministry of Labor - Regulation respecting occupational health and safety)

Components	Type	Value
Ammonia (CAS 7664-41-7)	STEL	24 mg/m3
		35 ppm
	TWA	17 mg/m3
		25 ppm

#### Canada. Saskatchewan OELs (Occupational Health and Safety Regulations, 1996, Table 21)

Components	Type	Value
Ammonia (CAS 7664-41-7)	15 minute	35 ppm
	8 hour	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 minimise the risk of inhalation. If engineering measures are not sufficient to maintain concentrations 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 NH<sub>3</sub> is best practice.

#### Skin protection

##### Hand protection

Suitable gloves can be recommended by the glove supplier. Thermally protective gloves are recommended.

##### Other

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

**Respiratory protection** Respirator type: Chemical respirator with specific cartridge and full facepiece providing protection against the compound of concern. 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. 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 practices. 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.

**Colour** Colourless.

**Odour** Pungent. Irritating.

**Odour threshold** 5 ppm

**pH** 11.7 approximate (1% aqueous solution)

**Melting point/freezing point** -34.9 °C (-30.82 °F) (20% solution)

**Initial boiling point and boiling range** -33.4 °C (-28.1 °F)

**Flash point** Not available.

**Evaporation rate** Not available.

**Flammability (solid, gas)** Flammable gas.

### Upper/lower flammability or explosive limits

**Flammability limit - lower (%)** 16 %

**Flammability limit - upper (%)** 28 %

**Explosive limit - lower (%)** Not available.

**Explosive limit - upper (%)** Not available.

**Vapour pressure** 124 psi @ 20 °C (68 °F)

**Vapour 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** 651 °C (1203.8 °F)

**Decomposition temperature** Not available.

**Viscosity** 0.27 cP @ -34 °C

### Other information

**Bulk density** 620 kg/m<sup>3</sup> @ 16 °C

**Explosive properties** May form explosive mixtures with air.

**Molecular formula** N-H<sub>3</sub>

**Molecular weight** 17.03 g/mol

**Oxidising properties** Not oxidising.

**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.

<b>Possibility of hazardous reactions</b>	May react with evolution of heat on contact with water. Hazardous polymerisation 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 if inhaled.
<b>Skin contact</b>	Causes severe skin burns.
<b>Eye contact</b>	Causes serious eye damage.
<b>Ingestion</b>	Causes digestive tract burns. Harmful if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics** Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

### 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.

Components	Species	Test Results
Ammonia (CAS 7664-41-7)		
<b>Acute</b>		
<b>Inhalation</b>		
LC50	Rat	5.1 mg/l, 1 Hours
<b>Oral</b>		
LD50	Rat	350 mg/kg as Ammonium hydroxide
<b>Skin corrosion/irritation</b>	Causes severe skin burns. Contact with liquefied gas might cause frostbite, in some cases with tissue damage.	
<b>Serious eye damage/eye irritation</b>	Causes serious eye damage. Direct contact with liquefied gas may cause eye damage from frostbite.	
<b>Respiratory or skin sensitisation</b>		
<b>Respiratory sensitisation</b>	Not a respiratory sensitiser.	
<b>Skin sensitisation</b>	This product is not expected to cause skin sensitisation.	
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
<b>Carcinogenicity</b>	This product is not classified as a carcinogen.	
<b>Reproductive toxicity</b>	This product is not expected to cause reproductive or developmental effects.	
<b>Specific target organ toxicity - single exposure</b>	Not classified.	
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.	
<b>Aspiration hazard</b>	Not likely, due to the form of the product.	
<b>Chronic effects</b>	Prolonged inhalation may be harmful.	
<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** Very toxic to aquatic life.

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>	No data is available on the degradability of this product.	
<b>Bioaccumulative potential</b>	No data available.	
<b>Mobility in soil</b>	This product is miscible in water.	
<b>Other adverse effects</b>	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

### 13. Disposal considerations

<b>Disposal instructions</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Local disposal regulations</b>	Dispose in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Waste from residues / unused products</b>	Dispose of in accordance with all applicable regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.
<b>Contaminated packaging</b>	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport information

#### TDG

<b>UN number</b>	UN1005
<b>UN proper shipping name</b>	ANHYDROUS AMMONIA
<b>Transport hazard class(es)</b>	
<b>Class</b>	2.3
<b>Subsidiary risk</b>	8
<b>Packing group</b>	Not available.
<b>Environmental hazards</b>	Not available.
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.

#### IATA

<b>UN number</b>	UN1005
<b>UN proper shipping name</b>	Ammonia, anhydrous
<b>Transport hazard class(es)</b>	
<b>Class</b>	Forbidden
<b>Subsidiary risk</b>	Forbidden
<b>Packing group</b>	Not available.
<b>Environmental hazards</b>	Yes.
<b>ERG Code</b>	2CP
<b>Special precautions for user</b>	Passenger and Cargo Aircraft Quantity limitation: Forbidden.

#### IMDG

<b>UN number</b>	UN1005
<b>UN proper shipping name</b>	AMMONIA, ANHYDROUS
<b>Transport hazard class(es)</b>	
<b>Class</b>	2.3
<b>Subsidiary risk</b>	8
<b>Packing group</b>	Not available.
<b>Environmental hazards</b>	
<b>Marine pollutant</b>	Yes
<b>EmS</b>	F-C, S-U
<b>Special precautions for user</b>	Read safety instructions, SDS and emergency procedures before handling.
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not applicable.

## General information

IMDG Regulated Marine Pollutant. Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: Ensure that containers are firmly secured. Ensure cylinder valve is closed and not leaking. Ensure valve outlet cap nut or plug (where provided) is correctly fitted. Ensure valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

## 15. Regulatory information

### Canadian regulations

This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

#### Controlled Drugs and Substances Act

Not regulated.

#### Export Control List (CEPA 1999, Schedule 3)

Not listed.

#### Greenhouse Gases

Not listed.

#### Precursor Control Regulations

Not regulated.

### International regulations

#### Stockholm Convention

Not applicable.

#### Rotterdam Convention

Not applicable.

#### Kyoto Protocol

Not applicable.

#### Montreal Protocol

Not applicable.

#### Basel Convention

Not applicable.

### International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
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\*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

### Issue date

28-July-2016

### Revision date

22-April-2020

### Version No.

02

### List of abbreviations

EC50: Effective Concentration, 50%.  
LC50: Lethal Concentration, 50%.  
LD50: Lethal Dose, 50%.



**References**

IARC Monographs. Overall Evaluation of Carcinogenicity  
ECHA CHEM

**Disclaimer**

NOTICE: The information contained in this document is based on data considered to be accurate as of the preparation date of this Safety Data Sheet (SDS) and was prepared pursuant to applicable Government regulation(s). 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 above 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 about 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. Purchasers and users of the product are responsible for determining that this product is suitable for the intended use and application. No responsibility can be assumed by vendor for any damage or injury resulting from failure to adhere to recommended uses, or from any hazards inherent to 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 should explicitly advise their employees, agents, contractors and customers who will use the product of this SDS.