



MATHESON

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Safety Data Sheet

Material Name: AMMONIA, ANHYDROUS

SDS ID: MAT01050

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

AMMONIA, ANHYDROUS

Synonyms

ANHYDROUS AMMONIA; AMMONIA GAS; AMMONIA; SPIRIT OF HARTSHORN; AMMONIA, ANHYDROUS, LIQUIFIED; UN 1005; H3N;

Chemical Family

inorganic, Gas

Product Use

Industrial and Specialty Gas Applications.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Gases - Category 1

Gases Under Pressure - Liquefied gas

Acute Toxicity - Oral - Category 4

Acute Toxicity - Inhalation - Gas - Category 3

Skin Corrosion/Irritation - Category 1

Serious Eye Damage/Eye Irritation - Category 1

Respiratory Sensitization - Category 1

Germ Cell Mutagenicity - Category 2

Specific target organ toxicity - Single exposure - Category 1 (Respiratory system)

Specific target organ toxicity - Repeated exposure - Category 2 (Respiratory system)

Hazardous to the Aquatic Environment - Acute - Category 1

Hazardous to the Aquatic Environment - Chronic - Category 1

GHS Label Elements

Symbol(s)



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Material Name: AMMONIA, ANHYDROUS**SDS ID: MAT01050****Signal Word**

Danger

Hazard Statement(s)

Extremely flammable gas.

Contains gas under pressure; may explode if heated.

Toxic if inhaled.

Harmful if swallowed.

Causes severe skin burns and eye damage.

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Suspected of causing genetic defects.

Causes damage to organs.

May cause damage to organs through prolonged or repeated exposure.

Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s)**Prevention**

Do not handle until all safety precautions have been read and understood.

Do not breathe gas.

Do not eat, drink or smoke when using this product.

Obtain special instructions before use.

Wear protective gloves/protective clothing/eye protection/face protection.

Use Personal Protective equipment as required.

Keep away from heat, sparks, open flame, and hot surfaces - No smoking.

Use only outdoors or in a well-ventilated area.

Keep container tightly closed.

Avoid release to the environment.

Response

In case of inadequate ventilation wear respiratory protection.

Wash thoroughly after handling.

Wash contaminated clothing before reuse.

Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

Eliminate all ignition sources if safe to do so.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Immediately call a POISON CENTER or doctor/physician.

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.



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Remove/Take off immediately all contaminated clothing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Specific treatment is urgent, see first aid section of Safety Data Sheet.

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Get medical advice/attention if you feel unwell.

Collect spillage.

Storage

Store in a well-ventilated place.

Protect from sunlight.

Store locked up.

Disposal

Dispose in accordance with all applicable regulations.

Statement of Unknown Toxicity

100% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards

Frostbite may occur from rapid evaporation of the liquified gas.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
7664-41-7	AMMONIA, ANHYDROUS	100.0

Section 4 - FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing before reuse. Destroy contaminated shoes.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.



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Material Name: AMMONIA, ANHYDROUS**SDS ID: MAT01050****Most Important Symptoms/Effects****Acute**

respiratory tract burns, skin burns, eye burns, allergic reactions, lung damage

Delayed

Causes genetic defects, respiratory tract burns, skin burns, eye burns, lung damage, respiratory system effects

Note to Physicians

For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media**Suitable Extinguishing Media**

carbon dioxide, regular dry chemical, Large fires: Use regular foam or flood with fine water spray.

Unsuitable Extinguishing Media

None known.

Special Hazards Arising from the Chemical

Moderate explosion hazard. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products

ammonia, oxides of nitrogen

Fire Fighting Measures

Do not get water inside container. Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Keep unnecessary people away, isolate hazard area and deny entry. Stop flow of gas. Do not attempt to extinguish fire unless flow of material can be stopped first.

Special Protective Equipment and Precautions for Fire fighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Stop leak if safe to do so - Prevent entry into waterways, drains, or confined areas. Eliminate all ignition sources if safe to do so. Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. Damaged cylinders should be handled only by specialists.



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Material Name: AMMONIA, ANHYDROUS**SDS ID: MAT01050****Environmental Precautions**

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat, sparks and flame. When using, do not eat, drink or smoke. Do not breathe gas, fumes, vapor, or spray. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place.

Protect from sunlight.

Store locked up.

Subject to storage regulations: U.S. OSHA 29 CFR 1910.111.

Incompatible Materials

Acids, combustible materials, metals, oxidizing materials, metal salts, halo carbons, halogens, amines, reducing agents, Cyanides, bases

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

AMMONIA, ANHYDROUS	7664-41-7
ACGIH:	25 ppm TWA
	35 ppm STEL
NIOSH:	25 ppm TWA; 18 mg/m ³ TWA
	35 ppm STEL; 27 mg/m ³ STEL
	300 ppm IDLH
Europe:	20 ppm TWA; 14 mg/m ³ TWA
	50 ppm STEL; 36 mg/m ³ STEL
OSHA (US):	50 ppm TWA; 35 mg/m ³ TWA
Mexico:	25 ppm TWA LMPE-PPT; 18 mg/m ³ TWA LMPE-PPT
	35 ppm STEL [LMPE-CT]; 27 mg/m ³ STEL [LMPE-CT]

EU - Occupational Exposure (98/24/EC) - Binding Biological Limit Values and Health Surveillance Measures



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There are no biological limit values for any of this product's components.

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment**Eye/face protection**

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate chemical resistant clothing.

Respiratory Protection

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Glove Recommendations

For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Not available	Physical State	gas
Odor	pungent odor	Color	colorless
Odor Threshold	1 - 5 ppm	pH	11.6 at 25 °C
Melting Point	-78 °C (-108 °F)	Boiling Point	-33 °C (-27 °F)
Freezing point	Not available	Evaporation Rate	Not available
Boiling Point Range	Not available	Flammability (solid, gas)	Not available
Autoignition	651 °C (1204 °F)	Flash Point	Not available
Lower Explosive Limit	15 %	Decomposition	Not available
Upper Explosive Limit	28 %	Vapor Pressure	6658 mmHg at 21 °C
Vapor Density (air=1)	0.5967	Specific Gravity (water=1)	Not available



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Water Solubility	38 % (@ 20 °C)	Partition coefficient: n-octanol/water	Not available
Viscosity	0.475 cp	Solubility (Other)	Not available
Density	0.7067 g/L at 25 °C	Log KOW	0.03
pH Solution	1 N	Physical Form	liquefied gas
Molecular Formula	N-H ₃	Molecular Weight	17.03

Solvent Solubility**Soluble**

methanol, ethanol, chloroform, ether, organic solvents

Section 10 - STABILITY AND REACTIVITY

Reactivity

No reactivity hazard is expected.

Chemical Stability

Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions

Will not polymerize.

Conditions to Avoid

Minimize contact with material. Avoid inhalation of material or combustion by-products. Containers may rupture or explode if exposed to heat. Avoid heat, flames, sparks and other sources of ignition.

Incompatible Materials

Acids, combustible materials, metals, oxidizing materials, metal salts, halo carbons, halogens, amines, reducing agents, Cyanides, bases

Hazardous decomposition products

ammonia, oxides of nitrogen

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure**Inhalation**

Toxic if inhaled. burns May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.

Skin Contact

burns



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Material Name: AMMONIA, ANHYDROUS**SDS ID: MAT01050****Eye Contact**

burns

Ingestion

burns

Acute and Chronic Toxicity**Component Analysis - LD50/LC50**

The components of this material have been reviewed in various sources and the following selected endpoints are published:

AMMONIA, ANHYDROUS (7664-41-7)

Oral LD50 Rat 350 mg/kg

Inhalation LC50 Rat 2000 ppm 4 h

Immediate Effects

respiratory tract burns, skin burns, eye burns, allergic reactions, lung damage

Delayed Effects

respiratory tract burns, skin burns, eye burns, lung damage, respiratory system effects

Irritation/Corrosivity Data

From human experience the gas is recognized as a skin and eye irritant.

Respiratory Sensitization

Human experience and animal testing indicate the substance is sensitizing.

Dermal Sensitization

Animal testing with an aqueous solution indicates the substance is not sensitizing.

Component Carcinogenicity

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

Germ Cell Mutagenicity

May cause genetic defects.

Tumorigenic Data

No data available

Reproductive Toxicity

No data available.

Specific Target Organ Toxicity - Single Exposure

Respiratory system, lungs

Specific Target Organ Toxicity - Repeated Exposure

Respiratory system, lungs

Aspiration hazard

Not applicable.

Medical Conditions Aggravated by Exposure

eye disorders, respiratory disorders, skin disorders and allergies



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Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Component Analysis - Aquatic Toxicity

AMMONIA, ANHYDROUS	7664-41-7
Fish:	LC50 96 h Cyprinus carpio 0.44 mg/L; LC50 96 h Lepomis macrochirus 0.26 - 4.6 mg/L; LC50 96 h Lepomis macrochirus 1.17 mg/L [flow-through]; LC50 96 h Pimephales promelas 0.73 - 2.35 mg/L; LC50 96 h Pimephales promelas 5.9 mg/L [static]; LC50 96 h Poecilia reticulata >1.5 mg/L; LC50 96 h Poecilia reticulata 1.19 mg/L [static]
Invertebrate:	LC50 48 h Daphnia magna 25.4 mg/L IUCLID

Persistence and Degradability

No information available for the product.

Bioaccumulative Potential

No information available for the product.

Mobility

No information available for the product.

Bioconcentration

No information available for the product.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components

Section 14 - TRANSPORT INFORMATION

Component Marine Pollutants

This material contains one or more of the following chemicals required by US DOT to be identified as marine pollutants

Component	CAS #	Minimum Concentration
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AMMONIA, ANHYDROUS	7664-41-7	DOT regulated marine pollutant
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US DOT Information:

Shipping Name: Ammonia, anhydrous

Hazard Class: 2.2

UN/NA #: UN1005

Required Label(s): 2.2

IMDG Information:

Shipping Name: Ammonia, anhydrous

Hazard Class: 2.3

UN#: UN1005

Required Label(s): 2.3 8

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

AMMONIA, ANHYDROUS	7664-41-7
SARA 302:	500 lb TPQ
SARA 313:	1 % de minimis concentration (includes anhydrous Ammonia and aqueous Ammonia from water dissociable Ammonium salts and other sources, 10% of total aqueous Ammonia is reportable under this listing)
CERCLA:	100 lb final RQ; 45.4 kg final RQ
OSHA (safety):	10000 lb TQ anhydrous); 15000 lb TQ solution, >44% Ammonia by weight)
SARA 304:	100 lb EPCRA RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes Chronic Health: No Fire: No Pressure: Yes Reactivity: No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
AMMONIA, ANHYDROUS	7664-41-7	Yes	Yes	Yes	Yes	Yes

Not listed under California Proposition 65



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Material Name: AMMONIA, ANHYDROUS**SDS ID: MAT01050****Canadian WHMIS Ingredient Disclosure List (IDL)**

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

AMMONIA, ANHYDROUS	7664-41-7
	1 %

WHMIS Classification

A., B1., D1A., E

Component Analysis - Inventory

AMMONIA, ANHYDROUS (7664-41-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR - KECI/KECL	KR - TCCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 3 Fire: 1 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Updated: 05/01/2015

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National



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Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information

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