

## 1. Identification

**Product identifier** Ammonium Hydroxide 1 - 1.6%

**Other means of identification**

**Synonyms** Ammonium Hydroxide 1% \* Ammonium Hydroxide 1.6%

**Recommended use of the chemical and restrictions on use**

**Recommended use** Industrial use.

**Recommended restrictions** None known.

**Manufacturer/Importer/Supplier/Distributor information**

**Manufacturer/Supplier** CMC Materials; 870 North Commons Drive; Aurora, IL 60504; United States

**Telephone** +1.630.375.6631

**Manufacturer/Supplier** CMC Materials; Amber Business Centre; Riddings Alfreton Derbyshire DE55 4DA; United Kingdom

**Telephone** +44 (0) 1773 844200

**E-mail** steve.grundy@cmcmaterials.com

**Manufacturer/Supplier** CMC Materials; 300 Throckmorton, Suite 1900; Fort Worth, Texas 76102; United States

**Telephone** +1.817.761.6100

**Manufacturer/Supplier** CMC Materials; Les Vieilles Hayes; 50620 Saint Fromond; France

**Telephone** +33 (0) 2 33 75 64 00

**E-mail** francesds@cmcmaterials.com

**Manufacturer/Supplier** CMC Materials; 9 Tuas View Lane; Singapore 638826

**Telephone** 65.3163.6666

**Manufacturer/Supplier** CMC Materials; Via Umbria 4; 20098 San Giuliano Milanese (MI); Italy

**Telephone** +39 02 988381 / +44 (0) 1773 844200

**E-mail** steve.grundy@cmcmaterials.com

**Emergency phone number**

**3E Global Incident Response Hotline**

**Singapore** +65 3158 6734

**Asia-Pacific** +1.760.476.3960

**International** +1.760.476.3962

**Access code** 333035

**CHEMTREC**

For Dangerous Goods Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:

**Singapore** 800.101.2201

**International** +1.703.741.5970

## 2. Hazards identification

**GHS classification**

**Physical hazards** Not classified.

**Health hazards** Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 2

**Environmental hazards** Not classified.

**GHS label elements, including precautionary statements**

## Pictograms



### Signal word

Warning

### Hazard statements

Causes skin irritation. Causes serious eye irritation.

### Precautionary statement

#### Prevention

Wash thoroughly after handling. Wear protective gloves/eye protection/face protection.

#### Response

IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention.

#### Storage

Not applicable.

#### Disposal

Not applicable.

### Other hazards which do not result in classification

None known.

### Supplemental information

None.

## 3. Composition/information on ingredients

### Substance or mixture

Mixture

Chemical name	Common name and synonyms	CAS Number	Concentration (%)
Ammonia, anhydrous		7664-41-7	1 - 1.6

### Composition comments

All concentrations are in percent by weight.  
Components not listed are either non-hazardous or are below reportable limits.

## 4. First-aid measures

### Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

### Skin contact

Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.

### Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

### Ingestion

Rinse mouth. Get medical attention if symptoms occur.

### Most important symptoms/effects, acute and delayed

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

### Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

### General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## 5. Fire-fighting measures

### Suitable extinguishing media

Use extinguishing agent suitable for type of surrounding fire.

### Unsuitable extinguishing media

None known.

### Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed. Combustion products may include: nitrogen oxides, ammonia.

### Fire fighting equipment/instructions

Move containers from fire area if you can do so without risk.

### Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

### Specific methods

Use standard firefighting procedures and consider the hazards of other involved materials.

### General fire hazards

The product is nonflammable and does not support combustion.

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

### Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

## Methods and materials for containment and cleaning up

This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. 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.

## 7. Handling and storage

### Precautions for safe handling

Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

### Conditions for safe storage, including any incompatibilities

Store in tightly closed container. Store away from incompatible materials (see section 10 of the SDS).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### Singapore. PELs. (Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order)

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

### Control parameters/Occupational exposure limits

#### US. ACGIH Threshold Limit Values

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

### Appropriate engineering control measures

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide easy access to water supply and eye wash facilities.

### Individual protection measures, such as personal protective equipment

<b>Eye/face protection</b>	When working with liquids wear splash-proof chemical goggles and face shield unless full facepiece respiratory protection is worn.
<b>Skin protection</b>	
<b>Hand protection</b>	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
<b>Other</b>	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
<b>Respiratory protection</b>	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Selection and use of respiratory protective equipment should be in accordance with Singapore Standard SS 548:2009. Appropriate respirator selection should be made by a qualified professional.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.

### General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Colour</b>	Colourless.
<b>Odour</b>	Slightly ammoniacal.
<b>Odour threshold</b>	Not available.
<b>pH</b>	12

<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	100 °C (212 °F)
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Vapour pressure</b>	17.54 mm Hg
<b>Vapour density</b>	Not available.
<b>Relative density</b>	0.903 (Water=1)
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Completely soluble in water.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other data</b>	
<b>Density</b>	56.37 lb/ft³ (25 °C (77 °F))

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	Contact with incompatible materials. Excessive heat.
<b>Incompatible materials</b>	Acids. Oxidizing agents.
<b>Hazardous decomposition products</b>	No hazardous decomposition products are known.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	Spray mist may irritate the respiratory system.
<b>Skin contact</b>	Causes skin irritation.
<b>Eye contact</b>	Causes serious eye irritation.
<b>Ingestion</b>	May cause discomfort if swallowed.

<b>Acute toxicity</b>	Not expected to be acutely toxic.
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Components	Species	Test Results
Ammonia, anhydrous (CAS 7664-41-7)		
<u>Acute</u>		
Inhalation		
LC50	Rat	13.77 mg/l, 1 hr (female)
		9.85 mg/l, 1 hr (male)
Symptoms	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.	
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitisation		
Respiratory sensitisation	Not a respiratory sensitiser.	
Skin sensitisation	This product is not expected to cause skin sensitisation.	
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
Carcinogenicity	Not classifiable as to carcinogenicity to humans.	

<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 an aspiration hazard.
<b>Chronic effects</b>	None known.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components		Species	Test Results
Ammonia, anhydrous (CAS 7664-41-7)			
<b>Aquatic</b>			
<i>Acute</i>			
Crustacea	LC50	Daphnia magna	92.4 - 110 mg/l, 48 Hours (Read-across)
Fish	LC50	Green sunfish (Lepomis cyanellus)	9 - 272 mg/l, 96 hours total ammonia (ionized and non-ionized)
		Oncorhynchus mykiss	11 - 48 mg/l, 96 hours total ammonia (ionized and non-ionized)
<i>Chronic</i>			
Crustacea	NOEC	Daphnia magna	0.79 mg/l
Fish	NOEC	Pink salmon (Oncorhynchus gorbuscha)	1.2 mg/l

**Persistence and degradability** The product solely consists of inorganic compounds which are not biodegradable.

**Bioaccumulative potential** No data available.

### Octanol/water partition coefficient log Kow

Ammonia, anhydrous (CAS 7664-41-7) -2.66

**Mobility in soil** The product is water soluble and may spread in water systems.

**Other adverse effects** The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

## 13. Disposal considerations

**Disposal methods/information** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Special precautions** Dispose in accordance with all applicable regulations.

## 14. Transport information

### ADR

Not regulated as dangerous goods.

### RID

Not regulated as dangerous goods.

### ADN

Not regulated as dangerous goods.

### IATA

Not regulated as dangerous goods.

### IMDG

Not regulated as dangerous goods.

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

## 15. Regulatory information

**Safety, health and environmental regulations specific for the product in question** This safety data sheet was prepared in accordance with Singapore Standard Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods Part 3: Preparation of Safety Data Sheets (SDS) (SS 586: Part 3: 2014) as amended.

**Prior Informed Consent (PIC) Substances (Environment Protection and Management Act, 2nd Schedule, Part 1, Jul. 1, 2013)**

Not regulated.

**Chemical Weapons Prohibition (Act)**

Not applicable.

**Environmental Protection and Management (Hazardous Substances) Regulations**

Ammonia, anhydrous (CAS 7664-41-7)

1000 kg

500 kg

**Environmental Public Health Act**

Not applicable.

**Misuse of Drugs Act****Controlled Narcotic Drugs (Misuse of Drugs Act, First Schedule, Part I, II & III, as amended)**

Not regulated.

**Drug Precursors (Misuse of Drugs Act, Third Schedule, Parts I & II, as amended)**

Not regulated.

**Controlled Specified Drugs (Misuse of Drugs Act, Fourth Schedule, as amended)**

Not regulated.

**Temporarily Listed Drugs (Misuse of Drugs Act, Fifth Schedule, as amended)**

Not regulated.

**International regulations****Montreal Protocol**

Not applicable.

**Stockholm Convention**

Not applicable.

**Rotterdam Convention**

Not applicable.

**Kyoto Protocol**

Not applicable.

**Basel Convention**

Not applicable.

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

Australia

Australian Inventory of Industrial Chemicals (AICIS)

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

New Zealand

New Zealand Inventory

Yes

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS)

Yes

Taiwan

Taiwan Chemical Substance Inventory (TCSI)

Yes

United States &amp; Puerto Rico

Toxic Substances Control Act (TSCA) Inventory

Yes

\*A "Yes" indicates that all components of this product comply 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****References**ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices  
IARC Monographs. Overall Evaluation of Carcinogenicity  
NLM: Hazardous Substances Data Base**Issued by**

Not available.

**Prepared by****Title**

Sharlene Parry, Product Stewardship Manager

**Disclaimer**

CMC Materials cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

**Issue date**

26-April-2021

**Revision date**

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**Key/legend**

ACGIH: American Conference of Governmental Industrial Hygienists.

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

CAS: Chemical Abstract Service.

IARC: International Agency for Research on Cancer.

IATA: International Air Transport Association.

IBC: Intermediate Bulk Container.

IMDG: International Maritime Dangerous Goods.

MARPOL: International Convention for the Prevention of Pollution From Ships.

RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.

STEL: Short-Term Exposure Limit.

TWA: Time Weighted Average.