

SAFETY DATA SHEET

1. Identification of the hazardous chemical and of the supplier

Product identifier: Ammonium Chloride

Other means of identification

Product No.: 0660, 3364, 3384

Recommended use of the chemical and restrictions on use

Recommended use: For Laboratory, Research or Manufacturing Use.

Recommended restrictions: Not determined.

Details of the supplier of the safety data sheet

Company Name: Avantor Performance Materials, LLC
 Address: 100 Matsonford Rd, Suite 200
 Radnor, PA 19087
 Telephone: Customer Service: 855-282-6867
 Fax:
 Contact Person: Product Information Compliance
 E-mail: info@avantormaterials.com

Emergency telephone number: CHEMTREC: 60-392125794 (24/7)

2. Hazard(s) identification

GHS classification of substance or mixture, and national or regional information:

Health Hazards

Acute toxicity (Oral)	Category 4
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2

Unknown toxicity- Health

Acute toxicity, inhalation, dust or mist	100 %
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Unknown toxicity- Environment

Acute hazards to the aquatic environment	0 %
Chronic hazards to the aquatic environment	100 %

GHS label elements

Hazard symbol(s):



Signal Word: Warning

Hazard Statement(s): Harmful if swallowed.
Causes serious eye irritation.

Precautionary statement(s):

- Prevention:** Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection.
- Response:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
- Disposal:** Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in GHS classification: None known.

3. Composition and information of the ingredients of the hazardous chemical

Substances

Chemical Identity	Common name and synonyms	CAS Number	Concentration*
Ammonium chloride		12125-02-9	99.5 - 100.0%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.

Description of necessary first-aid measures

- Inhalation:** Move to fresh air. Get medical attention if symptoms persist.
- Skin Contact:** Wash skin thoroughly with soap and water. Get medical attention if irritation persists after washing.
- Eye contact:** Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if symptoms persist.
- Ingestion** Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

- Symptoms:** Harmful if swallowed. Causes serious eye irritation.
- Hazards:** No data available.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media:** Use fire-extinguishing media appropriate for surrounding materials.
- Unsuitable extinguishing media:** None known.

Specific hazards arising from the chemical: Fire may produce irritating, corrosive and/or toxic gases.

Special protective action for fire fighters

- Special fire fighting procedures:** Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.
- Special protective equipment for fire-fighters:** Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

- Personal precautions, protective equipment and emergency procedures:** Keep unauthorized personnel away. Keep upwind. Ventilate closed spaces before entering them. Avoid inhalation of dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Environmental Precautions:** Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.
- Methods and material for containment and cleaning up:** Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination.
- Notification Procedures:** Inform authorities if large amounts are involved. Prevent entry into waterways, sewer, basements or confined areas.

7. Handling and storage

- Precautions to ensure safe handling:** Avoid contact with eyes, skin, and clothing. Avoid inhalation of dust. Do not taste or swallow. Do not eat, drink or smoke when using the product. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the SDS for Personal Protective Equipment.
- Conditions for safe storage, including any incompatibilities:** Keep container tightly closed. Store in a well-ventilated place.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Ammonium chloride Fume.	Time Weighted Average (TWA):	10 mg/m3	Malaysia. OELs. (Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations)03 2000
Ammonium chloride - Fume.	TWA	10 mg/m3	US. ACGIH Threshold Limit Values (2011)
	STEL	20 mg/m3	US. ACGIH Threshold Limit Values (2011)

Biological Limit Values

None of the components have assigned exposure limits.

Appropriate Engineering Controls: No data available.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) 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. An eye wash and safety shower must be available in the immediate work area.

Eye/face protection: Use tight fitting goggles if dust is generated.

Skin Protection

Hand Protection: Use suitable protective gloves if risk of skin contact.

Other: Wear suitable protective clothing.

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. Air-purifying respirator with a high efficiency particulate filter.

Hygiene measures: Provide eyewash station and safety shower. 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

Physical state: Solid
Form: Granular powder
Color: White
Odor: Odorless
Odor threshold: No data available.
pH: 4.5 - 6.0 (25 °C) (5% aqueous solution)

Melting point/freezing point:	337.8 - 341 °C
Initial boiling point and boiling range:	520 °C
Flash Point:	Not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	Noncombustible Solid
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	0.133 kPa (160.4 °C)
Vapor density:	No data available.
Relative density:	1.53 (25 °C)
Solubility(ies)	
Solubility in water:	372 g/l (20 °C) 758 g/l (100 °C)
Solubility (other):	acetone: Practically insoluble ether: Practically insoluble ethyl acetate: Practically insoluble methanol: Soluble
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	> 400 °C
Decomposition temperature:	338 °C
Viscosity:	No data available.
Other information	
Molecular weight:	53.5 g/mol (NH ₄ Cl)

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Excessive heat. Moisture.
Incompatible Materials:	Strong oxidizing agents. Strong acids. Nitrates. Potassium. Copper. Halogens.
Hazardous Decomposition Products:	Ammonia. Nitrogen oxides. Hydrogen chloride.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	May cause irritation to the respiratory system.
Skin Contact:	Causes skin irritation.
Eye contact:	Causes serious eye irritation.
Ingestion:	Harmful if swallowed.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: LD 50 (Rat): 1,410 - 1,650 mg/kg

Dermal

Product: LD 50 (Rat): > 2,000 mg/kg

Inhalation

Product: No data available.

Repeated dose toxicity

Product: No data available.

Skin Corrosion/Irritation

Product: Causes skin irritation.

Serious Eye Damage/Eye Irritation

Product: Causes serious eye irritation.

Respiratory or Skin Sensitization

Product: Not a skin nor a respiratory sensitizer.

ACGIH Sensitization

Carcinogenicity

Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogenic components identified

ACGIH Carcinogen List:

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro

Product: No mutagenic components identified

In vivo

Product: No mutagenic components identified

Reproductive toxicity

Product: No components toxic to reproduction

Specific Target Organ Toxicity - Single Exposure

Product: None known.

Specific Target Organ Toxicity - Repeated Exposure

Product: None known.

Aspiration Hazard

Product: Not classified

Other effects:

None known.

12. Ecological information

Ecotoxicity

Acute hazards to the aquatic environment

Fish
Product: No data available.

Aquatic Invertebrates
Product: No data available.

Chronic hazards to the aquatic environment

Fish
Product: No data available.

Aquatic Invertebrates
Product: No data available.

Toxicity to Aquatic Plants
Product: No data available.

Persistence and Degradability

Biodegradation
Product: Expected to be readily biodegradable.

BOD/COD Ratio
Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)
Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)
Product: No data available.

Mobility

Mobility in soil: No data available.

Other adverse effects: The product components are 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.

13. Disposal information

Disposal methods

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

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

14. Transport information

ADR

Not regulated.

IATA

Not regulated.

IMDG

Not regulated.

15. Regulatory information

Malaysia. Medical Surveillance Chemicals, Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health): Schedule 2

Not Regulated

Malaysia. Prohibited Use of Substances [Occupational Safety and Health (Prohibition of Use of Substance) Order]

Not Regulated

Malaysia. Controlled Precursors Subject to Conditional Exports (Customs (Prohibition of Exports) Order 2012, Second Schedule

Not Regulated

Malaysia. Controlled Precursors Subject to Conditional Imports (Customs (Prohibition of Imports) Order 2012, Part I of Second Schedule)

Not Regulated

Malaysia. CWC. Chemical Weapons Convention Act 2005, (Schedules 1-3)

Not Regulated

Malaysia. Ozone Depleting Substances (ODS) (Environmental Quality (Prohibition on the Use of CFC and Other Gases as Propellants and Blowing Agents) Order 1993)

Not Regulated

Malaysia. Lists of Halon Management (Environmental Quality (Halon Management) Regulation 1999)

Not Regulated

Malaysia. Refrigerant Hazardous Substance (Environmental Quality (Refrigerant Management) Regulation 1999)

Not Regulated

Malaysia. Active Ingredients of Pesticide Product (Pesticide Act 1974, First Schedule), as amended

Not Regulated

International regulations

Montreal protocol

Not applicable

Stockholm convention

Not applicable

Rotterdam convention

Not applicable

Kyoto protocol

Not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Japan (ENCS) List:	On or in compliance with the inventory
Japan ISHL Listing:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Mexico INSQ:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Philippines PICCS:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory

16. Other information, including date of preparation or last revision
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Issue Date: 07-28-2020

Revision Date: No data available.

Version #: 2.1

Source of information: Sources of information used in preparing this SDS included one or more of the following: results from in house or supplier toxicology studies, information from the Toxicology Data Network (TOXNET), European Chemical Agency (ECHA) substance dossiers, IARC Monographs, US National Toxicology Program data, the Agency for Toxic Substances and Disease Registry, other manufacturer's SDSs and other sources, as appropriate.

Further Information: No data available.

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