

1. Identification

Product: Ammonium chloride animal feed grade

Recommended use: For use as an animal feed ingredient.

Uses advised against: Not intended for human consumption.

Other means of identification

Molecular formula: NH_4Cl

Details of the supplier of the safety data sheet

Distributed by:

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2. Hazards Identification

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

Classification of the product

Acute Tox.	4 (oral)	Acute toxicity
Eye Dam./Irrit.	2A	Serious eye damage/eye irritation
Aquatic Acute	3	Hazardous to the aquatic environment - acute

Label elements

Pictogram:



Signal Word: WARNING

Hazard Statements:

H319 Causes serious eye irritation.
H302 Harmful if swallowed.
H402 Harmful to aquatic life.

Precautionary Statements (Prevention):

P280 Wear eye/face protection.
P273 Avoid release to the environment.
P270 Do not eat, drink or smoke when using this product.
P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301 + P330 IF SWALLOWED: rinse mouth.
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture. No specific dangers known, if the regulations/notes for storage and handling are considered.

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

Emergency overview

WARNING:

CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

HARMFUL IF SWALLOWED.

INGESTION MAY CAUSE GASTRIC DISTURBANCES.

Avoid contact with the skin, eyes and clothing.

Avoid inhalation of dusts.

Use with local exhaust ventilation.

Wear a NIOSH-certified (or equivalent) particulate respirator.

Wear NIOSH-certified chemical goggles.

Wear chemical resistant protective gloves.

Wear protective clothing.

Eye wash fountains and safety showers must be easily accessible.

3. Composition / Information on Ingredients

According to Hazardous Products Regulations (HPR) (SOR/2015-17)

<u>Chemical name</u>	<u>CAS Number</u>	<u>EC Number</u>	<u>Content (W/W)</u>
Ammonium chloride	12125-02-9	235-186 -4	$\geq 75.0 - \leq 100.0\%$
May consist of anticaking agents at less than 1%, most of which are classed as non-hazardous with the exception of the following:			
Hydrogenated tallow alkyl amine acetate	61790 -59 -8		>1%

4. First-Aid Measures

Description of first aid measures

General advice:

Remove contaminated clothing.

If inhaled:

Keep patient calm, remove to fresh air. If symptoms persist, seek medical advice.

If on skin:

Wash thoroughly with soap and water. If symptoms persist, seek medical advice.

If in eyes:

Flush with copious amounts of water for at least 15 minutes. Seek medical attention.

If swallowed:

Rinse mouth immediately and then drink plenty of water, seek medical attention.

Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions.

Most important symptoms and effects, both acute and delayed

Symptoms: Overexposure may cause: vomiting, lethargy, confusion, hyperventilation, nausea, headache

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. Fire-Fighting Measures

Flammability

Not combustible or flammable.

Extinguishing media

Suitable extinguishing media for surrounding fire:
foam, water spray, dry powder

Hazardous decomposition products

Hazardous products may form from decomposition in a fire, including Nitrogen oxides (NOx) and hydrogen chloride gas.

Advice for fire-fighters

Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Product itself is non-combustible; fire extinguishing method of surrounding areas must be considered. In case of fire and/or explosion do not breathe fumes. Large quantities of extinguishing water containing dissolved product should be contained. Contaminated extinguishing water must be disposed of in accordance with official regulations.

Impact Sensitivity:

Remarks: Based on the chemical structure there is no shock-sensitivity.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Use personal protective clothing. Avoid formation of dust and aerosols. DO NOT breathe in vapours or dust or fog if formed. Use in a well-ventilated area.

Environmental precautions

Avoid creating spills if possible, and DO NOT release this product into the environment. Do not empty into drains. Do not allow discharge of this product into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

Sweep or shovel any spills up. Avoid raising dust. Eliminate into designated waste containers as deemed appropriate by local authorities.

7. Handling and Storage

Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Keep out of eyes and off of skin/clothes. Keep the formation and deposition of dust to a minimum.

Protection against fire and explosion:

No special precautions necessary.

Conditions for safe storage, including any incompatibilities

Segregate from alkalis and alkalizing substances. Segregate from nitrites. Segregate from oxidants. Do not store with: Sodium nitrate. Suitable materials for containers. Polyester resin, glass reinforced (Palatal A410), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4571, rubberized, enamelled

This product is hygroscopic. Keep in sealed containers to protect against moisture.

8. Exposure Controls/Personal Protection

Component with occupational exposure limits:

ammonium chloride	OSHA PEL	STEL value 20mg/m ³ fumes/smoke ; TWA value 10mg/m ³ , fumes/smokes;
	ACGIH TLV	TWA value 10mg/m ³ fumes/smokes; STEL value 10mg/m ³ , fumes/smokes;

Personal protective equipment**Respiratory protection:**

Breathing protection if breathable aerosols/dust are formed. Wear a NIOSH-certified (or equivalent) particulate respirator.

Hand protection:

Chemical resistant protective gloves, Suitable materials, rubber, plastic

Eye protection:

Tightly fitting safety goggles (chemical goggles).

Body protection:

Body protection must be chosen based on level of activity and exposure.

General safety and hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Wash soiled clothing immediately.

9. Physical and Chemical Properties

Form:	crystalline, powder	
Odour:	almost odourless	
Colour:	white	
pH value:	4.7	(200 g/l, 25 °C) (DIN ISO 976)
Melting point:	338 °C	
Sublimation point:	338 °C	
Flash point:	not applicable	
Flammability:	not applicable	
Autoignition:	not applicable	
Density:	1.53 g/cm ³	(25 °C)
Bulk density:	600 - 900 kg/m ³	(DIN ISO 697)
Partitioning coefficient n-octanol/water (log Pow):	not applicable	
Self-ignition temperature:	not applicable	
Thermal decomposition:	520°C (968°F)	
Viscosity, dynamic:	not applicable	
Solubility in water:	372 g/l	(20 °C)

10. Stability and Reactivity**Chemical stability**

The product is chemically stable under normal conditions.

Reactivity

Reacts to produce ammonia and hydrogen chloride.

Corrosion to metals:

Corrosive to metals at high temperatures. Avoid high temperatures.

Oxidizing properties:

Based on its structural properties the product is not classified as oxidizing.

Possibility of Hazardous Reactions:

Reacts with alkalis to release ammonia. Reacts with acids to release hydrogen chloride.

Conditions to Avoid:

Heating to decomposition may produce nitrogen oxides, hydrogen chloride and ammonia gas. Product is hygroscopic; environments of high humidity could compromise the quality of this product.

Incompatible Materials:

Avoid strong oxidizing agents, alkalis, acids and nitrates. Corrodes most metals at high temperatures.

11. Toxicological information

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute Toxicity Estimates: Oral 1410 -1566 mg/kg, Dermal >2000

Chronic Toxicity

Data not available.

Repeated ingestion of large amounts may lead to metabolic acidosis.

Toxicity effects

Oral

Type of value: LD50

Species: rat (male/female)

Value: 1,410 mg/kg (BASF-Test)

Ingestion: May cause gastrointestinal irritation, nausea, vomiting, thirst, headaches, hyperventilation and drowsiness. Large amounts may cause severe metabolic acidosis with symptoms such as headache, drowsiness, vomiting, confusion, thirst and hyperventilation

Dermal

Type of value: LD50

Species: rat (male/female), rabbit

Value: > 2,000 mg/kg

May cause mild skin irritation.

Inhalation

No data available.

May cause irritation of the nose, throat and upper respiratory tract with sneezing, coughing and sore throat.

Eyes

No data available.

Causes irritation with redness, tearing and pain.

Skin corrosion/irritation: Ammonium chloride is not irritating to rabbit skin.

Eye damage/ irritation: Ammonium chloride is irritating to rabbit eyes (fully reversible with 7 days).

Skin Sensitization: Ammonium chloride did not cause sensitization in a guinea pig maximization test.

Respiratory Sensitization: No data available. Not expected to be a respiratory sensitizer based on human experience.

Aspiration Hazard

not applicable

Specific Target Organ Toxicity (Single Exposure): No data available.

Specific Target Organ Toxicity (Repeated Exposure): In an oral repeat dose study, rats were administered ammonium chloride in their feed at 684 mg/kg for 70 days. No treatment related effects were seen. The NOAEL for oral repeated dose toxicity is considered to be 684 mg/kg.

Developmental / Reproductive Toxicity

Rats were administered 1 mL/kg of a solution of ammonium chloride at 8.9 mg/kg by gavage on days 7 to 10 of gestation. Neither maternal toxicity nor developmental toxicity including was found.

Germ Cell Mutagenicity Ammonium chloride was negative in an in vitro mammalian cell gene mutation assay and positive in an in vitro mammalian chromosome aberration test without metabolic activation. Ammonium chloride was negative in an in vivo chromosome aberration micronucleus assay.

Carcinogenicity

None of the components at or greater than 1% are listed as a carcinogen or suspected carcinogen by ACGIH, ARC, NTP or OSHA. . Studies in rats and mice with ammonium chloride were conducted for carcinogenicity or the potential of carcinogenicity by acidification of the urinary tract. The decrease of urine pH was observed, however the incidences of bladder tumor, hyperplasia and calculi were not increased.

Teratogenicity

Assessment of teratogenicity: No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Specific Target Organ Toxicity (Single Exposure): No data available.

Specific Target Organ Toxicity (Repeated Exposure): In an oral repeat dose study, rats were administered ammonium chloride in their feed at 684 mg/kg for 70 days. No treatment related effects were seen. The NOAEL for oral repeated dose toxicity is considered to be 684 mg/kg.

Symptoms of Overexposure

Overexposure may cause vomiting, lethargy, confusion, hyperventilation, nausea, headache

Supplementary Information

RTECS: BP4550000

12. Ecological Information

Aquatic toxicity

Toxicity to fish

LC50 (96 h) 42,91 mg/l Ammonium chloride, Oncorhynchus mykiss (rainbow trout)

LC50(96 h) - 209.00 mg/l - Cyprinus carpio (Carpe)

NOEC (28 d) - 11.8 mg/L Pimephales promelas (Fathead minnow) (ECHA)

Aquatic invertebrates

LC50 - Daphnia magna (daphnia) - 161 mg/l - 48 h

NOEC - Daphnia magna (daphnie) - 14.6 mg/L - 21 d

Persistence and degradability

Not expected. Ammonium chloride is inorganic.

Bioaccumulative potential

Accumulation in organisms is not to be expected.

Mobility in soil

Mobility in soil is not expected. Ammonium chloride is highly soluble in water and readily dissociates into ammonia and chloride ions.

Other harmful effects

No data available.

13. Disposal considerations

Waste disposal of substance

Dispose of non-recyclable leftover or waste products and solutions in accordance with national, provincial/state and local specialized waste regulations.

Waste disposal of empty packages/containers

Dispose of as unused product.

14. Transport Information

Land transport

TDG Not regulated as a dangerous good under transport regulations

49 CFR (US) Not regulated as dangerous goods under transport regulations.

Sea transport

IMDG Not regulated as a dangerous good under transport regulations

Air transport

IATA/ICAO Not classified as a dangerous good under transport regulations

15. Regulatory Information

WHIMS Classification

D2B Toxic material that produces other effects. Product with moderate toxicity to eyes.

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Acute Tox.	4 (oral)	Acute toxicity
Aquatic Acute	3	Hazardous to the aquatic environment - acute
Eye Dam./Irrit.	2A	Serious eye damage/eye irritation

16. Other Information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Pestell Minerals & Ingredients and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

Version 2.0

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