1. Identification

Product identifier used on the label

Ammonium chloride AF animal feed grade

Recommended use of the chemical and restriction on use
Recommended use*: Raw material; auxiliary; inorganic salts; flavours

* The “Recommended use” identified for this product is provided solely to comply with a US Federal requirement and is not part of the seller's published specification. The terms of this Safety Data Sheet (SDS) do not create or infer any warranty, express or implied, including by incorporation into or reference in the seller's sales agreement.

Details of the supplier of the safety data sheet

Distributor:
Pestell Minerals & Ingredients Inc.,
141 Hamilton Road
New Hamburg, On, N3A 2H1, Canada

Telephone: (1) 519-662-2877 - Email: qa@pestell.com

Emergency telephone number
CANUTEC (24hs): 1-613-996-6666

Other means of identification
Molecular formula: NH(4)CL
Synonyms: Ammonium chloride

2. Hazards Identification


Classification of the product

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox.</td>
<td>4</td>
<td>Acute toxicity</td>
</tr>
<tr>
<td>Acute Tox. Oral</td>
<td>4</td>
<td>Acute toxicity (oral)</td>
</tr>
<tr>
<td>Eye Dam./Irrit.</td>
<td>2A</td>
<td>Serious eye damage/eye irritation</td>
</tr>
<tr>
<td>Aquatic Acute</td>
<td>3</td>
<td>Hazardous to the aquatic environment - acute</td>
</tr>
</tbody>
</table>

Label elements

Pictogram:
Safety Data Sheet
Ammonium chloride AF animal feed grade

Revision date: January 04, 2016

Signal Word:
Warning

Hazard Statement:
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.


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

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

Extinguishing media

Suitable extinguishing media:
foam, water spray, dry powder

Special hazards arising from the substance or mixture

Hazards during fire-fighting:
No particular hazards known.
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.

Environmental precautions
Do not empty into drains.

Do not discharge into drains/surface waters/groundwater. This product is regulated by CERCLA ('Superfund').

Methods and material for containment and cleaning up
For small amounts: Sweep/shovel up.
For large amounts: Sweep/shovel up.
Avoid raising dust.

7. Handling and Storage

Precautions for safe handling
Avoid contact with skin and eyes. Handle in accordance with good industrial hygiene and safety practice. Keep the formation and deposition of dust to a minimum.

Protection against fire and explosion:
See MSDS section 5 - Fire fighting measures.

Conditions for safe storage, including any incompatibilities
Segregate from alkalies and alkalizing substances. Segregate from nitrites. Segregate from oxidants.
Do not store with: Sodium nitrate

Further information on storage conditions: Protect against moisture.

8. Exposure Controls/Personal Protection

Advice on system design:
Provide local exhaust ventilation to control dust.
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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>crystalline, powder</td>
</tr>
<tr>
<td>Odour</td>
<td>almost odourless</td>
</tr>
<tr>
<td>Colour</td>
<td>white</td>
</tr>
<tr>
<td>pH value</td>
<td>4.7 (200 g/l, 25 °C) (DIN ISO 976)</td>
</tr>
<tr>
<td>Melting point</td>
<td>338 °C (The substance / product decomposes. Literature data.)</td>
</tr>
<tr>
<td>Sublimation point</td>
<td>338 °C (The substance / product decomposes. The value has not been determined because the substance is inorganic.)</td>
</tr>
<tr>
<td>Flash point</td>
<td>not flammable (other) (not applicable)</td>
</tr>
<tr>
<td>Flammability</td>
<td>not flammable (other) (not applicable)</td>
</tr>
<tr>
<td>Autoignition</td>
<td>not applicable (other) (not applicable)</td>
</tr>
<tr>
<td>Density</td>
<td>1.53 g/cm3 (25 °C) (DIN ISO 697)</td>
</tr>
<tr>
<td>Bulk density</td>
<td>600 - 900 kg/m3 (DIN ISO 697)</td>
</tr>
<tr>
<td>Partitioning coefficient n-octanol/water (log Pow):</td>
<td>not applicable</td>
</tr>
<tr>
<td>Self-ignition</td>
<td>not self-igniting</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>To avoid thermal decomposition, do not overheat.</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>not applicable</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>372 g/l (20 °C) Literature data.</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

Reactivity
No hazardous reactions if stored and handled as prescribed/indicated.

Corrosion to metals:
No corrosive effect on metal.

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

Chemical stability
The product is chemically stable.
Possibility of hazardous reactions
Violent reaction under influence of oxidizing agents. Incompatible with bases. Reacts with nitrites.

Conditions to avoid
Avoid heat. Avoid moisture. See MSDS section 7 - Handling and storage.

Incompatible materials
nitrites, nitrates, oxidizing agents

Hazardous decomposition products
Decomposition products:
Hazardous decomposition products: Hydrogen chloride, ammonia

Thermal decomposition:
To avoid thermal decomposition, do not overheat.

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
Assessment of acute toxicity: Of moderate toxicity after single ingestion. Virtually nontoxic after a single skin contact. The product has not been fully tested. The statements have been derived in parts from products of a similar structure or composition.

Oral
Type of value: LD50
Species: rat (male/female)
Value: 1,410 mg/kg (BASF-Test)

Inhalation
No data available.

Dermal
Type of value: LD50
Species: rat (male/female)
Value: > 2,000 mg/kg
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Assessment other acute effects
Assessment of STOT single:
Apart from effects causing lethality, no specific target organ toxicity was observed in experimental studies.

Irritation / corrosion
Assessment of irritating effects: Not irritating to the skin. Eye contact causes irritation.

Skin
Species: rabbit  
Result: non-irritant  
Method: Draize test

**Eye**  
Species: rabbit  
Result: Irritant.  
Method: BASF-Test

**Sensitization**  
Assessment of sensitization: Skin sensitizing effects were not observed in animal studies.

Guinea pig maximization test  
Species: guinea pig  
Result: Non-sensitizing.

**Aspiration Hazard**  
not applicable

**Chronic Toxicity/Effects**

**Repeated dose toxicity**  
Assessment of repeated dose toxicity: Repeated oral uptake of the substance did not cause substance-related effects.  
Repeated ingestion of large amounts may lead to metabolic acidosis.

**Genetic toxicity**  
Assessment of mutagenicity: In the majority of studies performed with microorganisms and in mammalian cell culture, a mutagenic effect was not found. A mutagenic effect was also not observed in in vivo tests.

**Carcinogenicity**  
Assessment of carcinogenicity: In long-term studies in rats in which the substance was given by feed, a carcinogenic effect was not observed.

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

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

12. Ecological Information

**Toxicity**

**Aquatic toxicity**  
Assessment of aquatic toxicity:  
Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.  
Acutely harmful for aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

**Toxicity to fish**  
LC50 (96 h) 42.91 mg/l Ammonium chloride, Oncorhynchus mykiss
LC50 (96 h) 46,27 mg/l Ammonium chloride, Prosopium williamsoni

Aquatic invertebrates
EC50 (48 h) 98,5 mg/l Ammonium chloride, Ceriodaphnia dubia (static)

EC50 (48 h) 136,6 mg/l Ammonium chloride, Daphnia magna (static)

Aquatic plants
EC50 (5 d) 1,300 mg/l (growth rate), Chlorella vulgaris (static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

EC50 (18 d) 2,700 mg/l, Chlorella vulgaris (static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Chronic toxicity to fish
EC10 (30 d) 4,28 mg/l ammonium chloride, Lepomis macrochirus (Flow through.)

Chronic toxicity to aquatic invertebrates
EC10 (70 d) 2,52 mg/l ammonium chloride (semistatic)

Soil living organisms
Toxicity to soil dwelling organisms:
LC50 (14 d) 163 mg/kg, Eisenia foetida (artificial soil)

Toxicity to terrestrial plants
No observed effect concentration (84 d) 626 mg/l
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Other terrestrial non-mammals
Study scientifically not justified.

Microorganisms/Effect on activated sludge
Toxicity to microorganisms
OECD Guideline 209 aquatic activated sludge, domestic/EC20 (0.5 h): approx. 850 mg/l

Persistence and degradability
Assessment biodegradation and elimination (H2O)
Inorganic product which cannot be eliminated from water by biological purification processes. Can be oxidized to nitrate, or be reduced to nitrogen, by microorganisms.

Assessment of stability in water
Study scientifically not justified.

Bioaccumulative potential
Assessment bioaccumulation potential
Accumulation in organisms is not to be expected.
Accumulation in organisms is not to be expected.

**Mobility in soil**

Assessment transport between environmental compartments
Study scientifically not justified.
Adsorption to solid soil phase is possible.

**Additional information**

Add. remarks environm. fate & pathway:
The product has not been tested. The statements on environmental fate and pathway have been derived from the properties of the individual components.

### 13. Disposal considerations

**Waste disposal of substance:**
Dispose of in accordance with national, state and local regulations.

### 14. Transport Information

**Land transport**
USDOT
Not classified as a dangerous good under transport regulations

**Sea transport**
IMDG
Not classified as a dangerous good under transport regulations

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

**Further information**
Specific national features of transport regulations must be observed. They are to be found in the shipping documents.

### 15. Regulatory Information

**Federal Regulations**

**Registration status:**
Chemical  TSCA, US  released / listed
Feed  TSCA, US  released / exempt
Food  TSCA, US  released / exempt

**EPCRA 311/312 (Hazard categories):**  Acute;

**Reportable Quantity for release:**  5,000 lb
State regulations

State RTK  CAS Number  Chemical name
MA, NJ, PA  12125-02-9  ammonium chloride

NFPA Hazard codes:
Health: 2  Fire: 1  Reactivity: 0  Special:

HMIS III rating
Health: 2  Flammability: 1  Physical hazard: 0

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

SDS Prepared by:

Pestell Minerals & Ingredients Inc.
SDS Prepared on: January 04, 2016

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.

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