

Material Safety Data Sheet

Ammonium Chloride, GR



1. Product and company identification

Product name : Ammonium Chloride, GR
Product code : AX1270
Supplier : EMD Chemicals Inc.
480 S. Democrat Rd.
Gibbstown, NJ 08027
856-423-6300 Technical Service
Monday-Friday: 8:00 -5:00 PM
Synonym : Sal Ammoniac
Material uses : Other non-specified industry: Analytical reagent.
Validation date : 12/8/2010.
In case of emergency : 800-424-9300 CHEMTREC (USA)
613-996-6666 CANUTEC (Canada)
24 Hours/Day: 7 Days/Week

2. Hazards identification

Emergency overview : WARNING!
HARMFUL IF SWALLOWED.
CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
MAY CAUSE DAMAGE TO THE FOLLOWING ORGANS: RESPIRATORY TRACT,
SKIN, EYES, EYE, LENS OR CORNEA.
Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Physical state : Solid. [Crystalline solid. Granular solid.]

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Routes of entry : Inhalation. Ingestion.

Potential acute health effects

Inhalation : Irritating to respiratory system.
Ingestion : Toxic if swallowed.
Skin : Irritating to skin.
Eyes : Irritating to eyes.

Potential chronic health effects

Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.
Target organs : May cause damage to the following organs: upper respiratory tract, skin, eyes, eye, lens or cornea.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (section 11)

3 . Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>% by weight</u>
Ammonium Chloride	12125-02-9	100

4 . First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

5 . Fire-fighting measures

- Flammability of the product** : No specific fire or explosion hazard.
- Extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
nitrogen oxides
halogenated compounds
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and storage

- Handling** : Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container, protected from direct sunlight. Keep container tightly closed and sealed until ready for use.

8. Exposure controls/personal protection

Ingredient	Exposure limits
Ammonium Chloride	<p>ACGIH TLV (United States, 2/2010). TWA: 10 mg/m³ 8 hour(s). Form: Fume STEL: 20 mg/m³ 15 minute(s). Form: Fume</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 10 mg/m³ 8 hour(s). STEL: 20 mg/m³ 15 minute(s).</p> <p>NIOSH REL (United States, 6/2009). TWA: 10 mg/m³ 10 hour(s). Form: Fume STEL: 20 mg/m³ 15 minute(s). Form: Fume</p>

Consult local authorities for acceptable exposure limits.

- Engineering measures** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Recommended: nitrile rubber
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Recommended: safety glasses with side-shields
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Recommended: lab coat
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state	: Solid. [Crystalline solid. Granular solid.]
Flash point	: [Product does not sustain combustion.]
Color	: White.
Odor	: Odorless.
Molecular weight	: 53.49 g/mole
Molecular formula	: Cl-H4-N
pH	: Not available.
Boiling/condensation point	: Not available.
Melting/freezing point	: Sublimation temperature: 337.55°C (639.6°F)
Relative density	: 1.53
Vapor pressure	: Not available.
Vapor density	: 1.8 [Air = 1]
Odor threshold	: Not available.
Evaporation rate	: Not available.
VOC	: 0 % (w/w)
Solubility	: Soluble in the following materials: water

10 . Stability and reactivity

Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.
Conditions to avoid	: No specific data.
Materials to avoid	: Reactive or incompatible with the following materials: oxidizing materials, acids and alkalis. Hygroscopic. Keep container tightly closed.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Test Route	Species	Result
Ammonium Chloride	LD50	Rat	30 mg/kg
	Intramuscular		
	LD50 Oral	Rat	1650 mg/kg
	LD50 Oral	Mouse	1300 mg/kg
	LD50 Unreported	Rat	550 mg/kg
	LDLo	Rat	140 mg/kg
	Intraperitoneal		
	LDLo Oral	Domestic animals	1500 mg/kg
	LDLo Oral	Domestic animals	1500 mg/kg

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Observation
Ammonium Chloride	Eyes - Mild irritant	Rabbit	-	-
	Eyes - Severe irritant	Rabbit	-	-

Carcinogenicity

No known significant effects or critical hazards.

Mutagenicity

Continued on next page

11 . Toxicological information

No known significant effects or critical hazards.

Teratogenicity

No known significant effects or critical hazards.

12 . Ecological information

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
Ammonium Chloride	Acute EC50 261 ug/L Marine water	Crustaceans - American lobster - Homarus americanus - LARVAE - 22 to 63 mg	48 hours
	Acute LC50 2.88 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	Acute LC50 2.63 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
	Acute LC50 >1.43 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - 24 hours	48 hours
	Acute LC50 1.06 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - 24 hours	48 hours
	Acute LC50 0.46 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - 24 hours	48 hours
	Acute LC50 0.28 mg/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - 24 hours	48 hours
	Acute LC50 0.25 mg/L	Fish	96 hours
	Acute LC50 0.25 mg/L	Fish	96 hours
	Acute LC50 0.21 mg/L	Fish	96 hours
	Acute LC50 0.16 mg/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss - FRY - 1.7 to 1.9 cm	96 hours
	Acute LC50 0.14 mg/L Marine water	Fish - Atlantic silverside - Menidia menidia - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Acute LC50 0.11 mg/L	Fish	96 hours
	Acute LC50 0.08 mg/L	Fish	96 hours
	Acute LC50 2940 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - Neonate	48 hours
	Acute LC50 1460 ug/L Fresh water	Crustaceans - Shrimp - Paratya curvirostris - Adult	48 hours
	Acute LC50 1420 ug/L Fresh water	Crustaceans - Shrimp - Paratya curvirostris - Adult	48 hours
	Acute LC50 1290 ug/L	Crustaceans - Penaeidean shrimp - Penaeus sp. - 500 to 1500 mg	48 hours
	Acute LC50 1050 ug/L Fresh water	Crustaceans - Water flea - Simocephalus vetulus - Adult	48 hours
	Acute LC50 1030 ug/L Fresh water	Daphnia - Water flea - Ceriodaphnia dubia - Neonate - <24 hours	48 hours
Acute LC50 1000 ug/L Fresh water	Crustaceans - Giant river prawn - Macrobrachium	48 hours	

12 . Ecological information

Acute LC50 990 ug/L Marine water	rosenbergii - Post-larvae - 9.6 mm - 12.9 mg Crustaceans - Daggerblade grass shrimp - Palaemonetes pugio - Juvenile (Fledgling, Hatchling, Weanling) - 20 mm	48 hours
Acute LC50 960 ug/L Fresh water	Daphnia - Water flea - Daphnia pulicaria	48 hours
Acute LC50 810 ug/L Fresh water	Crustaceans - Giant river prawn - Macrobrachium rosenbergii - Juvenile (Fledgling, Hatchling, Weanling) - 34.5 mm - 836 mg	48 hours
Acute LC50 390 ug/L Fresh water	Daphnia - Water flea - Daphnia magna - Young	48 hours
Acute LC50 177.6 ug/L Fresh water	Fish - Coho salmon, silver salmon - Oncorhynchus kisutch - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
Acute LC50 166 ug/L Fresh water	Fish - Lake trout, siscowet - Salvelinus namaycush - 1.6 g	96 hours
Acute LC50 160 ug/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss	96 hours
Acute LC50 160 ug/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss	4 days
Acute LC50 148 ug/L Fresh water	Fish - Lake trout, siscowet - Salvelinus namaycush - 1.6 g	96 hours
Acute LC50 147 ug/L Fresh water	Fish - Lake trout, siscowet - Salvelinus namaycush - 1.6 g	96 hours
Acute LC50 110 ug/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss	96 hours
Acute LC50 80 ug/L Fresh water	Fish - Rainbow trout, donaldson trout - Oncorhynchus mykiss	96 hours
Acute LC50 20 ug/L Fresh water	Crustaceans - Giant river prawn - Macrobrachium rosenbergii - Post-larvae - 9.6 mm - 12.9 mg	48 hours

Environmental effects : No known significant effects or critical hazards.

Other adverse effects : No known significant effects or critical hazards.

13 . Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	-	CHEMICALS, N.O.S.	-	-		-

PG* : Packing group

15 . Regulatory information

United States

- HCS Classification** : Toxic material
Irritating material
Target organ effects
- U.S. Federal regulations** : **TSCA 8(a) IUR**: Partial exemption
United States inventory (TSCA 8b): This material is listed or exempted.
TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: Ammonium Chloride
SARA 311/312 MSDS distribution - chemical inventory - hazard identification:
Ammonium Chloride : Immediate (acute) health hazard
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: Ammonium Chloride
Clean Air Act (CAA) 112 accidental release prevention: No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 313

	<u>Product name</u>	<u>CAS number</u>	<u>Concentration</u>
Form R - Reporting requirements	: Ammonium Chloride	12125-02-9	100
Supplier notification	: Ammonium Chloride	12125-02-9	100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

Massachusetts Substances : This material is listed.

New Jersey Hazardous Substances : This material is listed.

New York Acutely Hazardous Substances : This material is listed.

Pennsylvania RTK Hazardous Substances : This material is listed.

Canada

- WHMIS (Canada)** : Class D-2B: Material causing other toxic effects (Toxic).
- Canadian lists** : **CEPA Toxic substances**: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

15 . Regulatory information

CEPA DSL / CEPA NDSL : This material is listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

EU regulations

Hazard symbol or symbols :



Risk phrases : R22- Harmful if swallowed.
R36- Irritating to eyes.

Safety phrases : S22- Do not breathe dust.

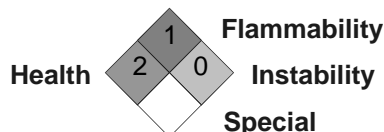
International regulations

International lists :

- Australia inventory (AICS)**: This material is listed or exempted.
- China inventory (IECSC)**: This material is listed or exempted.
- Japan inventory**: This material is listed or exempted.
- Korea inventory**: This material is listed or exempted.
- New Zealand Inventory of Chemicals (NZIoC)**: This material is listed or exempted.
- Philippines inventory (PICCS)**: This material is listed or exempted.

16 . Other information

National Fire Protection Association (U.S.A.) :



Notice to reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.