

Material Safety Data Sheet

Date: 07/06/2009

Rev. 1

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name : AMMONIUM SULFATE
Usage : Ammonium sulfate is used as a artificial fertilizer,
in preparing other ammonium compounds, and for fireproofing.
Manufacturer : TAE KWANG INDUSTRIAL Co., Ltd.
162-1, 2-GA JANGCHUNG-DONG CHOONG-GU,
SEOUL, KOREA
C.P.O BOX : 1173 SEOUL
CABLE "TAE KWANG" SEOUL
TELEX "PIGEON" K28219
FACSIMILE 82-2-3406-0226
TELEPHONE 82-2-3406-0300
Emergency Contact Point : TAE KWANG INDUSTRIAL Co., Ltd. Petrochemical 3rd Plant
Safety & Environment(S&E) Team or
TAE KWANG INDUSTRIAL Co., Ltd.
Petrochemical Sales Department
Tel. No. S&E Team 82-52-259-9703 or
Sales Department 82-2-3406-0334

2. HAZARDS IDENTIFICATION

Incombustible, Harmless(Non-acute harmness) but some emission of ammonia with the application of heat.
Harmless to fishes.

Health Hazard Classification	None of Data
Warning	
<input type="radio"/> Danger/Hazard Symbol	None of Data
<input type="radio"/> Warning Statement	None of Data
<input type="radio"/> Precautionary Measures	
Precaution	None of Data
Measures	None of Data
Storage	None of Data
Dispose	None of Data
Other hazards which do not result in Classification(NFPA)	
<input type="radio"/> Heath	2
<input type="radio"/> Flammability	0
<input type="radio"/> Reactivity	0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name : Ammonium Sulfate
Synonym : Ammonium Sulphate, Sulfuric acid diammonium salt, Sulfuric acid ammonium salt
CAS. No. : 7783-20-2
Composition : More than 98%(Ammonical Nitrogen 20.5% MIN.)

4. FIRST AID MEASURES

Eye contact :
Wash eyes immediately with large amounts of water(at least 15-20 minutes),
Immediately get medical attention

Skin contact :
Wash with soap and large amounts of water until no evidence of chemical remains (at least 15-20 minutes).
Completely clean and dry contaminated clothing before reuse.

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Remove contaminated clothing, jewelry, and shoes immediately.
Get medical attention, if needed.

Inhalation :

If a patient have irritation, cephal-algia, vomiting, drowsiness, move the patient to fresh air.
Immediately get medical attention.

Ingestion :

Induce vomiting immediately.
Get medical attention.

Delayed and immediate effects

- Inhalation
 - Short Term Exposure : Irritation, dyspnea, asthma, pulmonary congestion
 - Long Term Exposure : None of Data
- Ingestion
 - Short Term Exposure : Irritation, nausea, vomiting, diarrhea, stomach pain
 - Long Term Exposure : None of Data
- Skin contact
 - Short Term Exposure : Irritation
 - Long Term Exposure : Irritation
- Eye contact
 - Short Term Exposure : Irritation
 - Long Term Exposure : Irritation

First Aid and Note to Physician : None of Data

5. FIRE FIGHTING MEASURES

Extinguishing media :

Adequate extinguishing media : Water spray, dry chemical, carbon dioxide.
Large fire : None of Data
Inadequate extinguishing media : None of Data

Specific hazards arising from the chemical :

Pyrolysis product : Ammonia, Nitrogen oxide, Sulfur
Fire and Explosion Hazards : Not considered to be a fire hazard.

Fire Fighting

Move containers from fire area if possible to do so without added risk.
Avoid respiring the material or product of combustion.
Fire should be approached from upwind.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : None of Data

Enviromental Precaution

- Air None of Data
- Soil None of Data
- Water None of Data

Methods for containment and cleaning up :

- Small spills None of Data
- Large spills Move the material into the proper container for disposal.
Restraint occurrence of particle.
Remove residue with vacuum cleaner.

7. HANDLING AND STORAGE

Handling :

- a) Avoid contact with eyes, skin and clothing.
- b) Treat the material under relative laws and regulations.
- c) Minimize generation and accumulation of dust
- d) Completely wash after treatment
- e) Provide proper ventilation.
- f) Remove contaminated clothing and clean it before reuse.
- g) Don't ingest or inhale the material.
- h) Do not expose container to heat or flame.
- i) Wear appropriate protector when long time handling.

Storage :

- a) Store the material under relative laws and regulations.
- b) Keep away from incompatibles such as halogen and intermediate halogen.
- c) Store in a cool, dry, well ventilated area as the product is absorbent and might get harden due to humidity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupation Exposure Limit :

Korea Regulation :	TWA - 10mg/m ³ , STEL - 20mg/m ³
ACGIH Regulation :	None of Data
Biological Exposure Limit :	None of Data

Adequate exposure control :

- Provide local exhaust or process enclosure ventilation system.
- Ensure compliance with applicable exposure limit.

Personnel protective equipment :

Respirator :

- Consider relative warning before use.
- If exposure to dust or mist is frequent, respirator is necessary.
- Respirators are ranked in order from minimum to maximum concentration.
- Respirator for dust, mist and fume.
- Air filtration type respirator (a high-efficiency particulate filter).
- Electric fan attachment respirator (a filter for dust, mist and fume).
- Self-contained breathing apparatus with a high-efficiency particulate filter.

- For Unknown Concentrations or Immediately Dangerous to Life or Health :
 - Supplied-air respirator.
 - Self-contained breathing apparatus with a full facepiece.

- a) If exposure amount is maximum 100mg/m³, wear the following respirator.
 - Half-mask respirator with an appropriate type filter or an anti-poison cartridge.
- b) If exposure amount is maximum 250mg/m³, wear the following respirator.
 - Powered air purifying respirator with a non-adhesive type hood or helmet.
 - Helmet type constant flow air line respirator.
- c) If exposure amount is maximum 500mg/m³, wear the following respirator.
 - Respirator with a full facepiece and an appropriate type filter or an anti-poison cartridge.
 - Powered air purifying half-mask respirator.
 - Supplied-air constant flow/pressure-demand mode respirator.
- d) If exposure amount is maximum 10000mg/m³, wear the following respirator.
 - Powered air purifying respirator with a full facepiece.
 - Supplied-air respirator with a full facepiece.

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Hood type respirator.

- e) If exposure amount is maximum 100000mg/m³, wear the following respirator.
Self-contained breathing apparatus that has a full facepiece or helmet/hood and is operated in a pressure-demand mode.

Eye protection :

Wear safety goggles to protect worker from entrained dust and hazardous liquid.
Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Gloves :

Wear appropriate chemical resistant gloves.

Clothing :

Wear appropriate chemical resistant clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state :	Solid, fine granules or crystals
Colour :	Yellowish brown color
Odour :	Ammonia odor, Odorless
pH :	5.5(0.1M solution)
Freezing Point :	N/A
Boiling Point :	N/A
Evaporation Rate :	N/A
Flash Point :	None of Data
Evaporation Velocity :	None of Data
Flammability(Solid, Vapor)	None of Data
Upper/lower limit in Flammable or Explosion Range	- / -
Vapor Pressure :	N/A
Solubility	
Solubility in water :	71% at 0°C
Insolubility :	Ethyl alcohol, acetone, ammonia solution
Vapor Density :	>1(air=1)
Specific Gravity :	1.769(at 50°C (water=1))
n-Octanol/Water distribution coefficient :	N/A
Spontaneous Combustion Temperature :	None of Data
Dissolution Temperature :	>235°C
Viscosity :	None of Data
Molecular Weight :	132.13

10. STABILITY AND REACTIVITY

Chemical stability :	Stable at normal temperature and pressure.
Conditions to avoid :	Avoid heat, flames, sparks and other sources of ignition.
Incompatible materials :	Acids, base, oxidizing agent, metals
Hazardous decomposition :	None of Data

11. TOXICOLOGICAL INFORMATION

1. Information on the likely route of exposure.

Inhalation :	Irritation, dyspnea, pulmonary congestion
Ingestion :	Irritation, nausea, vomiting, diarrhea, stomach pain
Skin contact :	Skin irritation
Eye contact :	Eye irritation

2. Delayed and immediate effects and chronic effects from short and long term exposure.

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<input type="radio"/> Acute Toxicity	
- Oral :	LD50 2000mg/kg rat
- Skin:	None of Data
- Inhalation:	None of Data
<input type="radio"/> Skin corrosion/irritation :	None of Data(EU Directive 67/548/EEC) Human irritating, rabbit/not irritating(IUCLID)
<input type="radio"/> Serious eye damage/irritation :	None of Data(EU Directive 67/548/EEC) rabbit/not irritating(IUCLID)
<input type="radio"/> Respiratory sensitization :	None of Data
<input type="radio"/> Skin sensitization :	None of Data
<input type="radio"/> Carcinogenicity	
- IARC :	None of Data
- NTP :	None of Data
- OSHA :	None of Data
- WISHA :	None of Data
- ACGIH :	None of Data
<input type="radio"/> Germ cell mutagenicity :	Salmonella / negative
<input type="radio"/> Reproductive toxic :	None of Data
<input type="radio"/> Specific target organ systemic toxicity(single exposure) :	None of Data
<input type="radio"/> Specific target organ systemic toxicity(repeated exposure) :	None of Data
<input type="radio"/> Aspiraton hazad :	None of Data

3. Numerical measure of Toxicity(such as acute toxicty estimate) None of Data

12. ECOLOGICAL INFORMATION

1.Aquatic Terrestrial Ecological Toxicity

<input type="radio"/> Fish :	LC50 480mg/l 96hr
<input type="radio"/> Crustacean :	EC50 129mg/l 48hr Daphnia magna
<input type="radio"/> Algae :	None of Data

2.Persistence and Degradability

<input type="radio"/> Persistence :	log Kow -5.1 (at 25°C)
<input type="radio"/> Degradability :	None of Data

3.Bioaccumulative Potential

<input type="radio"/> Biodegradability :	None of Data
<input type="radio"/> Accumulation :	None of Data

4.Mobility in soil : None of Data

5.Other adverse effects : None of Data

13. DISPOSAL CONSIDERATIONS

Disposal methods : None of Data

Disposal Consideration

Dispose of the material under relative regulations.

14. TRANSPORT INFORMATION

No classification assigned but normally transported in dry container or in bag and covered with tarpaulin to prevent rain.

UN Number :	N/A
UN Proper shipping name :	N/A
Transport hazard class :	N/A
Packing group :	N/A
Marine pollutant :	None of Data
Special Precautions , which a user needs to be aware of, or needs to comply with in connection with transport :	
In case of fire :	N/A

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In case of spills :

N/A

15. REGULATORY INFORMATION

Korean fertilizer regulation to be applied.

Regulation for Korea Industrial Safety and Health Act : None of Data

Regulation of Korea Toxic Chemicals Control Act : None of Data

Regulation for Korea Fire Services Act : None of Data

Korea Wastes Control Act : None of Data

Other Country Regulation

- OSHA Regulation : N/A
- CERCLA 103 Regulation : N/A
- EPCRA 302 Regulation : N/A
- EPCRA 304 Regulation : N/A
- EPCRA 313 Regulation : N/A
- Rotterdam Convention substance : N/A
- Stockholm Convention substance : N/A
- Montreal Protocol substance : N/A
- EU classification information
 - Firm classification results : N/A
 - Hazard statement : N/A
 - Precautionary measures statement : N/A

16. OTHER INFORMATION

The References are provided as followings :

- IUCLID(Ingestion)
- IUCLID(Skin corrosion/irritation)
- IUCLID(Serious eye damage/irritation)
- IUCLID(Germ cell mutagenicity)
- ISO, IUCLID(Fish)
- IUCLID(Crustacean)
- IUCLID(Persistence)