ANGUS CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Ammonium Sulfate, NF/ACS Grade

Manufacturer or supplier's details

Company name of supplier: ANGUS CHEMICAL COMPANY

Address:
1500 E. LAKE COOK ROAD
Buffalo Grove IL 60089-6553

Customer Information Number: +1-847-808-3711

E-mail address: NAR_CC@ANGUS.COM

Emergency telephone number: 800-424-9300

Recommended use of the chemical and restrictions on use

Recommended use:
Manufacture of dyes and pigments
Manufacture of fertilizers and nitrogen compounds
For industrial use only.

The ANGUS Chemical Company recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact the Customer Information Group (see Section 1 of this data sheet).

2. HAZARDS IDENTIFICATION

GHS Classification
Not a hazardous substance or mixture.

GHS Label elements, including precautionary statements
This product is not hazardous per the Globally Harmonized System of Classification and Labelling (GHS).

**Other hazards**
None known.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a substance.

**Components**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Sulfate</td>
<td>7783-20-2</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

<table>
<thead>
<tr>
<th>If inhaled</th>
<th>If unconscious place in recovery position and seek medical advice.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If symptoms persist, call a physician.</td>
</tr>
<tr>
<td>In case of skin contact</td>
<td>Wash off with plenty of water.</td>
</tr>
<tr>
<td>In case of eye contact</td>
<td>Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.</td>
</tr>
<tr>
<td>If swallowed</td>
<td>Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.</td>
</tr>
</tbody>
</table>

**Most important symptoms and effects, both acute and delayed**
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

**Protection of first-aiders**
If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Notes to physician**
Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. No specific antidote.

### 5. FIREFIGHTING MEASURES

**Suitable extinguishing media**
Water. Carbon dioxide fire extinguishers. Dry chemical fire extinguishers.

**Specific hazards during firefighting**
Non Combustible Solids
Container may rupture from gas generation in a fire situation.
Hazardous combustion products

During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides.

Further information

Hand held dry chemical or carbon dioxide extinguishers may be used for small fires. Keep people away. Isolate fire and deny unnecessary entry. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.

Special protective equipment for firefighters

Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions

Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up

Contain spilled material if possible. Collect in suitable and properly labeled containers. Use care to minimize generation of airborne dust. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Advice on safe handling

Avoid generating and breathing dust. Good housekeeping and controlling of dusts are necessary for safe handling of product. Keep container closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage

Store in a dry place. Do not store in: Zinc.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

Personal protective equipment
Respiratory protection
Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process.
In dusty or misty atmospheres, use an approved particulate respirator.
The following should be effective types of air-purifying respirators:
Particulate filter.

Hand protection
Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur.
Examples of preferred glove barrier materials include:
Neoprene. Polyvinyl chloride ("PVC" or "vinyl").
Nitrile butadiene rubber ("nitrile" or "NBR").
NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to:
Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Eye protection
Use safety glasses (with side shields).

Skin and body protection
Wear clean, body-covering clothing.

Hygiene measures
General industrial hygiene practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Crystalline solid

Color
Colorless to off-white

Odor
Odorless

Odor Threshold
no data available
pH 5.5 1.3 %

Melting point/range 280 °C (536 °F) (with decomposition)
Boiling point/boiling range Not applicable

Flash point Not applicable
Evaporation rate no data available
Flammability (solid, gas) Non-flammable
Vapor Pressure 0.00405 hPa

Relative density 1.8
Density 1.77 g/cm³

Solubility(ies)
Water solubility 770 g/l Soluble

Partition coefficient: n-octanol/water log Pow: -5.1

Viscosity
Viscosity, dynamic Not applicable
Viscosity, kinematic Not applicable

Explosive properties No data available.

Oxidizing properties no data available

Molecular weight 132.13 g/mol

Hygroscopic hygroscopic

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity Decomposes on exposure to temperature rise: release of toxic and corrosive gases/vapours (ammonia, nitrous vapours, sulphur oxides).
Reacts with (strong) oxidizers: (increased) risk of fire/explosion.
Violent exothermic reaction with (some) bases: release of toxic and corrosive gases/vapours (ammonia, sulphur oxides).
Chemical stability  Hygroscopic
Possibility of hazardous reactions
  Stable under recommended storage conditions.
  Stable under normal conditions.
Conditions to avoid  heat
Incompatible materials
  Strong acids.
  Metals
  Oxidizing agents
  Strong bases.
Hazardous decomposition products
  No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Product:  
Acute oral toxicity  Remarks: not classified

Skin corrosion/irritation

Product:  
Remarks: not classified

Serious eye damage/eye irritation

Product:  
Remarks: not classified

Respiratory or skin sensitization

Product:  
Remarks: not classified

Carcinogenicity

IARC  
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA  
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP  
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Teratogenicity

**Product**
Not Classified

Reproductive toxicity

**Product:**
Not Classified

**STOT - single exposure**

**Product:**
Remarks: not classified

**STOT - repeated exposure**

**Product:**
Remarks: not classified

**Further information**

**Product:**
Remarks: no data available

### 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Persistence and degradability**
no data available

**Bioaccumulative potential**

**Product:**
Partition coefficient: n-octanol/water

\[ \text{log Pow: } -5.1 \]

**Mobility in soil**
no data available

**Other adverse effects**

**Product:**
Ozone-Depletion Potential

Remarks: This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

**Additional ecological information**
no data available
### 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

| Waste from residues | DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device. Landfill. ANGUS HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. |
| Contaminated packaging | Empty containers should be taken to an approved waste handling site for recycling or disposal. |

### 14. TRANSPORT INFORMATION

**International Regulation**

| IATA-DGR | Not regulated as a dangerous good |
| IMDG-Code | Not regulated as a dangerous good |

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations**

**49 CFR (DOT) – NON BULK**

Not regulated as a dangerous good

**49 CFR (DOT) - BULK**

Not regulated as a dangerous good

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*
15. REGULATORY INFORMATION

OSHA Hazards
Combustible dust

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know
Massachusetts Right to Know List of Chemicals and Hazard Classifications

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Pennsylvania Right To Know
The following chemicals are listed because of the additional requirements of Pennsylvania law:

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New Jersey Right To Know
The following chemicals are listed because of the additional requirements of New Jersey law:

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California Prop. 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:
United States TSCA Inventory
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30
Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying...
Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECl - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods