

Sulf-N<sup>®</sup> Ammonium Sulfate

# PRODUCT GUIDE

ADVANSix

## AdvanSix Sulf-N® Ammonium Sulfate 21-0-0-24S

Chemical Content	%
Nitrogen (N)	21 min.
Sulfur (S)	24 min.
Free Acidity (H <sub>2</sub> SO <sub>4</sub> )	0.1 max.
Moisture	1.0 max.
Chemical Formula	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>
Molecular Weight	132.14
Angle of Repose	35°

### Typical Screen Analysis: Cumulative % Retained on Tyler Screen

Tyler Screen	Granular		Mid		Soluble	
	Avg.	Range*	Avg.	Range*	Avg.	Range*
6	11	0-25	0	0-1	0	0-0
8	47	15-75	1	0-3	-	-
9	74	50-95	5	0-12	-	-
10	90	75-100	28	10-50	-	-
12	97	90-100	71	60-90	1	0-5
14	99	95-100	94	85-100	14	5-25
16	-	-	98	95-100	40	20-60
24	-	-	-	-	73	50-90
35	-	-	-	-	92	85-100
-35	-	-	-	-	8	0-15
SGN	235	200-280	156	140-165	91	70-110
UI	48	35-55	60	50-65	27	23-31
Bulk Den. lb/ft <sup>3</sup>	65	63-67	65	63-67	64	62-66

\*+/-2 Standard Deviation

## Available Sizes

**Granular:** With a larger size and uniformity, it meets higher quality standards to provide the ideal specifications for bulk blending. It is coated with an anti-caking agent to maintain ease of handling.



Granular

**Mid:** Highly uniform, it is also coated with an anti-caking agent to maintain ease of handling. It is ideal for direct application, offering spread patterns comparable to granular grade products.



Mid

**Soluble:** For use in true liquid applications, manufactured fertilizers, industrial applications and herbicide adjuvants, it is also treated with a water-soluble dedusting agent that suppresses fugitive dust and promotes clean and efficient handling. It rapidly dissolves in water to make base grade ammonium sulfate solutions (8-0-0-9S).



Soluble

## Solubility

AdvanSix Sulf-N<sup>®</sup> ammonium sulfate is soluble in water. A 38% solution of ammonium sulfate by weight (8-0-0-9S) can be made by mixing soluble grade with water. No heat is required for dissolving 762 pounds of Sulf-N<sup>®</sup> ammonium sulfate into 1,238 pounds of water. Sulf-N<sup>®</sup> solutions are stable down to 14°F. Higher concentrations (up to 70% by weight), can be produced by suspending the Sulf-N<sup>®</sup> product with 2% attapulgite clay.

## Research

Soil and tissue testing help identify if a crop requires more sulfur. Research shows that crops will likely respond to added sulfur under these conditions:

- CEC < 8 (e.g. sandy loam or lighter soil texture)
- Organic matter < 2%
- Well drained
- No manure
- Tissue S level < 0.20% (most crops)
- Reduced tillage

## Critical Humidities

Fertilizer materials tend to absorb moisture at different rates depending on relative humidity and temperature. Blends with AdvanSix Sulf-N® ammonium sulfate have low moisture absorption.

	Ammonium Nitrate									
	Urea		Ammonium Sulfate		Diammonium Phosphate		Potassium Chloride		Monoammonium Phosphate	
59.4										
18.1	75.2									
62.3	56.4	79.2								
59	62	72	82.5							
67.9	60.3	71.3	70	84.0						
58.0	65.2	75.8	78	72.8	91.6					
69.2	71.5	81.4	77	—	79.0	96.3				

Courtesy of TVA

Critical Humidities of Fertilizer Salts and Mixtures at 86°F (% Relative Humidity)

## Compatibility

AdvanSix Sulf-N® ammonium sulfate can be stored next to or blended with urea, ammonium nitrate or other dry fertilizers. It absorbs less water than urea or ammonium nitrate, resulting in less caking.

	Ammonium Nitrate									
	Urea		Ammonium Sulfate		Diammonium Phosphate		Potassium Chloride		Monoammonium Phosphate	
I										
C	C									
C	L	C								
C	C	C	C							
C	C	C	C	C						
C	C	C	C	C	C					

Courtesy of TVA

### Chemical Compatibility of Blend Materials

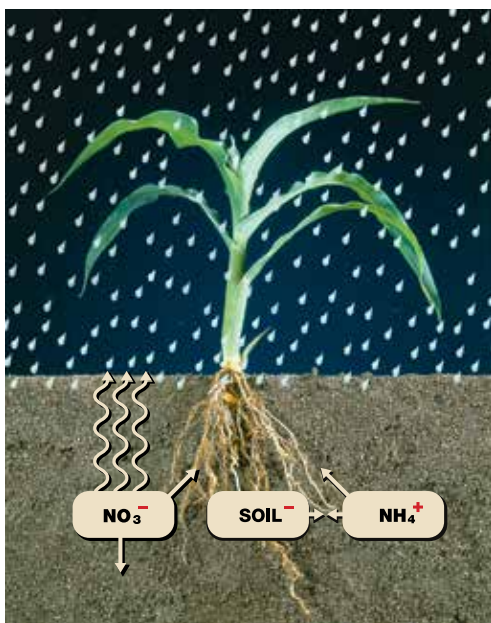
I = Incompatible L = Limited Compatibility  
C = Compatible

## Agronomic Advantages

AdvanSix Sulf-N<sup>®</sup> ammonium sulfate is a cost-efficient fertilizer because it provides two important agronomic nutrients at once: ammonium nitrogen and sulfate sulfur.

### Less Susceptible To Nitrogen Loss From Leaching

The ammonium ion ( $\text{NH}_4^+$ ) has a positive charge and is held by the negatively charged soil.



### Less Susceptible To Nitrogen Loss From Volatilization

Ammonia losses are minimal on most soils, which makes ammonium sulfate an excellent nitrogen source for surface applications, even without incorporation.

### Less Susceptible To Nitrogen Loss From Denitrification

The ammonium form of nitrogen is not subject to gas losses under waterlogged conditions.

### Higher Nutrient Efficiency

The roles of nitrogen and sulfur within the plant are closely linked, so by correcting a sulfur deficiency, nitrogen efficiency may increase. Phosphate and micronutrient availability may also be improved with AdvanSix Sulf-N<sup>®</sup> ammonium sulfate.

## Sulfur Advantage

Sulfur deficiencies have become more common, mainly due to the use of sulfur-free fertilizers, higher crop yields and reduced sulfur emissions. Like nitrogen, microorganisms will immobilize sulfur to balance their carbon-to-sulfur ratio. This can also contribute to a sulfur deficiency, especially under conservation tillage practices where crop residues accumulate on the soil surface.



Alfalfa



Corn



Cotton



Pasture



Potato



Rice



Soybean



Wheat

Sulfur deficiencies can be visually observed. Plants deficient in sulfur show a pale green coloring of younger leaves — not to be confused with nitrogen deficiency found on older leaves.



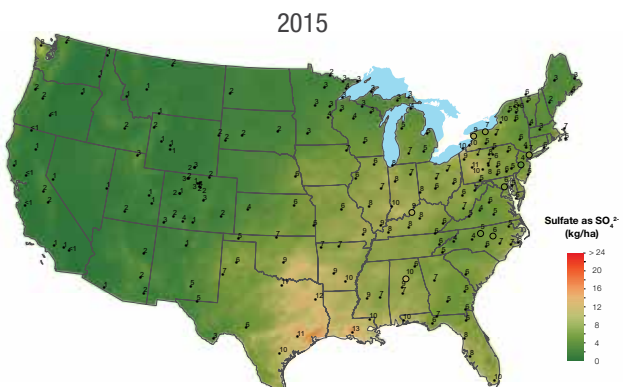
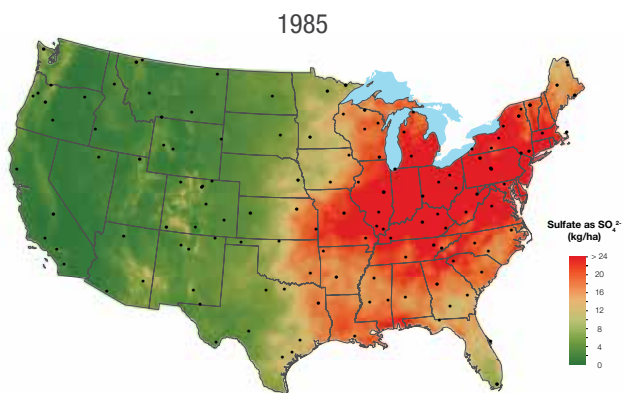
## Higher Profitability

The use of Sulf-N<sup>®</sup> ammonium sulfate can impact both yield and quality of crops, such as protein content, digestibility, palatability and overall crop health.

## Changing Sulfur Trends

Air pollution control has drastically reduced the amount of “free” sulfur originating from industrial emissions and eventually landing in growers’ fields, a major reason why more sites and soil types are responding to sulfur fertilization.

## Sulfate Ion Wet Depositions, 1985 versus 2015



National Atmospheric Deposition Program/National Trends Network  
[nadp.isws.illinois.edu](http://nadp.isws.illinois.edu)

# 10 Good Reasons To Use AdvanSix Sulf-N® Ammonium Sulfate

1. Contains 21% nitrogen and 24% sulfur.
2. Nitrogen in the ammonium form means minimum susceptibility to losses from leaching, denitrification and volatilization.
3. Sulfur in the sulfate form means immediate availability to plant roots.
4. Can increase quality, yields and profitability.
5. High-analysis product: 900 pounds of plant food per ton.
6. Easy to store because of its anti-caking agent and compatibility with other dry fertilizers.
7. Granular grade is screen-sized for uniform blending with all other granular fertilizer products.
8. Can be dissolved to make a solution (38% by weight) or suspended in concentrations up to 70%.
9. Can increase phosphate efficiency.
10. Proven across a broad geography of field and crop conditions. AdvanSix is the world's largest single site producer of ammonium sulfate and the global leader in agronomic research and promotion of this product.

---

Although AdvanSix Inc. believes that the information contained herein is accurate and reliable, it is presented without guarantee or responsibility of any kind and does not constitute any representation or warranty of AdvanSix Inc., either expressed or implied. A number of factors may affect the performance of any products used in conjunction with user's materials, such as other raw materials, application, formulation, environmental factors and manufacturing conditions among others, all of which must be taken into account by the user in producing or using the products. The user should not assume that all necessary data for the proper evaluation of these products are contained herein. Information provided herein does not relieve the user from the responsibility of carrying out its own tests and experiments, and the user assumes all risks and liabilities (including, but not limited to, risks relating to results, patent infringement, regulatory compliance and health, safety and environment) related to the use of the products and/or information contained herein.



#### Contact AdvanSix

To learn more about the benefits of Sulf-N® Ammonium Sulfate, visit [AdvanSix.com](http://AdvanSix.com) or [SulfN.com](http://SulfN.com) or call: **1-844-890-8949** (toll free, U.S./Can.) **+1-973-526-1800** (international)