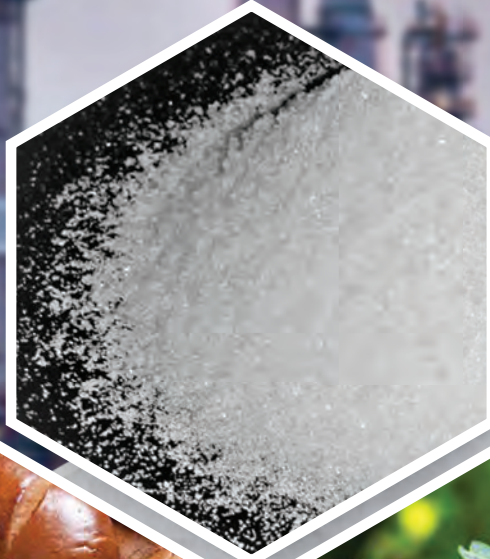


# BARNO



## BARNO

**AMMONIUM SULFATE CRYSTAL**  
 **$(\text{NH}_4)_2 \text{SO}_4$**

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# BARNO

## About Us



Barsava Sepehr Part Chemical Company, with the commercial brand name BARNO, is the largest producer of Ammonium Sulfate in Iran and the Producer of Crystalline Ammonium Sulfate in Iran using the state-of-the-art knowledge of Europe. This company is one of the subsidiaries of Sepehr Holding Company and was established in 2020 and began its work with an annual capacity of 90,000 tons in 2022.

Sepehr Holding Company was established in 1999, and its main activities include design, manufacturing, installation, and launching petrochemical facilities and producing various chemicals.

Considering the amount of its import to the country in recent years, one of the main objectives for establishing Barsava Sepehr Part Chemical Company is to resolve Iran's need for Crystalline Ammonium Sulfate.





## Ammonium Sulfate

- ◆ Ammonium Sulfate ( $(\text{NH}_4)_2\text{SO}_4$ ) is an inorganic salt with numerous uses. Ammonium Sulfate is crystalline solid white and has a salty taste. It is odorless and very soluble in water.
- ◆ Ammonium Sulfate is most often used in soil fertilizers and contains 21% Nitrogen in the form of positive ammonium ions and 24% sulfur in the form of sulfate anions. Sulfate in fertilizers reduces the soil's PH and is the best fertilizer for Iran's soil conditions.
- ◆ Ammonium Sulfate is one of the most widely used nitrogen fertilizers and one the best sources of nitrogen and sulfur for fruit trees and crops that require this element.

# Applications of Ammonium Sulfate



1

## ◆ Fertilizer in Agricultural Practices:

- ◆ Alfalfa, Corn, Maize, Rapeseed, Cotton, Potato, Rice, Wheat, Saffron, etc.
- ◆ Pistachio: One of the advantages of this fertilizer compared to Urea fertilizer and other fertilizers is that it contains ammonia, which is quickly and with the least amount of energy absorbed by the plants and helps them grow.
- ◆ Rice: The harvested crops can increase to two extra tons when Ammonium Sulfate fertilizer is used instead of Urea fertilizer.
- ◆ Rutaceae: Ammonium Sulfate is used for growing tomatoes, grapes, rice, alfalfa, beans, onion, strawberry, cucumber, rapeseed, wheat, barley, saffron, garlic, palm, watermelon, and corn.
- ◆ Agricultural Spray: Ammonium Sulfate is used in insecticides, herbicides, and fungicides soluble in water.

2

Fire extinguisher powders

3

Textile Industry: Used to produce different cloth, such as silk, as a flame retardant in the fabrics

4

Chemical products

5

Leather tanning

6

Extraction of protein from materials and tissues

7

Paper pulp

8

Paint, glue, and sealant production

9

Animal husbandry and poultry farming to prevent Coccidiosis

10

Water and wastewater treatment



## Advantages of Crystalline Ammonium Sulfate



- ◆ Good solubility and lack of waste by sublimation and leaching
- ◆ Contains ammoniacal nitrogen, which is the best form of nitrogen for plant absorption
- ◆ One of the most cost-effective chemical fertilizers containing two important elements of N and S, required for various products
- ◆ Controls soil's PH and is a good supply of nutrients such as iron, zinc, manganese, and phosphor
- ◆ Can be used as a soluble in water for hand or mechanical spraying on soils or fertilizer canals because of good granulation
- ◆ Can be used as a herbicide and pesticide

due to its high solubility and being water-soluble.

- ◆ Better use in alkaline and calcareous soils (soil condition of most pistachio orchards) than the Urea fertilizers, which can cause problems in alkaline or calcareous soils, such as higher alkalinity, adverse soil reactions, toxicity due to soil salinity. Ammonium Sulfate contains sulfur that produces sulfuric acid and nitrogen in the form of ammoniacal nitrogen when decomposed and reduces the soil alkalinity, and does not have a negative impact on the environment. As a result, Ammonium Sulfate fertilizers have a less harmful impact on the environment.

# Analysis Table



## BASIC PHYSICAL AND CHEMICAL PROPERTIES

No.	Name	Index
1	Nitrogen content	21%
2	Sulfur content	24%
3	Solubility in water at 20° C	755 gr/Litr
4	Solubility of ammonium sulfate in water: at 0° C, % weight	41.35%
	At 20° C % weight	42.85%
	At 100° C % weight	50.8%
5	Density, g/cm <sup>3</sup>	1.769
6	The specific gravity of an aqueous solution with a mass fraction of ammonium sulfate 42% is, kg/m <sup>3</sup>	1221
7	In aqueous solutions	acid reaction
8	Relative molecular weight, g/100 ml	132.14052
9	Molar mass, a. eat	132.14052
10	Melting point, C	235–280
11	Decomposition temperature, °C	218
12	Enthalpy of formation (st. arb.)	-1180 KJ/ mol



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