

NITROGEN (FIXED)—AMMONIA

(Data in thousand metric tons, nitrogen content, unless otherwise specified)

Domestic Production and Use: Ammonia was produced by 18 companies at 37 plants in 17 States in the United States during 2024; 2 additional plants were idle for the entire year. About 55% of total U.S. ammonia production capacity was in Louisiana, Oklahoma, and Texas because of their large reserves of natural gas, the dominant domestic feedstock for ammonia. In 2024, the U.S. plants actively producing ammonia operated at about 80% of rated capacity. The United States was one of the world's leading producers and consumers of ammonia. Urea, ammonium nitrate, nitric acid, ammonium phosphates, and ammonium sulfate were, in descending order of quantity produced, the major derivatives of ammonia produced in the United States.

Approximately 88% of domestic ammonia production was for fertilizer use, including anhydrous ammonia for direct application, urea, ammonium nitrates, ammonium phosphates, and other nitrogen compounds. Ammonia also was used to produce explosives, plastics, synthetic fibers and resins, and numerous other chemical compounds.

Salient Statistics—United States:

	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024^e</u>
Production ¹	14,000	12,700	13,800	13,800	14,000
Imports for consumption	1,990	2,080	1,930	1,720	1,800
Exports	369	231	719	890	880
Consumption, apparent ²	15,700	14,600	14,800	14,700	15,000
Stocks, producer, yearend	310	270	440	350	440
Price, average, free on board Gulf Coast, ³ dollars per short ton	213	578	1,070	470	440
Employment, plant, number ^e	1,600	1,600	1,600	1,600	1,600
Net import reliance ⁴ as a percentage of apparent consumption	11	13	7	6	6

Recycling: None.

Import Sources (2020–23): Trinidad and Tobago, 51%; Canada, 47%; and other, 2%.

<u>Tariff:</u>	<u>Item</u>	<u>Number</u>	<u>Normal Trade Relations</u> <u>12–31–24</u>
	Ammonia, anhydrous	2814.10.0000	Free.
	Urea	3102.10.0010	Free.
	Ammonium sulfate	3102.21.0000	Free.
	Ammonium nitrate	3102.30.0000	Free.

Depletion Allowance: Not applicable.

Government Stockpile: None.

Events, Trends, and Issues: The Henry Hub spot natural gas price ranged between \$1.25 and \$3.25 per million British thermal units for most of the year, with an average of about \$2.10 per million British thermal units. Natural gas prices in 2024 were lower than those in 2023—a result of above-average storage levels of natural gas and warmer-than-average winter weather. The Energy Information Administration, U.S. Department of Energy, projected that Henry Hub natural gas spot prices would average around \$3.10 per million British thermal units in 2025.

The weekly average Gulf Coast ammonia price was \$478 per short ton at the beginning of 2024, decreased to \$364 per short ton in late May, and increased to \$510 per short ton in late September. The average ammonia price for 2024 was estimated to be \$440 per short ton.

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Low natural gas prices in the United States have made it economical for companies to upgrade existing ammonia plants and construct new nitrogen facilities. The additional capacity has reduced ammonia imports. Expansion in the U.S. ammonia industry in the next 5 years is expected to increase capacity by about 1.4 million tons per year, which includes decarbonized ammonia projects.

Global ammonia annual capacity is expected to increase by a total of 7% during the next 4 years. Capacity additions were expected in places with low-cost natural gas such as in Asia, Eastern Europe, and North America. As part of the capacity increase, decarbonized ammonia plants have been proposed in several countries but mainly in North America. Consumption of ammonia for fertilizer is expected to increase in Latin America and eastern Asia.

Large corn plantings maintain the continued demand for nitrogen fertilizers in the United States. According to the U.S. Department of Agriculture, U.S. corn growers planted 37.0 million hectares of corn in crop-year 2024 (July 1, 2023, through June 30, 2024), which was 3% less than the area planted in crop-year 2023. Corn acreage in crop-year 2025 is expected to decrease because of anticipated lower returns for corn compared with those of other crops.

World Ammonia Production and Reserves:

	Plant production		Reserves ⁵
	2023	2024 ^e	
United States	13,800	14,000	Available atmospheric nitrogen and sources of natural gas for production of ammonia were considered adequate for all listed countries.
Algeria	2,000	2,000	
Australia	1,300	1,300	
Canada	3,600	3,600	
China	47,000	47,000	
Egypt	4,500	5,000	
Germany	1,720	1,700	
India	15,300	15,000	
Indonesia	5,800	6,000	
Iran	4,200	4,200	
Malaysia	1,400	1,400	
Netherlands	2,000	2,000	
Nigeria	1,700	1,700	
Oman	2,000	2,000	
Pakistan	3,500	3,500	
Poland	1,560	1,600	
Qatar	3,050	3,100	
Russia	14,000	14,000	
Saudi Arabia	5,400	5,400	
Trinidad and Tobago	3,220	3,200	
Uzbekistan	1,300	1,300	
Vietnam	1,440	1,400	
Other countries	12,300	13,000	
World total (rounded)	152,000	150,000	

World Resources:⁵ The availability of nitrogen from the atmosphere for fixed nitrogen production is unlimited. Mineralized occurrences of sodium and potassium nitrates, such as those found in the Atacama Desert of Chile, contribute minimally to the global nitrogen supply.

Substitutes: Nitrogen is an essential plant nutrient that has no substitute. No practical substitutes for nitrogen explosives and blasting agents are known.

^eEstimated.

¹Source: The Fertilizer Institute; data adjusted by the U.S. Geological Survey.

²Defined as production + imports – exports ± adjustments for industry stock changes.

³Source: Green Markets.

⁴Defined as imports – exports ± adjustments for industry stock changes.

⁵See Appendix C for resource and reserve definitions and information concerning data sources.