

NITROGEN (FIXED)—AMMONIA

(Data in thousand metric tons of nitrogen unless otherwise noted)

Domestic Production and Use: Ammonia was produced by 12 companies at 24 plants in 16 States in the United States during 2011; 4 additional plants were idle for the entire year. Sixty percent of total U.S. ammonia production capacity was centered in Louisiana, Oklahoma, and Texas because of their large reserves of natural gas, the dominant domestic feedstock. In 2011, U.S. producers operated at about 85% of their rated capacity. The United States was one of the world's leading producers and consumers of ammonia. Urea, ammonium nitrate, ammonium phosphates, nitric acid, and ammonium sulfate were the major derivatives of ammonia in the United States, in descending order of importance.

Approximately 86% of apparent domestic ammonia consumption 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 plastics, synthetic fibers and resins, explosives, and numerous other chemical compounds.

Salient Statistics—United States: ¹	2007	2008	2009	2010	2011^e
Production ²	8,540	7,870	7,700	8,290	8,100
Imports for consumption	6,530	6,020	4,530	5,540	5,810
Exports	145	192	16	35	22
Consumption, apparent	15,000	13,600	12,300	13,800	13,800
Stocks, producer, yearend	157	302	167	165	207
Price, dollars per ton, average, f.o.b. Gulf Coast ³	307	590	251	396	520
Employment, plant, number ⁴	1,050	1,100	1,050	1,050	1,050
Net import reliance ⁴ as a percentage of apparent consumption	43	42	38	40	41

Recycling: None.

Import Sources (2007–10): Trinidad and Tobago, 59%; Russia, 14%; Canada, 13%; Ukraine, 5%; and other, 9%.

Tariff: Item	Number	Normal Trade Relations 12-31-11
Ammonia, anhydrous	2814.10.0000	Free.
Urea	3102.10.0000	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 \$3.4 and \$4.9 per million British thermal units for most of the year, with an average of around \$4.2 per million British thermal units. Natural gas prices in 2011 were relatively stable; slightly higher prices were a result of increased demand for natural gas owing to colder temperatures. The average Gulf Coast ammonia price gradually increased from \$420 per short ton at the beginning of 2011 to a high of around \$550 per short ton in October. The average ammonia price for the year was estimated to be about \$520 per short ton. The U.S. Department of Energy, Energy Information Administration, projected that Henry Hub natural gas spot prices would average \$4.30 per million British thermal units in 2012.

A long period of stable and low natural gas prices in the United States has made it economical for companies to restart idled ammonia plants in Louisiana and Texas.

Several companies have announced plans to build new ammonia plants in Africa, Brazil, Brunei, China, India, Indonesia, Malaysia, and Turkmenistan, which would add about 6.7 million tons of annual production capacity within the next 2 to 4 years. The largest growth in ammonia production is in Africa and Brazil.

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According to the U.S. Department of Agriculture, U.S. corn growers planted 37.3 million hectares of corn in the 2011 crop year (July 1, 2010, through June 30, 2011), which was 5% higher than the area planted in 2010. Expectations of corn acreage utilization increased in many States because of higher selling prices and expectations of better net returns from corn compared to other commodities. Corn plantings for the 2012 crop year were expected to decrease slightly to 37.2 million hectares. Overall corn acreage was expected to remain high owing in part to continued U.S. ethanol production and U.S. corn exports in response to a strong global demand for feed grains.

Nitrogen compounds also were an environmental concern. Overfertilization and the subsequent runoff of excess fertilizer may contribute to nitrogen accumulation in watersheds. Nitrogen in excess fertilizer runoff was suspected to be a cause of the hypoxic zone that arises in the Gulf of Mexico during the summer. Scientists continued to study the effects of fertilization on the Nation's environmental health.

World Ammonia Production and Reserves:

	Plant production		Reserves ⁵
	2010	2011 ^e	
United States	8,290	8,100	Available atmospheric nitrogen and sources of natural gas for production of ammonia are considered adequate for all listed countries.
Australia	1,200	1,200	
Bangladesh	1,300	1,300	
Canada	4,000	4,100	
China	40,900	41,000	
Egypt	3,000	3,500	
Germany	2,680	2,700	
India	11,500	12,000	
Indonesia	4,800	4,800	
Iran	2,500	3,000	
Japan	1,000	1,000	
Netherlands	1,800	1,800	
Pakistan	2,400	2,400	
Poland	1,800	1,800	
Qatar	1,700	3,900	
Romania	1,100	1,100	
Russia	10,400	11,000	
Saudi Arabia	2,600	3,000	
Trinidad and Tobago	5,000	5,600	
Ukraine	3,400	3,400	
Uzbekistan	1,000	1,000	
Venezuela	1,160	1,200	
Other countries	<u>17,000</u>	<u>17,000</u>	
World total (rounded)	131,000	136,000	

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

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

^eEstimated.

¹U.S. Department of Commerce (DOC) data unless otherwise noted.

²Annual and preliminary data as reported in Current Industrial Reports MQ325B (DOC).

³Source: Green Markets.

⁴Defined as imports – exports + adjustments for Government and industry stock changes.

⁵[See Appendix C for resource/reserve definitions and information concerning data sources.](#)