

Ammonium Sulfate

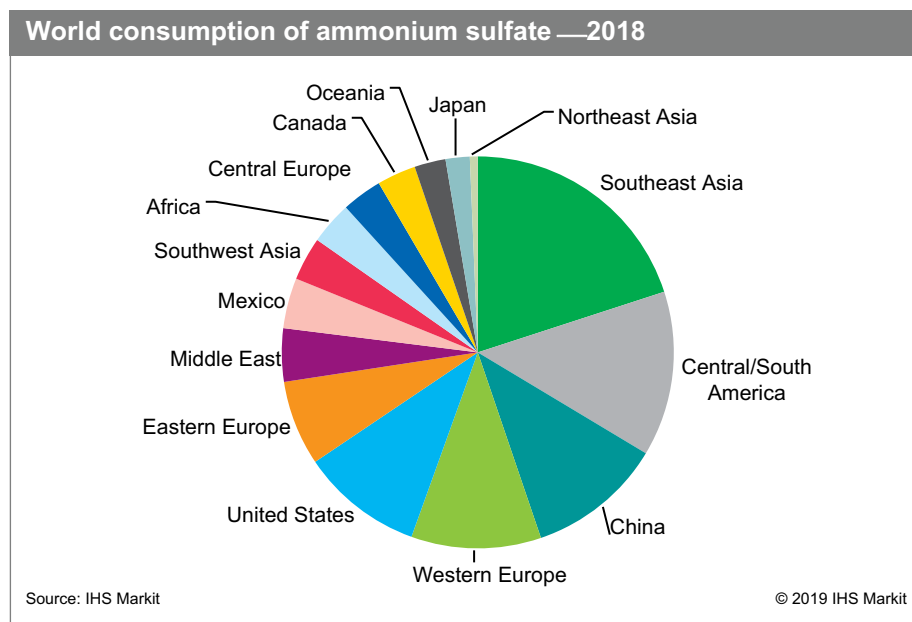
30 August 2019

Abstract

Ammonium sulfate is used almost exclusively as a fertilizer material; minor amounts are used in nonfertilizer applications, including use as a cattle feed supplement, for several pharmaceutical applications, and for flameproofing, tanning, mining rare earth metals, food processing, fermentation, textile dyeing, and water treatment. In 2018, ammonium sulfate was used mainly (95% of world consumption) as a nitrogen fertilizer material and accounted for about 4.8% of the world nitrogen fertilizer market. Industrial use of ammonium sulfate accounts for only about 5% of world consumption.

World consumption of ammonium sulfate is concentrated in Southeast Asia, Central and South America, China, Western Europe, and the United States.

The following pie chart shows world consumption of ammonium sulfate:



In general, the industrialized regions account for most of the world's ammonium sulfate capacity, with Western Europe and the United States being overtaken by China in recent years. Because much of ammonium sulfate is produced involuntarily as a by-product or coproduct, the volume of production is influenced more by general industrial output levels than by fertilizer demand. As a result, the major capacity growth during 2005–18 occurred in China, and China is projected to account for the major gain during the forecast period, but at a slower rate.

Contacts

Koon-Ling Ring • Koon-Ling.ring@ihsmarkit.com
Maria deGuzman • Maria.deguzman@ihsmarkit.com

Ammonium sulfate has a high sulfur content in the sulfate form, making it readily absorbable by plants. It has a low pH, making it suitable for alkaline soils. As a nitrogenous fertilizer, it competes with urea, ammonium phosphates, and ammonium nitrate. Sulfur has become increasingly recognized as an essential nutrient for plant growth since it supports the synthesis of amino acids, proteins, enzymes, vitamins, and chlorophyll. It has been found to be beneficial to a variety of crops, including canola, alfalfa, corn, potatoes, rice, vegetables, and wheat.

There are no serious environmental concerns involved with the use of ammonium sulfate as a fertilizer material. Environmental concern does, however, play an important role in the ammonium sulfate industry in that a significant portion of the world's ammonium sulfate production is the direct result of the necessity to remove SO₂ from stack gases at various metal smelting and refining operations in order to conform to government regulations on SO₂ emissions. A large potential source of additional by-product ammonium sulfate production is SO₂ recovery from coal-fired electrical generating stations.

In China, with the extremely rapid development of the caprolactam industry, the volume of by-product ammonium sulfate has increased constantly. Furthermore, encouraged by environmental protection policies, power plant desulfurization has also produced a rapidly increasing volume of ammonium sulfate. The increased amount went primarily to exports. Chinese exports of ammonium sulfate accounted for over two-thirds of production in China in 2018, corresponding to a strong average annual growth rate between 2013 and 2018.

The majority of ammonium sulfate produced in the United States is generated as a by-product. The US market is mature and is expected to grow at around slightly during the next five years. In February 2017, the US International Trade Commission (USITC) determined that the United States was materially injured by reason of imports of ammonium sulfate from China, which was sold in the United States at less than fair value and subsidized. Affected by this, imports of AS from China declined from 33,528 metric tons in 2015 to nearly zero in 2017, 2018, and the first half of 2019.

Apparent world consumption of ammonium sulfate increased steadily during 2005–18, and is forecast to continue increasing at a similar rate during 2018–23. During 2005–18, the fastest growing regions were Eastern Europe, Africa, and China. In 2018, three regions—Southeast Asia, Central and South America, and China—accounted for nearly half of total world consumption. Although the total nitrogen fertilizer market grew substantially between 2005 and 2018, and further growth is forecast by 2023, the bulk of world demand for nitrogen fertilizer is being filled by urea, another solid fertilizer material with a higher nitrogen content.

Contents

Executive summary	6
Summary	7
Introduction	11
Manufacturing processes	12
Primary product	12
By-product or coproduct	12
– Caprolactam	12
– Coking	13
– Methyl methacrylate	14
– Metallurgical operations	14
– Sulfuric acid tail gas scrubbing (flue gas desulfurization)	15
– Sewage treatment	15
– Gypsum	15
– Other by-product	15
Environmental issues	16
Supply and demand by region	17
World	17
– Salient statistics	17
– Capacity and production	17
– Consumption	19
– Price	21
– Trade	22
United States	24
– Producing companies	24
– Salient statistics	26
– Consumption	27
– Fertilizer uses	28
– Industrial uses	30
– Price	31
– Trade	34
Canada	35
– Producing companies	35
– Salient statistics	36
Mexico	37
– Producing companies	37
– Salient statistics	38
Central and South America	38
– Producing companies	38
– Salient statistics	39
– Trade	40

Western Europe	41
– Producing companies	41
– Salient statistics	44
– Consumption	45
– Trade	46
Central Europe	47
– Producing companies	47
– Salient statistics	49
– Consumption	50
– Trade	51
Eastern Europe	52
– Producing companies	52
– Salient statistics	54
– Consumption	56
– Trade	56
Middle East	57
– Producing companies	57
– Salient statistics	58
– Consumption	60
– Trade	60
Africa	61
– Producing companies	61
– Salient statistics	62
– Consumption	64
– Trade	65
China	66
– Producing companies	66
– Salient statistics	69
– Consumption	71
– Price	71
– Trade	72
Japan	73
– Producing companies	73
– Salient statistics	74
– Consumption	75
– Price	76
– Trade	76
Southwest Asia	77
– Producing companies	77
– Salient statistics	78
– Consumption	79
– Trade	79
Northeast Asia	80

– Producing companies	80
– Salient statistics	81
– Consumption	81
– Trade	82
Southeast Asia	83
– Producing companies	83
– Salient statistics	83
– Consumption	84
– Trade	85
Oceania	86
– Producing companies	86
– Salient statistics	86
– Consumption	87
– Trade	88
Additional resources	89
Revisions	90

IHS Markit Customer Care

CustomerCare@ihsmarkit.com

Americas: +1 800 IHS CARE (+1 800 447 2273)

Europe, Middle East, and Africa: +44 (0) 1344 328 300

Asia and the Pacific Rim: +604 291 3600

Disclaimer

The information contained in this report is confidential. Any unauthorized use, disclosure, reproduction, or dissemination, in full or in part, in any media or by any means, without the prior written permission of IHS Markit or any of its affiliates ("IHS Markit") is strictly prohibited. IHS Markit owns all IHS Markit logos and trade names contained in this report that are subject to license. Opinions, statements, estimates, and projections in this report (including other media) are solely those of the individual author(s) at the time of writing and do not necessarily reflect the opinions of IHS Markit. Neither IHS Markit nor the author(s) has any obligation to update this report in the event that any content, opinion, statement, estimate, or projection (collectively, "information") changes or subsequently becomes inaccurate. IHS Markit makes no warranty, expressed or implied, as to the accuracy, completeness, or timeliness of any information in this report, and shall not in any way be liable to any recipient for any inaccuracies or omissions. Without limiting the foregoing, IHS Markit shall have no liability whatsoever to any recipient, whether in contract, in tort (including negligence), under warranty, under statute or otherwise, in respect of any loss or damage suffered by any recipient as a result of or in connection with any information provided, or any course of action determined, by it or any third party, whether or not based on any information provided. The inclusion of a link to an external website by IHS Markit should not be understood to be an endorsement of that website or the site's owners (or their products/services). IHS Markit is not responsible for either the content or output of external websites. Copyright © 2019, IHS Markit®. All rights reserved and all intellectual property rights are retained by IHS Markit.

