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Sodium Sulfate

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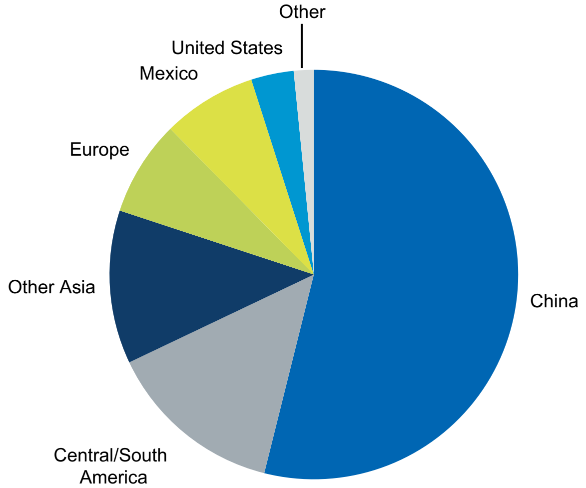
Abstract

Sodium sulfate is used mostly in detergents but also finds use in sodium sulfide production and glass, pulping, and textile applications. Detergent applications have shown steady growth, especially in developing countries; in 2016, detergent uses account for about 39% of global consumption. Sodium sulfide production accounts for 19% of total sodium sulfate consumption in 2016; this market is almost exclusively in China, where sodium sulfide is still produced by reduction of sodium sulfate with powdered coal. Glass is the third-largest use for sodium sulfate, and is also the market most impacted by economic conditions (especially for construction markets and automobile production).

Sodium sulfate can be recovered from naturally occurring brines or lakes that contain significant amounts of the product. It is also obtained as a by-product of the production of man-made fibers, chromium chemicals, hydrochloric acid, and formic acid, as well as from lead-acid battery recycling or desulfurization of flue gases. By-product sodium sulfate can have purity similar to that of the natural product.

The following pie chart shows world consumption of sodium sulfate:

World consumption of sodium sulfate—2016



Source: IHS

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China is the world's largest market and is growing at about 2–3% annually. China has the largest reserves of mirabilite (a major source of natural sodium sulfate in China) and has been building and expanding capacity to meet global demand. As

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production costs are relatively lower than in the rest of the world, China has become the major supplier of sodium sulfate for global consumption.

China is the predominant consumer of sodium sulfate, with an estimated 54% of the market in 2016. North America and Europe account for about 11% and 8%, respectively. China is faced with serious overcapacity, while domestic demand in the United States and Europe has been decreasing in recent years. This situation has stimulated exports from these areas. Exports from China have doubled since 2004, with about half going to Other Asia and half to the rest of the world. Brazil, Colombia, Argentina, and Chile are becoming significant consumers, as are Vietnam, Indonesia, the Philippines, Thailand, and South Korea. Central and South America is almost entirely dependent on imports, with trade from China and Spain accounting for about 90–95% of the total.

US consumption of sodium sulfate has been decreasing in detergents, as demand for sodium sulfate–free liquid detergents has increased. The laundry and dishwashing detergent market segment continues to be the largest segment in the United States. The current market in North America is balanced to slightly tight.

Mexico has been a developing market for sodium sulfate, mostly because of the demand from the detergent sector. Even though production has grown steadily, domestic consumption has increased at a faster rate and Mexico shifted from a net exporter to a net importer of sodium sulfate in 2006. Since the completion of Química del Rey's expansion in 2014, imports have gradually fallen but Mexico remains a net importer.

Historically, sodium sulfate production was mainly from natural resources in Canada and Russia, along with pockets in various parts of Latin America, the western United States, Spain, and India. However, large quantities are currently produced as a by-product from nitrate/iodine processing, rayon spinning, the Mannheim process for hydrochloric acid production, and in the manufacture of sodium dichromate, phenol, resorcinol, formic acid, boric acid, lithium carbonate, and ascorbic acid (vitamin C). In recent years, natural production has become predominant because of the increased production in China.

Global demand is expected to grow at a rate of about 2.1% per year during the forecast period to 2021. Detergent and sodium sulfide production are expected to increase at 2–3% per year, while the other major markets (glass, kraft pulp, and textiles) are expected to increase at about 1–2% per year.

Contents

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