

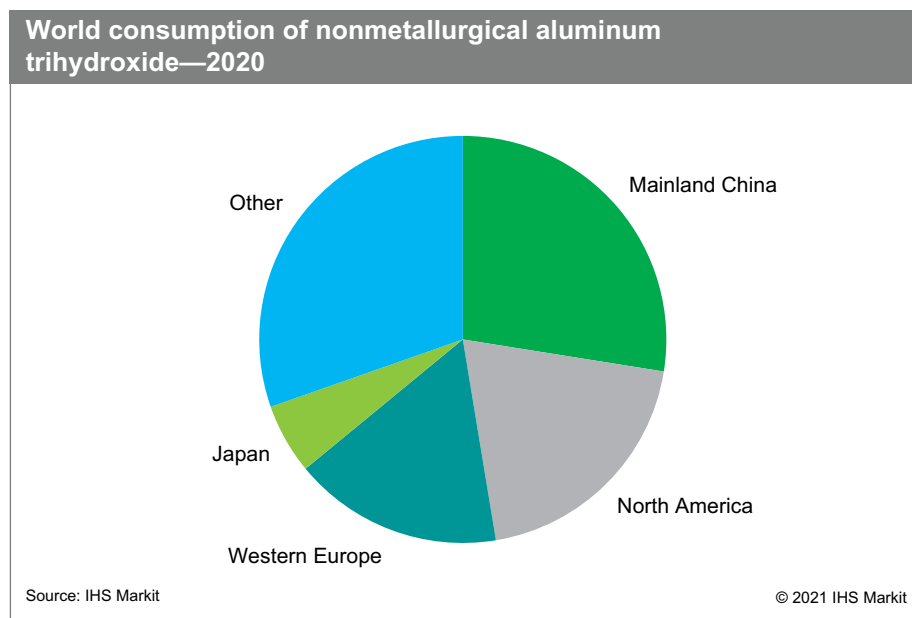
# Aluminum Chemicals

April 2021

## Abstract

In 2020, about 95% of the production of alumina was further processed to produce primary aluminum metal. The principal products covered in this report are alumina trihydrate, aluminum oxide, aluminum chloride, aluminum sulfate, alumina silicate, and sodium aluminate. Alumina trihydrate is typically produced from bauxite via the Bayer process; the vast majority of production is calcined and used for aluminum metal production. This report focuses on the chemical markets for alumina trihydrate and on the markets for the other aluminum chemicals that may be, but are not always, derived from alumina trihydrate.

The following pie chart shows consumption of nonmetallurgical alumina trihydrate in chemical applications by region:



Important alumina trihydrate end uses include use as

- Raw material for production of aluminum-containing chemicals, such as  $\text{Al}_2\text{O}_3$ ,  $\text{AlCl}_3$ ,  $\text{Al}_2(\text{SO}_4)_3$  and  $\text{NaAlO}_2$
- Flame retardants and reinforcement fillers in plastics, elastomers, adhesives, and other products
- Filler pigments and coatings in papermaking
- Precursor for production of activated and other specialty aluminas

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Mainland China continues to be the world's leading consumer of alumina trihydrate, accounting for 27% of the total consumption in chemical applications. The total does not include the calcined material that is used for refractories, ceramics, and abrasives, which are not studied in this report.

Major applications for aluminum compounds other than alumina trihydrate include

- High-quality papermaking (iron-free, white-grade of  $\text{Al}_2[\text{SO}_4]_3$ )
- Electrolyte flux in aluminum metal smelting (aluminum fluoride)
- Surface treatment of titanium dioxide (sodium aluminate)
- Water treatment (sodium aluminate, alum, polymerized and aqueous  $\text{AlCl}_3$ )
- Pulp and paper (sodium aluminate, alum)
- Detergent builders (crystalline aluminosilicates)
- Catalysts (crystalline aluminosilicates,  $\text{Al}_2\text{O}_3$ , anhydrous  $\text{AlCl}_3$ , sodium aluminate)
- Pharmaceuticals (hydrous  $\text{AlCl}_3$ )
- Molecular sieves (crystalline aluminosilicates)

Flame retardants and fillers are forecast to show the strongest growth over the next five years, with global consumption of ATH for this application increasing at 3–4% per year in 2020–25. ATH is the largest flame retardant by volume globally. This market is dominated by higher-value and higher-purity grades, obtained mainly by reprecipitating or finely milling ATH. Its addition to plastics and other materials takes advantage of both its flame retardancy and filler properties.

**For more detailed information, see the table of contents, shown below.**

**IHS Markit's Chemical Economics Handbook – Aluminum Chemicals** is the comprehensive and trusted guide for anyone seeking information on this industry. This latest report details global and regional information, including



Global summary;  
regional coverage



Producers with  
annual capacities  
and plant sites



Production figures  
and trends



Consumption and  
forecasts by end use  
application



Manufacturing  
processes and  
environmental issues



Trade – imports  
and exports

## Key Benefits

**IHS Markit's Chemical Economics Handbook – Aluminum Chemicals** has been compiled using primary interviews with key suppliers, organizations and leading representatives from the industry in combination with IHS Markit's unparalleled access to upstream and downstream market intelligence, expert insights into industry dynamics, trade and economics.

This report can help you:

- Identify trends and driving forces influencing chemical markets
- Forecast and plan for future demand
- Understand the impact of competing materials
- Identify and evaluate potential customers and competitors
- Evaluate producers
- Track changing prices and trade movements
- Analyze the impact of feedstocks, regulations, and other factors on chemical profitability

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