Cellulose Ethers

15 April 2019

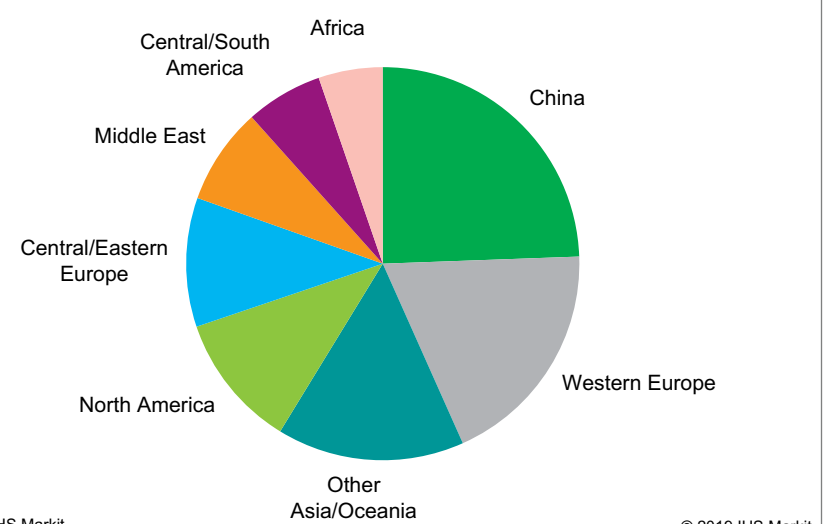
Abstract

Cellulose ethers are water-soluble polymers produced by the chemical modification of cellulose. The cellulose ethers covered in this report include carboxymethylcellulose (CMC), methylcellulose (MC) and derivatives such as hydroxypropyl methylcellulose (HPMC), hydroxyethylcellulose (HEC) and derivatives, hydroxylpropyl cellulose (HPC), and ethylcellulose (EC).

Cellulose ethers function as stabilizers, thickeners, and viscosity modifiers in many industries, including food, pharmaceuticals, personal care products, oil field chemicals, construction, paper, adhesives, and textiles. In select applications, they compete with each other and with synthetic water-soluble polymers (polyvinyl alcohol, polyurethane associative thickeners, polyacrylates) and natural water-soluble polymers (xanthan gum, carrageenan, locust bean gum). The choice of polymer is determined by price/performance trade-offs, availability, and ease of product reformulation based on price/performance considerations.

The following pie chart shows world consumption of cellulose ethers:

World consumption of cellulose ethers—2018



Source: IHS Markit

CMC is the major cellulose ether consumed worldwide, accounting for half of the total consumption volume in 2018. The market for CMC is divided into technical (crude), semipurified, and high-purity grades. The largest end uses are detergents (which consume technical CMC), oil field applications, and food additives. Demand for CMC in the oil field sector is volatile and depends on the price of crude oil. In addition, CMC faces competition from other water-soluble polymers such as xanthan gum that have performance advantages in certain end uses (e.g., horizontal drilling fluids).

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Methylcellulose and derivatives such as HPMC represented a third of the consumption volume in 2018; hydroxyethylcellulose and derivatives and other cellulose ethers accounted for the remainder. Demand for these cellulose ethers is driven by building/construction end uses (including surface coatings) and food/pharma/personal care applications.

The competitive landscape for CMC differs from that of other cellulose ethers. The market for technical CMC is fragmented, with the five largest producers accounting for only 22% of total capacity. Chinese producers, who together control almost half of technical CMC capacity, dominate this segment of the market. The market for purified CMC is somewhat more concentrated, with the five largest producers responsible for slightly more than half of production capacity. CP Kelco leads with a capacity share of almost 20%, followed by Ashland with a 14% share.

The market for other cellulose ethers is more concentrated than the market for CMC despite the significant expansion of production capacity in China and South Korea in recent years. Major international producers of other cellulose ethers include DowDuPont, Ashland, and Shin-Etsu.

An average annual growth rate of almost 3% is expected for cellulose ethers as a whole during 2018–23. In Other Asia and Oceania, consumption of cellulose ethers is expected to increase substantially during the forecast period, driven in large part by demand growth in India, Indonesia, and Thailand. China will lead global growth but Japanese consumption is expected to grow at a comparatively low rate. Central and Eastern Europe and Africa will also experience strong demand growth, although from a comparatively low base. Middle Eastern consumption will increase at slightly less than the average rate, while North America, Central and South America, and Western Europe will have fairly sluggish growth.

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