

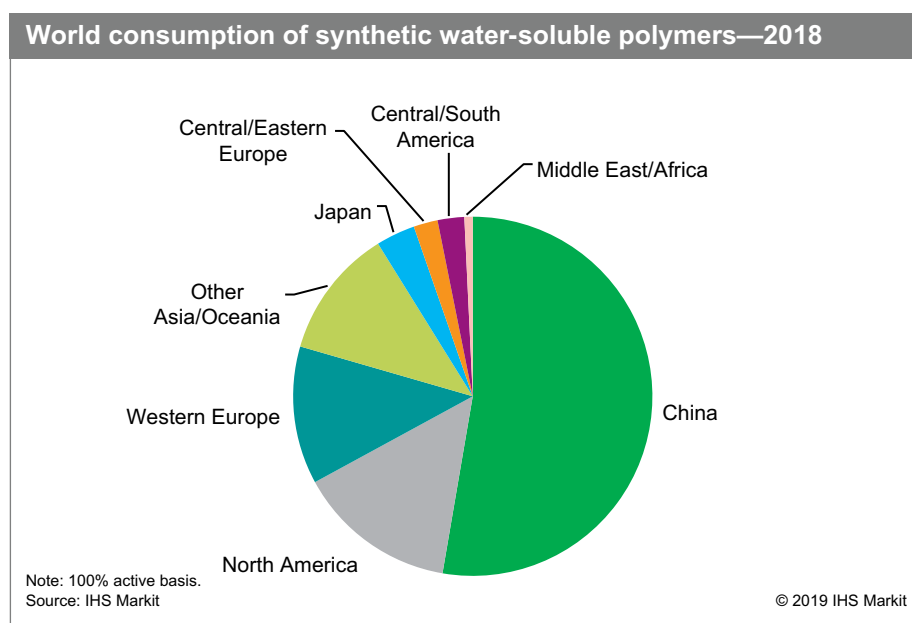
# Water-Soluble Polymers, Synthetic

14 June 2019

## Abstract

Synthetic water-soluble polymers are organic materials that dissolve, disperse, or swell in water and thus modify the physical properties of the resulting aqueous system. These macromolecules act as dispersants, suspending agents, thickeners, stabilizers, coagulants, flocculants, film-formers, binders, humectants, and lubricants in aqueous media. In addition, some water-soluble polymers serve as starting materials for other water-soluble materials.

The following pie chart shows world consumption of synthetic water-soluble polymers:



China is the leading global consumer of synthetic water-soluble polymers, accounting for more than half of global consumption. The nation is also the fastest-growing market for these polymers and will account for the bulk of consumption growth during 2018–23. Consumption in Other Asia and Oceania will increase at a slightly lower rate during the forecast period, although from a much smaller base. In contrast, consumption in North America, Western Europe, and Japan is predicted to grow at a slower pace because of the maturity of large traditional applications such as water treatment, paper production, detergents, and textile processing.

The majority of end-use applications for synthetic water-soluble polymers are well-established. Large-volume industrial applications include municipal and industrial water treatment, paper and board manufacture, textile processing, mineral processing, oil and gas production, detergents, adhesives, surface coatings, and construction chemicals. Synthetic water-soluble polymers also find application in consumer goods such as personal care products, cosmetics, and pharmaceuticals.

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Growth in consumption of synthetic water-soluble polymers is therefore predicted to be in line with the regional growth expectations for the various end-use industries.

Above-average consumption growth is anticipated for polyethylene glycols, which serve as chemical intermediates in the manufacture of polycarboxylate ethers (PCEs). PCEs are highly effective plasticizers for concrete admixtures, reducing the amount of water required in concrete formulations and improving their workability. Because of their superior performance, PCEs continue to replace traditional plasticizers such as lignin sulfonates and formaldehyde condensates. The rapid expansion of construction in developing nations—particularly China—has propelled the use of PCEs over the last 10 years, and this trend is set to continue.

Polyacrylamides will also experience strong demand growth during the forecast period, driven by demand from the water treatment and oil and gas sectors. Again, China will account for the bulk of consumption growth.

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