

# Polyethylene Terephthalate (PET) Solid-State Resins

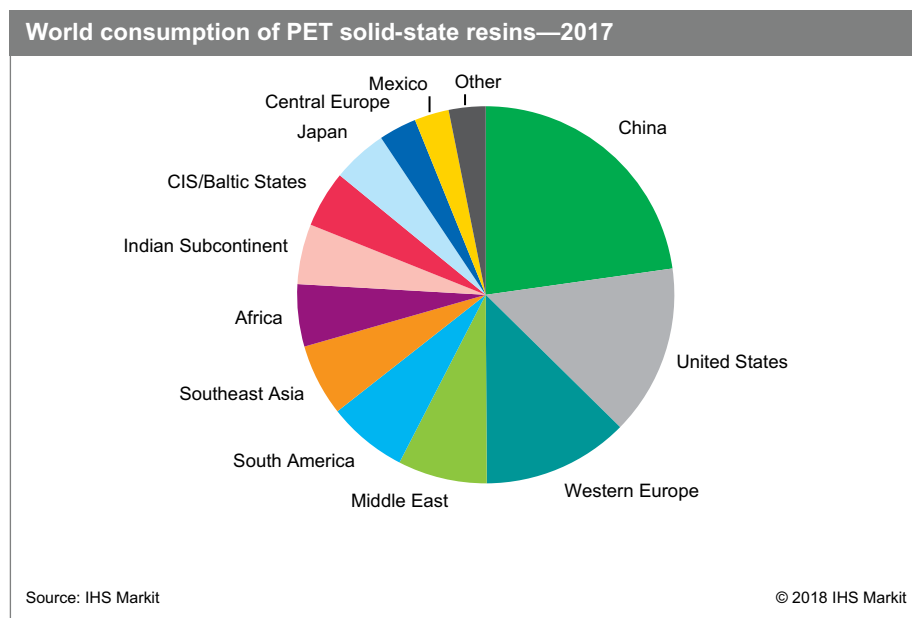
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## Abstract

Polyethylene terephthalate (PET) solid-state resins belong to the broad generic class of high-molecular-weight condensation polymers known as thermoplastic polyesters. They are derived from PET melt-phase resins (also referred to as polyester melt) that are further polymerized (solid-stated) before use and therefore have a higher intrinsic viscosity. The combination of good physical, optical, and lightweight properties has allowed PET solid-state resins to gradually displace glass bottles and containers, and it remains the material of choice for these applications. This report concentrates primarily on the supply/demand picture for PET solid-state resins used in bottle and packaging applications.

Over the past decade, PET solid-state resin consumption has broadly doubled. PET resin consumption has benefitted from the substitution of heavy-walled glass containers, especially in the beverage market, and has grown at a sustained average rate of more than 6% per year over the last 15 years. In developed markets, PET consumption is maturing as most glass substitution has already taken place; however, in developing regions, PET resin markets are still fast-growing, as a result of increasing GDP, changing lifestyles, and improving living standards, as well as expanding populations. China alone accounted for nearly one-fourth of global PET resin consumption in 2017; consumption has grown at more than 14% per year over the last 15 years. Quite healthy demand growth was also registered in the Indian Subcontinent (17% per year) and Africa (15% per year), while stagnating and even decreasing consumption of PET resins was seen in more mature markets such as North America and Western Europe.

The following pie chart shows world consumption of polyethylene terephthalate (PET) solid-state resins:



## Contacts

Koon-Ling Ring • [Koon-Ling.ring@ihs.com](mailto:Koon-Ling.ring@ihs.com)  
 Maria deGuzman • [Maria.deguzman@ihs.com](mailto:Maria.deguzman@ihs.com)

Global consumption of PET resin is dominated by the production of beverage containers, which accounted for 79% of the world total in 2017, followed by food containers and cosmetic and pharmaceutical applications. Other PET applications such as film and sheet account for the remainder, driven primarily by developments in China and the Middle East. Each region reveals certain preferences. While the production of beverage containers accounts for only about 35% of the total consumption in Canada, the average for almost all other regions is around 80%, based on 2017 estimates, and some countries are at 100%. “Other” PET applications are most dominant in markets such as Taiwan, North America, Japan, and China, where they account for about 18–28% of the total PET resin demand. For the food packaging segment, the highest consumption shares are registered in Taiwan, Mexico, and Western Europe.

In developed regions, PET resin consumption has been negatively affected by several trends—the lightweighting of plastic bottles, the shift in consumer behavior toward lower consumption of carbonated soft drinks, and the increasing use of recycled PET (R-PET) material. Strong growth for R-PET demand has been driven primarily by legislation requiring the reduction of solid waste. Even though the production of R-PET has increased at more than 9% per year over the past decade, it still represented only about 6% of total global PET solid-state resin production in 2017.

Future growth in PET solid-state resins consumption will continue to be driven by the two largest end-use segments, beverage containers and other. As most of the glass substitution has already been achieved, PET resin consumption is now driven primarily by the general growth of the beverage industry (containers). As such, the market is now heavily driven by emerging economies, where the growing population, the improvement of living standards, and the progressive westernization are driving the consumption of more bottled beverages.

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## 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

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