

# Polyoxymethylene (POM)

## *Demand Is High in China, Stable in Western Europe, and Growing in Eastern Europe*

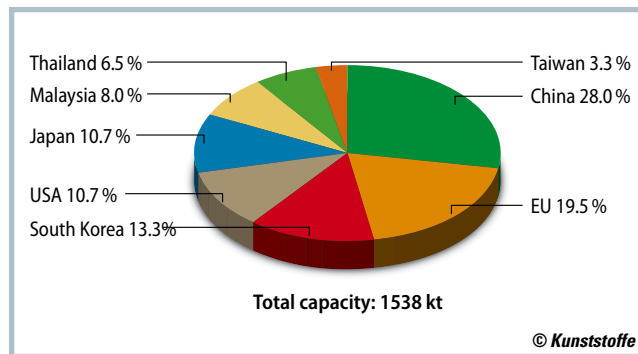
In order to estimate in detail the demand for POM according to individual countries or regions, import and export quantities must be considered, in addition to the POM quantities produced. With its import volume of 250,000 t per year, China is the undisputed leader of this ranking. It is followed by Japan, the USA and Germany.

**G**lobal capacities for polyoxymethylene (POM) are currently estimated at slightly more than 1500 kt/a. Of this quantity, approx. 430 kt come from production plants in China, corresponding to a share of 28%. The EU is the second largest producer of POM, with a rough 300 kt/a capacity and a share of 20%. South Korea has plants to produce approx. 200 kt of POM per year, while annual capacities in the USA and Japan amount to around 160 kt in each country. Capacities in Malaysia amount to approx. 120 kt/a, in Thailand it is 100 kt/a. Production plants in Taiwan have a capacity of 50 kt/a (Fig. 1).

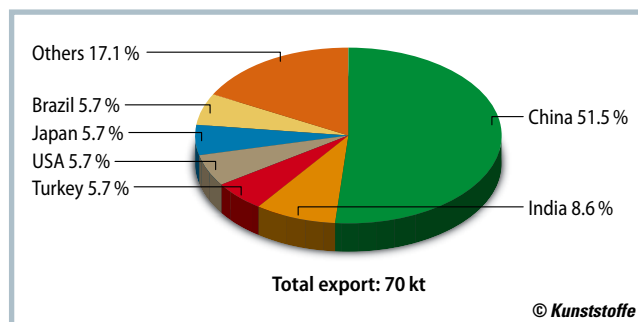
### **EU: China the Most Important Trade Partner**

European POM capacities of approx. 300 kt per year are divided between three member countries. Germany accounts for 180 kt/a (sites in Frankfurt and Ludwigshafen), the Netherlands for 100 kt/a (Dordrecht site) and Poland for approx. 20 kt/a (Tarnow site). Eurostat, the statistical office of the EU, treats as confidential the respective amounts of production for the individual countries, publishing only the total production per year in the EU. In the year 2013, this figure was 210 kt [1], corresponding to a rough 70% utilization of plants.

The following information on POM import and export were taken from the Comtrade data base [2]. In the years 2013 and 2014, EU member states exported approx. 70 kt/a to countries outside the EU (Fig. 2). China is the major trade partner here (approx. 36 kt). Trailing far behind are



**Fig. 1.** Distribution of global POM capacities in 2014. China accounts for approx. 28% of capacities, the EU for approx. 20% (source: ICIS)



**Fig. 2.** Volume of POM exports from the EU according to countries of destination for 2014. China is by far the most important trading partner (source: Comtrade)

India (6 kt/a) as well as Turkey, Brazil, the USA, Japan and Switzerland (approx. 4 kt/a each). As compared to the years 2010 and 2011, POM exports from the EU have increased by roughly 60%. Export quantities in this period of time were approx. 45 kt per year.

In 2014, EU member countries imported 62 kt of POM from countries outside the EU (Fig. 3). South Korea accounted for the largest share, i.e. 50% (approx. 31 kt/a), while Thailand supplied roughly 13% (approx. 8 kt/a). EU countries imported around 5 kt/a from Japan as well as China, and 4 kt from the USA. Little has changed in the EU import situation in recent years. Thailand and China were able to step up

their shares in POM imports into the EU, while imports from Japan and the USA decreased. As early as 2003, Korea was the EU's most important trade partner in terms of POM imports, with a share of more than 40% at that time.

### **Favorable Foreign Trade Balance, Increase in Eastern Europe**

In the area of POM, the Foreign Trade Balance of the EU was favorable in the past years. That means, more POM was exported than was imported. Foreign trade surplus in 2013 was roughly 10 kt. Also taking into account Eurostat data stating production volumes, this leads to domes-

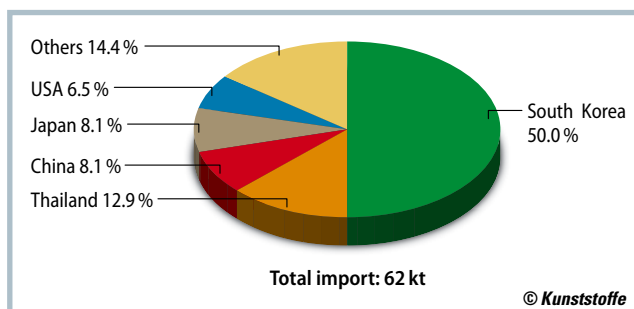


tic demand in the EU of approx. 200kt POM per year.

To estimate the POM quantities processed in Germany, one has to consider production capacities and foreign trade balance. German production capacities are 140kt at the Frankfurt site and 40kt at the Ludwigshafen site. Under the assumption that average plant utilization is 80%, an annual production volume of 144kt is obtained starting from 2011. Between the years 2012 and 2014, German companies imported 50 to 56kt of POM every year. In 2014, Germany exported approx. 130kt of POM. Based on the data at hand, it can be assumed that domestic demand for POM in Germany was roughly 70kt in 2014 (Fig. 4).

Italy imported approx. 30kt of POM in 2014. Export volume was approx. 4 to 5kt. The difference of roughly 25kt of POM is the material processed in Italy. In 2014, 22.6kt of POM material was imported into France, while 2.6kt were exported. Consequently, French companies processed approx. 20kt of POM in 2014. POM imports into the Czech Republic have been constantly rising over recent years. The country imported roughly 18kt in 2014. This figure represents a 60% increase in import volume as against 2010. The low figures of POM exports from the Czech Republic lead to the conclusion that approx. 18kt of POM were processed in the country in 2014.

Imports into Poland were almost as high as 8kt/a in 2014. As opposed to this, approx. 9kt/a of POM were exported. Assuming an average utilization rate of 80% at the polish site of Tarnow, 16kt of POM



**Fig. 3.** Volume of POM imports into the EU according to countries of origin for 2014. Little has changed here in recent years (source: Comtrade)

are produced in Poland every year. This leads to a volume of approx. 15kt of POM processed in Poland in 2014. POM imports into Austria increased over recent years, rising from 13.5kt in 2010 to over 15kt in 2014. Subtracting export volumes leads to 13kt of POM that were processed in Austria in 2014. In the same year, approx. 12kt of POM were processed in Spain.

#### *Demand in North and South America: Increase in Mexico, Decrease in Brazil*

In the USA, there are two plants to produce POM, at a total capacity of 165kt. The site in Bishop, Texas can process 85kt/a, while the site in Parkersburg, West Virginia, has 80kt/a capacity. The U.S. Census Bureau does not publish a statistics to show the production volume of POM, which is why the actual volume can only be estimated. Assuming an average utilization degree of 80%, US production of POM is approx. 130kt/a.

Between 2010 and 2014, annual quantities imported into the USA varied, ranging from just under 20 to just over 30kt. The highest import figures were achieved

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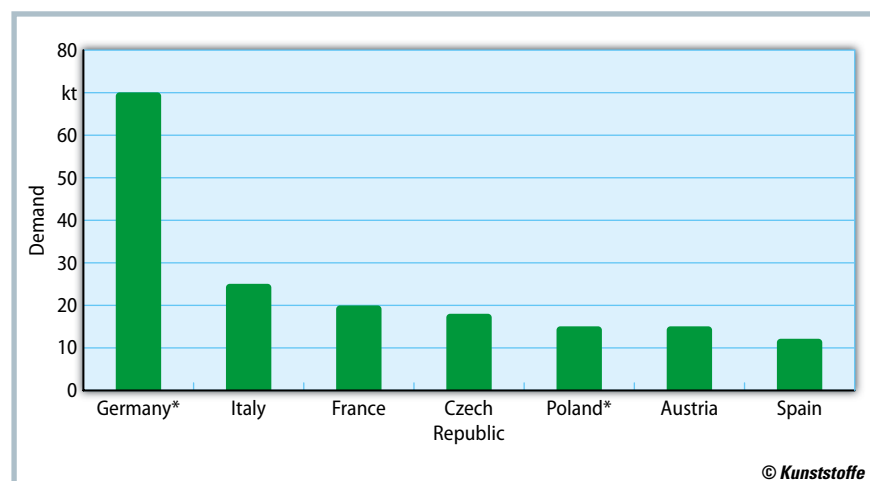
in 2014 (31kt), with most of the POM imported from Korea (14kt) as well as Japan and Thailand (5kt each). In recent years, US exports of POM ranged from just under 90kt to just over 100kt, annually. The major trade partner is Mexico, which received 34kt of the US exports in 2014. Mexico is followed by China (21kt) and Brazil (10kt) as well as Canada and Korea (6kt each).

The US foreign trade balance for POM is favorable – in the past years, average exports exceeded imports by approx. 60kt/a. Based on an 80% utilization of POM production plants, the US demand for POM can be estimated at 70kt/a, roughly (Fig. 5).

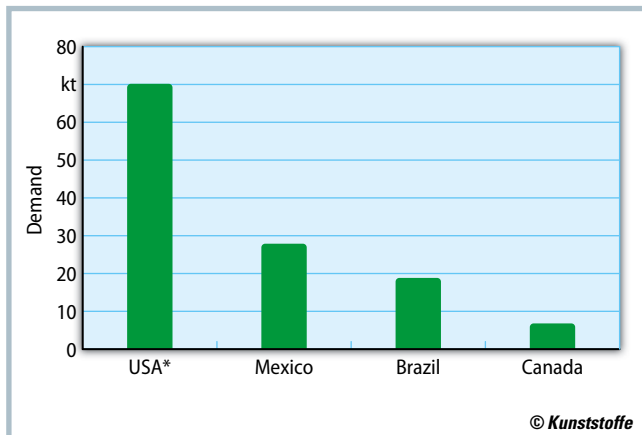
POM imports of Mexico were approx. 28kt in 2014. This means imports were up by approx. 2kt as compared to the previous year. POM imports into Brazil remained unchanged between 2010 and 2013, ranging between 20 and 22kt. Reaching only 19kt in 2014, POM imports decreased by approx. 9%. Just under 7kt were imported into Canada in 2014, which is significantly less than the quantities imported between 2010 and 2012 (10kt/a).

#### *Asia: Imports into China Rise, Demand in Japan Is Stable*

The overall capacity of Chinese POM plants is approx. 430kt/a, at present. Around 100kt/a can be produced at ➤

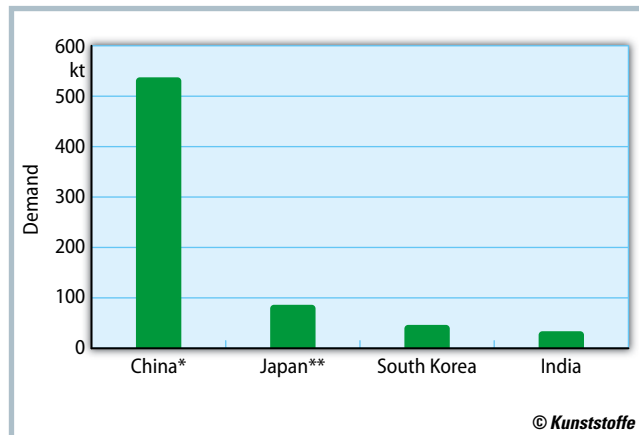


**Fig. 4.** POM demand in the major EU markets in 2014 (\* for an average utilization of production plants of 80%) (source: Comtrade/Eurostat)



**Fig. 5.** POM demand in the major markets of North and South America in 2014 (\* for an average utilization of production plants of 80%) (source: Comtrade)

Comtrade)



**Fig. 6.** POM demand for 2014 (\*\* 2013 figures) in the major markets of Asia (\*for an average utilization of production plants of 80%) (source: Comtrade/METI)

Comtrade/METI)

the Kaifeng site. Each of the sites in Shanghai, Nantong, Yinchua and Chongqing has a capacity of 60 kt/a. Moreover, there are some smaller plants at the sites in Tangchan (40 kt/a), Yunnan (30 kt/a) and Jiangsu (20 kt) [3].

In 2014, POM import volume in China exceeded 250 kt for the first time. Following a slight decrease in imports in 2011, POM imports were up by approx. 12% in 2013 and by 6% in 2014, as compared to the respective previous year. In 2014, China's major import partners were Korea

(44 kt) and the EU (36 kt). China imported 27 kt from Thailand, Japan and the USA, each, while 24 kt came from Malaysia.

China's POM exports varied between 60 kt and 65 kt from 2010 to 2013. In the year 2014 the lowest level of exports was achieved, i.e. only 48 kt. Also in 2014, the difference between imports and exports was higher than 200 kt, for the first time ever. This foreign trade deficit for POM had been 168 kt in 2010.

Due to China's intransparent information policy, the actual utilization of POM plants is unknown. Assuming 50% utilization leads to roughly 420 kt/a domestic demand. Starting from the assumption that Chinese POM capacities are utilized at 80%, on average, domestic POM demand is approx. 540 kt/a (Fig. 6).

Japan produces POM at three sites, i.e. in Fuji (100 kt/a), in Mizushima (45 kt/a) and in Yokkaichi (20 kt/a) [3]. Overall capacity of POM production is thus 165 kt/a. According to information supplied by the Japanese ministry of economics, 116 kt of POM were produced in Japan in 2014 [4]. This means that POM production decreased by 22 kt, i.e. 16%, between 2011 and 2014.

The volume of POM exports from Japan significantly decreased over the period from 2010 to 2014. Amounting to 68 and 69 kt, respectively, in 2010 and 2011, POM exports only reached 50 kt in 2014. In Japan, POM material was produced mainly for the markets in China (18 kt) and Hong Kong (7 kt). At the same time, Japan imported 27 kt of POM in 2014, which is

significantly higher than the figures in 2012 and 2013 (approx. 17 kt each). However, the foreign trade balance of Japan remains favorable, even though the surplus was only around 24 kt in 2014. Based on the figures at hand, domestic demand for POM in Japan was approx. 92 kt in 2014, corresponding to a rough 8% increase as against the previous year. From 2011 to 2013, domestic demand had remained more or less unchanged, at approx. 85 kt/a.

In South Korea, total POM capacity is 205 kt/a. Of this figure, the site at Ulsan accounts for 140 kt/a, while 65 kt/a are produced at Gyeongbuk [3]. POM exports by South Korea have grown considerably within recent years, reaching a volume of approx. 130 kt in 2014. This corresponds to an increase rate higher than 40% as compared to 2010 and 2011. In 2014, China was the largest market for POM from South Korea, with 36 kt, i.e. approx. 27% of POM exports going there. South Korea's POM imports are relatively constant, amounting to approx. 10 kt/a. With its export surplus of roughly 120 kt, and assuming POM capacities are utilized at 80%, on average, a domestic demand of approx. 45 kt/a is obtained for South Korea.

POM imports have grown significantly in India, too, over the past years. In 2014, India imported approx. 33 kt of POM, which means an increase of more than 25% as compared to 2013. With exports on a low level, present demand for POM in India is roughly 33 kt/a. ■

Harald Sambale, Munich, Germany

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