

Supply issues continue to dominate

TiO₂ pigment

Supply issues dominated the TiO₂ industry in the last quarter of 2017 and indeed for most of the year. The ongoing impact of the fire at Venator's Pori plant in January 2017 continued to affect European customers, particularly inks producers. Further environmental regulatory actions in China added to the supply concerns. China is expected to continue with its 'blue skies' policies in 2018, and impacts to Lomon Billions and several sites in Panzhihua are already noted.

At the time of writing, TiO₂ pigment inventories remained low or below normal at most global producers with most operating at near to full capacity to meet demand and rebuild stocks ahead of the Northern Hemisphere paint season. Limited inventory build is believed to have occurred outside of China in Q4 2017.

Downstream users, particularly coatings and inks manufacturers, have reacted to supply challenges and further TiO₂ prices increases by announcing price increases of their own.

TZMI understands price increases for 2018 have been communicated to customers by global TiO₂ producers and it is expected they will be largely accommodated given the tight supply conditions. In Europe, it is understood that some producers have sold out or have placed customers on allocation.

In its most recent supply/demand update (November 2017), TZMI extended its view of the cycle peak to mid to late 2018 given the situation in China and the ongoing tight supply conditions.

Demand growth is being driven by the mature markets of North America and Europe, with Asian growth also remaining strong.

TZMI believes the conditions in the TiO₂ pigment industry are at their strongest since the downturn of 2011/12.

Titanium feedstocks

The buoyant TiO₂ pigment market has meant the current feedstock market continues to reflect strong offtake conditions as pigment producers maximise output to meet customer demand.

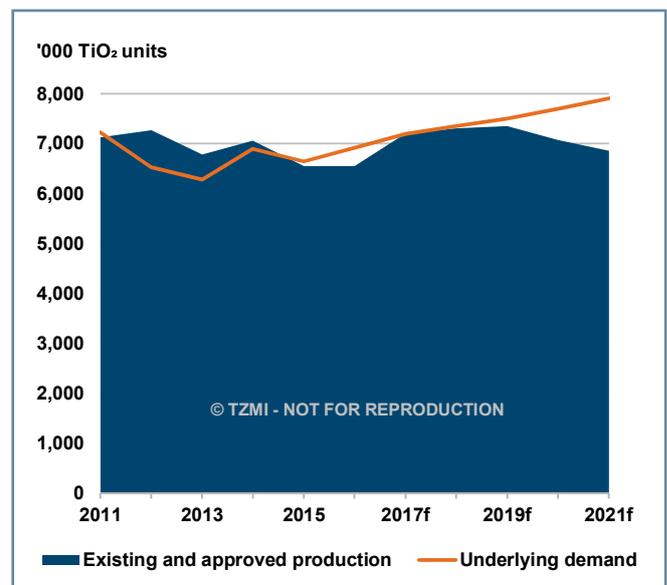
Most feedstock producers reported strong market conditions in Q3 2017 with increases in sales and volumes as well as an uplift in prices. Many expected price increases to come into effect in 2018 as demand remained strong particularly for higher grade feedstocks. TZMI noted some weakness in the

Chinese market for sulfate ilmenite with a decline in demand and prices in the final quarter of 2017.

As with TiO₂ pigment, supply disruptions continued in China during 2017 with ongoing environmental inspections affecting miners and reprocessors.

TZMI maintains its forecast for feedstock demand growth to outperform supply growth during the next few years unless new supply becomes available from new projects. New supply will need to be brought onstream from 2019 to avoid supply deficits.

GLOBAL FEEDSTOCK SUPPLY/DEMAND BALANCES AND OUTLOOK TO 2021



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TZMI's demand outlook for titanium feedstock remains largely unchanged from the last *Market Update*. While the data is yet to be finalised, global demand for titanium feedstocks is estimated at 7.19 million TiO₂ units in 2017, close to the peak demand level in 2011. Current expectation is that global demand will continue to trend higher in 2018, up another 160,000 TiO₂ units or 2% year-on-year.

TZMI expects supply from existing operations in the near term will be relatively flat despite a minor increase in 2018.

Global prices for most titanium feedstock products were seen to increase during the last two quarters of 2017. This is the case for both chloride and sulfate-grade feedstocks. Pricing momentum is building for high-grade chloride feedstocks driven by the emerging supply deficit.

Zircon

The zircon market continued to be tighter than expected during 2017. TZMI understands that many zircon customers were unable to source enough zircon for their requirements and many producers report having less zircon for sale than in 2016.

TZMI estimates that reported excess zircon inventory in the supply chain has decreased significantly and the market will remain tight in the foreseeable future unless new supply is induced. The zircon market is forecast to remain in deficit in 2018 with new projects required to return the market to surplus.

TZMI increased its demand forecast for zircon in 2017, on the back of continued demand in China; strong growth in India and better than expected demand in other markets.

TZMI's demand estimate for 2017 is yet to be finalised but it is expected that most market sectors would have seen growth of 2.8% in 2017, with refractories showing recovery and specialty chemicals being impacted by China environmental enforcement. Looking ahead, demand growth is forecast to be strongest in the zirconia/zirconium chemicals sector followed by ceramics, foundry and refractories markets.

Global zircon supply, on the other hand, is set to decline considerably in the lead up to 2021, driven by mine depletions at several locations.

The zircon sector in China was also affected by environmental policies particularly for downstream users such as ceramics and zirconium oxychloride (ZOC) producers. During 2017, a significant number of zircon consumers were forced to shut down while they underwent modifications to improve environmental performance at their plants.

Zircon producers announced significant price rises for Q4 2017 and Q1 2018 and further price increases are expected in 2018 given the continued expected tight supply conditions. Iluka Resources increased its benchmark zircon reference price by US\$130 per tonne to US\$1,230 per tonne effective 1 October 2017 for a period of six months, reflecting its intention to achieve a sustainable pricing strategy for zircon.



ABOUT TZMI

TZ Minerals International (TZMI) is a global, independent consulting and publishing company which specialises in all aspects of the mineral sands, titanium dioxide and coatings industries.

With a worldwide presence, including offices in Australia, the US, Africa and China, TZMI's strength in consulting services is a result of its extensive practical experience across all elements of the industries and from a comprehensive and unique database, which has been built up over many years.

TZMI has proven expertise gained from its consultants having many years of direct operating experience in the industry in chief executive, senior operational, analytical and marketing roles.

TZMI's publications and data services ensure up-to-date, high-quality and comprehensive data, analysis and information across the mineral sands, zircon and TiO₂ pigment industries.