

TZMI CONGRESS 2014, SHANGHAI CHINA

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Summary by Dr Robert Porter, General Manager, Investor Relations

OVERVIEW

The following provides some notes and observations of part of the proceedings of the TZMI Congress, held in Shanghai in November 2014, relating to the titanium dioxide feedstock and pigment sectors, as well as the zircon market. The observations entail no concurrence, implicit or explicit, with the views expressed by others. Iluka comments and interpretations are shown in brackets. No representation is made as to the accuracy or completeness of this summary.

Daniel Rubin, Global Business Director, DuPont Titanium Technologies

DuPont is the largest chloride pigment producer globally and this part of the business is due to spun out in mid-2015. This change in the industry structure is one of a number in the pigment sector, the largest single end demand market for Iluka's feedstocks.

General observations and elements of the presentation:

- chloride pigment demand has had a 5 year CAGR of 3 per cent (typically demand is closely correlated with global GDP, although the demand can vary quite markedly in different regions);
- a period of more stable growth for chloride pigment demand is expected;
- total world demand of TiO₂ (sulphate and chloride pigment): 5.4mt (2013); China is greater than 25 per cent of the pigment market (although this is predominantly sulphate);
- TiO₂ pigment growth expected to follow global GDP trend line
 - in developing markets demand growth is generally higher than GDP
 - in mature markets demand growth is generally lower than GDP
 - these two effects will continue to offset each other
- 2013 – 2014 recovery years in demand and growth above GDP;
- 2015 expected to return to trend;
- Altamira chloride pigment plant, New Mexico, on track for 2015 commissioning – 200ktpa of chloride pigment capacity; a 15 per cent increase in global chloride capacity;
- In response to a question on DuPont's chloride pigment plants in China, the response was that necessary permitting has not been able to be obtained but that DuPont has "not shut the door" on chloride in China (other presentations indicated existence of three chloride pigment plants in China and that the advent of chloride production in China was a reality).

Jean Francois Turgeon, Executive Vice President Tronox

Tronox is a fully integrated pigment company, with ilmenite mining (upgraded to slag in South Africa and with a synthetic rutile kiln in Western Australia).

- The production facilities were advised as:
 - Titanium slag 410,000 tonnes per annum (ktpa);
 - Rutile – 97 ktpa;
 - Leucoxene 26ktpa;
 - Zircon – 265ktpa (it should be noted that this production capacity assumes the completion of the Fairbreeze project, capital expenditure of US\$365 million which in large part maintains production levels. The presenter said that a reference to the Namakwa Sands zircon production of 135ktpa was closer to 125ktpa);
- Pigment business is exclusively chloride and has a 480kt capacity.
- The “Story of 2014” was described to include:
 - conditions remain challenged in 2014 largely due to soft conditions in titanium;
 - feedstocks which lagged pigment market weakness, and led to destocking at customer level in 2013, has led to a return to strong volumes;
 - pigment producer inventory has fallen from >100 days in Q3 '12 to normal levels today;
 - plant utilization rates have picked up, enabling greater fixed cost absorption;
 - the chart used in the presentation had ticks next to pigment supply/demand in balance;
 - pigment inventories fall to normalized levels; pigment plant utilization rates increase and a reference to “titanium ore pricing stabilises.”
- Reference to organic investment – Fairbreeze (US\$365 million); production expected in late 2015 (as indicated previously mainly maintenance of existing production profile).

David McCoy Managing Consultant, TZMI, TiO₂: China, consolidation and change

Overview of the titanium dioxide pigment sector with an emphasis on recent industry dynamics. View that pigment demand is returning to trend line and over 5 years expected to be relatively flat (note this is chloride and sulphate pigment combined), 2013 data reflected lower than 2011 volumes but represents demand recovery and re-stocking of the supply chain. TZMI view that 2014 volumes up 4 per cent year-on-year.

Current factors affecting titanium dioxide sector (ore and pigment):

- rationalisation/consolidation (Exxaro/Tronox, Huntsman/Rockwood, DuPont spin);
- regional supply/demand balances;
- mineral sands producers have high capital base – need continue to invest for the future;
- TiO₂ pigment – moderate capex, “barriers to exit” are high;
- China is the largest supplier of sulphate pigment – not just domestic, but also exporting. China represents 32 per cent of global pigment supply;
- Discussion on substitution/reformulation
 - optimisation of formulations
 - “inorganic extenders / substitutes” and “organic extenders” – been around for an long period of time
 - emerging pigment producers in China are increasing product quality with their products being used more in emerging economies – notably Latin America and SE Asia
- Main conclusions
 - operating rates (for pigment plants) are improving but differentiated regionally
 - in North America operating rates low 80 per cent to match demand, improved fixed costs
 - ex North America mid 70s – low 80 per cent

- China operating rates are low, near 69 per cent
- Chinese sulphate quality is improving but not yet interchangeable across all applications
- expected peak conditions by 2015/2016 – but a significantly lower peak than 2011
- (Concluding comments emphatic that China will develop chloride pigment technology although the pace and extent hard to determine).

Ed Barlow, TZMI Country Manager, China – Coating Trends in Asia Pacific

- China's coating product market is at an "inflection point":
 - high growth 2004 – 2009 CAGR – 38 per cent
 - mid growth 2009 – 2014 CAGR – 11 per cent
 - 2014 – 2022 forecast: more in line with GDP growth
- Architectural coatings:
 - expected to grow to over 8mt in 2022
 - 2014 and 2015 expect to be slow due to softness in construction market
 - recoating applications will become significant as buildings age
 - white is the preferred colour in China and makes up 80 per cent of the total demand
- OEM:
 - total demand expected to grow to 8.5mt by 2022 (7.5 per cent CAGR)
 - auto coating demand to growth at 7.1 per cent CAGR
- TiO₂ consumption:
 - pricing environment in 2010 – 2012 probably caused 1 to 2 per cent reduction of intensity of use
 - high growth phase over: expect solid, stable growth for several years to come.

Bruce Griffin, Chief Executive Officer, TZMI, Feedstock Sector – Challenges and Way Forward

- Downstream pigment inventory reducing.
- Improving pigment plant utilisation.
- Demand growth in 2014 dominated by chloride feedstock, accounting for 75 per cent of total demand growth.
- Marginal growth in supply:
 - growth in chloride feedstock offset largely by decline in sulphate feedstock production chloride market balanced but overall market (that is including sulphate) remains in over supply in 2014.
- View that the market (total market of sulphate and chloride) will remain oversupplied in the near term (TZMI did not comment specifically on supply/demand equation in the chloride feedstock market nor the high grade feedstock market. In part, supply is influenced by the production settings of the main players – that is, Iluka's actions and also refer to Rio Tinto presentation comments below).
- Discussion of challenges in the market (Iluka has referenced in its presentations the industry dynamics and industry challenges; some are similar to TZMI, although Iluka has placed more emphasis on: VHM grade/assemblage decline; maturing ore bodies requiring fresh capital, such as Fairbreeze, Zulti South and some of Iluka's organic projects).
- The challenges referenced by TZMI – vertical integration reducing tradeable market; margin erosion from falling prices and rising costs; lack of visibility in supply chain leading to over and under supply; resource nationalism; reduced funding for new projects (a significant part of the presentation was devoted to this with a discussion of factors affecting project viability).
- Reference to the fact that "producers have responded" with reference to production response by the main players (Rio Tinto, Iluka, as well as Ukraine and Vietnam supply).

- Overall global demand expected to grow at 5 per cent CAGR:
 - strongest growth in central and south America
 - subdued growth: W Europe and North America
 - China -moderate growth
- In TZMI's view (for total market – chloride and sulphate) net result – balanced to slight oversupply in the near term (as indicated this is not a specific reference to the chloride market and as indicated this will be dependent on the production settings of the main players and various product availabilities within the high grade sector).

Matthew Blackwell, Head of Marketing, Iluka Resources. Iluka – More than Minerals

The presentation, which was very much pitched to customers at the conference, is available on Iluka's website.

Some elements which may be novel to previous Iluka presentations:

- Iluka supplies 18 different specifications of zircon;
- all Iluka product shipped in the last 12 months on spec (assays done at mine site; at vessel and landing port and from warehouses);
- Iluka investing in supply and logistics: sales teams and products closer to customers to allow just in time delivery;
- change in sales team structure, with head of zircon marketing; head of titanium dioxide and a trading arm;
- Iluka a foundation sponsor of the Zircon Industry Association;
- 8 new products launched by Iluka in the last 18 months;
- Iluka announced the establishment of a Technical Centre near Shanghai, China. A state of the art facility with a laboratory and chlorinator, with association with leading academics and scientists allowing feedstocks to be analysed and the utilisation of Iluka feedstocks in the chlorination process for demonstration purposes.

Dr Mark Davies, Chief Commercial Officer, Rio Tinto Iron and Titanium

A large part of the comments on the titanium dioxide market were drawn from Rio's June mineral sands presentation. Some key points from the TZMI presentation included:

- favourable long term fundamentals for titanium dioxide feedstocks, including pigment intensity levels and Rio's view that China will move to 2 kilograms per capital pigment intensity by 2025, the equivalent of 1.3 million tonnes of additional TiO₂ feedstock demand, which would entail six new Richards Bay Mineral deposits;
- indicated that Rio's mineral sands business was "demand led" with alignment of capacity utilisation to market demand;
- no legacy TiO₂ contract after the end of 2014;
- Zulti South development, entailing US\$400 million capital expenditure to 'sustain production' for 20 years.

Ed Barlow China Country Manager, TZMI Global Zircon Supply and demand Trends

- Supply – the first year of recovery; TZMI view of reduced risk of supply disruption (although there was a question mark after this comment).
- Globally, price and volume both stabilised – 4 per cent growth in 2014 to 1.13 million tonnes.
- Global production has stabilised after declines in 2012 and 2013. Production growth coming from Africa – South Africa, Mozambique, Senegal and Kenya (no comment on potential erosion of supply from existing sources).
- Zircon to titanium dioxide ratios have fluctuated but currently sitting below long term average ratio of 0.2 to 1 (this is similar to Iluka's commentary re VHM grade and assemblage challenges and has implications for medium to longer term zircon supply).

- Global import volumes in June 2014 roughly the same as June 2012 – recovery is evident.
- Based on recent historical analysis, offer pricing appears to have trended to a US\$1,100 baseline for benchmark 65 per cent zircon FOB.
- China pricing has also stabilised, inventories have steadily reduced, implying balance has returned to the market.
- Demand recovery in 2014 led by speciality chemicals; construction growth (in China) is softening. Final consumption remains strong.
- The world is still in a cyclical expansion phase, despite some concerns in Europe and Latin America.
- Re ceramics – substitution and thriftiness has stabilised and might be slightly reversing across some applications.
- Digital ink-jets are seeing strong growth, especially in China (TZMI did not have a clear firm as to what this might mean for zircon usage – for Iluka's views refer Iluka Briefing Paper, Iluka Ceramics Tile Survey, March 2014 [http://www.iluka.com/docs/default-source/mineral-sands-briefing-papers/iluka-ceramics-tile-study-\(7-mar-2014\)](http://www.iluka.com/docs/default-source/mineral-sands-briefing-papers/iluka-ceramics-tile-study-(7-mar-2014)))
- Steady growth with balanced supply and demand growth
 - a CAGR 3 per cent for zircon supply can be expected from 2014 to the end of the decade;
 - global tile production will grow at similar rates; digital printing will continue to grow tapping new segments of demand;
 - speciality chemicals will lead growth;
 - overall a more balanced picture is emerging.

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- product pricing assumptions
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- current or new technical challenges
- market conditions
- management decisions

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