

MINERAL SANDS BRIEFING PAPER

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An occasional briefing paper prepared by Iluka Resources to provide information relating to the company and/or mineral sands sector.

Stephen Hay, former Manager of Iluka's Shanghai Representative Office responds to questions on his experience managing Iluka's sales and marketing function in China.

Stephen has been employed with Iluka since 1999 and has been in sales and marketing functions since 2003. In early 2008 he moved with his family to establish Iluka's first representative office in China. Prior to this, Iluka relied predominantly on distributors to sell product in this country. After three and a half years in this role, Stephen has returned to Australia to establish a trading business for Iluka.

Given the significance of Stephen's time and role in China, it was considered worth providing his views on a number of commonly asked questions in relation to the mineral sands market in China.

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What are the main features you observed in the zircon market during your time in China?

It is very interesting though that through the whole period (2008 to present) the demand in China, as measured by consumption, remained very strong. In fact, I would say there was only a short period during Q4, 2008 when demand in China could have been considered as weak. That was understandable given the emergence of the GFC in September of that year and the 'wait and see' attitude of all buyers.

My view is that the issue around market strength for zircon in China was almost exclusively a function of supply. As demand for zircon weakened dramatically in other parts of the world, in particular in Europe and the USA, there was suddenly much more zircon available. Of course, all zircon producers then focussed their attention on the developing markets, and China in particular, to keep moving their products and generate cash flow. So, while the Chinese demand remained strong, the buyers were effectively spoilt for choice and were in a strong negotiating position. On top of that, they had built up stocks through the period of slow consumption in Q4, 2008 and were not in any rush to start buying in 2009.

To illustrate this point, I estimate that in 2008, prior to the GFC, zircon consumption was running at close to 40,000 tonnes per month in China. In Q4, 2008 it dropped to about half that rate. So for all of 2008 consumption in China was about 400,000 tonnes. This consumption level was actually maintained in 2009 while the rest of the world faded dramatically. And then in 2010 we saw an incredible surge to above 600,000 tonnes. Chinese consumption is certainly on track to jump above this level in 2011 – provided there is sufficient supply to fuel it.

The driver of this demand strength has been the domestic market. A robust construction sector, on the back of the mass urbanisation in China and government-sponsored infrastructure projects, has fuelled demand for tiles and sanitary ware and construction glass and steel - using zircon and zirconia-based refractories. Other user sectors such as zirconium chemicals and casting are more exposed to the export market and, therefore, saw a relatively slower period through 2009. However, with the recovery of the global market in 2010 these sectors too have bounced back to be bigger and stronger than ever.

Another important feature of the zircon market in China is its reliance on imports for supply. Domestic production of zircon in China is very limited and the quality is rather poor. The main producing region in Hainan province is producing something like 2,000 tonnes of low grade zircon per month which is down from around 7,000 or 8,000 tonnes per month a few years ago. The main limit in this production has been government regulation. Hainan is being transformed into a major international Tourist Resort destination and environment preservation is high on the agenda. Illegal mining activity has all but been eradicated and it is now extremely difficult to obtain permission to clear new areas for mining.

Iluka has been very well placed to meet the import demands in China. Our proximity to China, our China warehouses and our office in Shanghai, staffed with six Chinese nationals, has led to a significant 'ease of business' factor.

Iluka has steadily built up a very strong supply leadership in China. This has been a firm strategy for Iluka since the mid 2000s. Other zircon producers, by contrast, did not have a strong foothold in China prior to 2009 and, in my view, had been more focussed on the traditional European markets. Of course, in 2009, when Europe dramatically slowed down, and producer stocks were high, we saw South African zircon starting to come into China in large volumes. For the nine months between Q3, 2009 until end of H1, 2010 South African producers were selling an average of more than 20,000 tonnes of zircon into China every month. For the nine months from Q3, 2010 until end of Q1, 2011 South African supply had dropped by more than half to an average of less than 10,000 tonnes per month. This significant supply drop reflected the exhaustion of producer stocks by mid 2010 and the switching of some available South African zircon back to Europe.

So from a supply perspective China is very dependent on imports. Traditionally Australia has been the major source of imports for China. For a 9 month period in late 2009 and H1, 2010 we saw South Africa become a major supplier to China. But this has dropped off significantly since Q3, 2010. Chinese consumers who became dependent on South African zircon have been the hardest hit by lack of supply following the global demand recovery.

With the growing shortage of zircon in China since about Q2, 2010 we have, of course, witnessed some big step increases in price. At the start of this period it was rather difficult for most customers to accept that prices should move up. While Iluka could see zircon sand stocks being exhausted at producer and consumer locations, some customers believed that final product stocks held between them and their customers were still high and so could not pass on price increases. However, as soon customers realised that zircon availability was becoming scarce, in particular that they could no longer buy the volumes they needed, the initial step up in prices were accepted. And then, as the low stocks began flowing through the whole supply chain the price increases were being passed along with little resistance.

By around end of Q3, 2010 Chinese customers were no longer overly concerned about pricing. The discussions became all about supply volume. Customers with strong links to large, reliable suppliers had a big competitive advantage. Even though the size of the step increases was becoming larger each quarter they being accepted more willingly. Customers had become aware that their customers were also struggling to secure supply of the end products and so prices could flow through the chain without too much trouble. And, most importantly, good margins could be achieved by all in the chain.

Over the last three years I have seen some incredibly strong growth from our customers. Despite the interruption from the GFC some of our core customers have expanded by a factor of two or three times in that time. By way of example we have seen a key zirconia customer increase from around 30,000 tonnes of zircon capacity to around 60,000 tonnes now and a zircon milling customer grow from around 7,000 tonnes per year to around 22,000 tonnes. Both are operating using almost 100 per cent Iluka zircon to operate at near full capacity and still cannot meet the demand from their end customers.

Can you comment on the structure of the customer base in China. Have you seen any signs of aggregation on the part of customers?

The structure differs a fair bit between the zircon sectors and the TiO₂ sectors.

In zircon we see a very fragmented market full of mostly small, privately owned companies. State ownership in the zircon industry is rather limited. Most customers tend to be centred around a few major industrial hubs in various parts of the country.

In early 2008 there were virtually no zircon users in China who could have been considered 'large' – certainly from a global perspective. While the market remains highly fragmented, what we have seen since 2008 is the emergence of a number of very big zircon users. We now have zircon millers who have grown to rival the size of some of the world's biggest, huge new world-class zirconium chemical plants and major global producers of fused zirconia and refractories.

Interestingly, very little growth has come from aggregation or merger and acquisition activity. The preference of the Chinese customers certainly seems to be organic growth. I think the reasons for this are:

- firstly, companies are more comfortable building on existing assets at existing locations where they are familiar with the local government and regulations and the local markets;
- secondly, smaller and older plants, the most likely takeover targets, are generally subject to tight scrutiny from the government on environmental issues and may be forced out of operation at some point; and
- thirdly, there are generally no real barriers to entry. The technologies for most zircon end uses are well known and capital is generally available. So it is relatively easy to build a new plant, or expand an existing plant, and control the construction rather than buy an existing plant from someone else that may have hidden risks or liabilities.

So what we see is the stronger, more efficient and cleaner plants expanding and becoming bigger while older, smaller and dirtier plants are being forced to close down. It is also interesting that in the latter case companies willingly close down their old plants in sensitive areas and re-build new plants in new locations where they may receive government incentives. So some new hubs are starting to appear in the more western and northerly provinces.

The TiO₂ feedstock industry structure varies between the different sectors. The pigment industry has gone from a highly fragmented structure with few dominant payers to one that it is now moderately fragmented and easily dominated by the top five or so producers. There is also a mix of state and private ownership in the industry. The biggest producers four or five years ago were about 20,000 tonnes per year. Now we have the biggest producers pushing capacities of up to 200,000 tonnes per year.

Due to technology constraints all of the major current production is still utilising the sulphate process. However, many of the bigger players and new entrants are now focussing heavily on the chloride technology pigment route.

Titanium sponge has, until recently, been made up mostly of a large number of very small producers utilising old Russian technology – again fragmented around the country. However, in the last year or two we have seen some major new operations opening up. The new operations are much larger scale than traditional plants and are focussed on cleaner, more efficient technology – utilising higher grade titanium feedstock. These plants are only just beginning to enter operation and demand for rutile from these operations has been very strong.

The welding-consumable industry in China is also heavily fragmented with a very large number of very small producers spread throughout the country. There are a few bigger players who purchase feedstock directly but most rely on a small number of middle men to negotiate and import raw material on their behalf. The high end flux-cored wire market, utilising high grade feedstock, is less fragmented than the general welding sector and a small number of main producers are again starting to expand in order to support the surging Chinese ship-building industry.

Iluka's main focus in China has traditionally been in zircon. Titanium feedstocks have not been high on our radar screen since most Chinese demand has been for low grade feedstock only. Iluka has limited production of low grade TiO₂ products while China has a very large domestic production of these products (eg ilmenite and low grade rutile). However, with the growth in new age sponge plants, expansion of flux-cored wire welding consumable production and progress in chloride route pigment technology, this position is changing rapidly. Demand for Iluka rutile in China has been surging in 2011 and it is likely that we will be making our first SR (synthetic rutile) sales into China in the very near future.

Iluka's progress in the Chinese zircon market has been very successful. The growth of the market, the changes in the zircon industry structure and Iluka's focus on China have all assisted this development. With smaller customers, a limited distribution network and limited resources Iluka was forced to rely mostly on the services of distributors to market its zircon in China prior to 2008. In 2007 Iluka sold directly to only seven zircon customers in China, who collectively made up 35 per cent of our total zircon sales to China. In 2011 our direct customer base will be more than 40 – making up about 90 per cent of our zircon sales into China. The benefits of this have been significant. We have developed closer connection to the market, we have developed much stronger and longer term relationships and we have pocketed the value of commissions that would otherwise have been paid to a distributor.

Iluka has moved from about a half market weight position in China when you took the role now – what do you consider some of the main elements of the reason for this increase in market position?

We had about a 20 per cent share of the zircon market in China in 2007 and managed to grow and maintain this pretty quickly after setting up the office in Shanghai in 2008 to about 35 per cent - which is in line with our global production share. It really was a very quick turnaround which I think can be attributed to a few key elements:

- for the first time we had Iluka people, experienced Iluka marketing personnel together with professional Chinese nationals, directly promoting products from within China;
- we backed ourselves to place zircon stock inside China, at key locations, and make our products more accessible and visible to the Chinese market; and,
- we remained heavily focussed on moving more product into the Chinese market at a time when other suppliers were beginning to struggle (eg Indonesia) or were still more focussed on traditional, perhaps more comfortable, markets (eg South Africa).

We have managed to maintain our leading market position through some pretty tough times by bringing in more high quality people, strengthening our relationships with all customers and continuing to implement many new initiatives.

The key for us now is to grow our production in line with market demand so that we can continue to support our customers as much as possible.

You have also been responsible for a major increase in zircon prices in China. The price has increased during your time from under US\$800/ tonne to about US\$2200/tonne now. What has the customer reaction been to those price increases and how they have accommodated such increases?

As I mentioned previously, once the industry realised and accepted that the market was falling into a very significant under-supply our customers became very supportive of the price increases. We worked very hard with our customers in Q1 and Q2 of 2010 to explain the emerging shortage. My team and I were constantly on the road at that time and we visited factory after factory giving all the customers the same message about the need for prices to increase and the importance for customers to lock in volumes as soon as possible. We also explained in detail that the poor financial performance of the producers at the time could not be sustained and prices must either start moving up or more operations would be forced to close. I recall that customers at the time were very receptive to our message, and genuinely wanted to support us, but were still hesitant to sign up to a higher price – fearing that their competitors would not and that they would then not be able to compete.

However, our hard work paid off and as soon as customers needed to begin replenishing stocks they began signing up. Of course, as the shortage increased the price negotiations became easier and significant room opened up to increase the quantum of each step. We saw our customers not only passing through the price increases but also finding room to increase their own margins. All in all it became a very healthy financial position for both the producers and the producers' customers.

Iluka's initiative to introduce quarterly pricing and give advanced warnings to our customers of price changes for the upcoming quarter, has allowed our customers to minimise their exposure and also plan for the cost impact slightly ahead of time. In most cases our customers have now structured their own pricing deals with customers on a maximum quarterly basis.

Have you seen evidence of substitution or end demand destruction?

I see substitution as an interesting topic. As I have said to many people I do not believe that pricing is the main driver for customers, or users at the end of the chain, to find substitutes or ways to reduce their zircon consumption levels. It is simply lack of availability. If you have an operation that relies on a zircon-based product and you cannot get enough of that zircon-based product at any price you must, by necessity, find a way to operate by using lower volumes of it. Otherwise your business will die.

My argument is that even if the price of zircon was halved tomorrow it would not stop any efforts to find ways to work with less of it. Dropping the price by any amount does not magically make it more available.

The work we have done suggests that there are some sectors that could find ways to reduce their consumption rate of zircon-based materials. But we still believe that any drop in the amount of zircon in any of the end applications will be at the expense of quality. Ceramic tile manufacturers may be able to reduce the amount of zircon they use per square metre of tile by using new production techniques. But even if this proves to be successful I do not anticipate a major near term impact in China. The Chinese tile industry has expanded very rapidly over the past 12 to 18 months. In that time many new tile factories have been constructed (and are still being constructed) using European technology to produce porcelain tiles that require zircon opacifier throughout the entire body of the tile. It is highly unlikely that such recently built factories, after undergoing substantial capital investment, would contemplate a switch to a new, unproven technology in the near future.

There is also some scope for alternative materials to make up a higher proportion of the input base in some casting applications. However, we cannot see any clear room for substitution or reduced reliance on zircon in the sanitary ware, fused zirconia, refractory and chemical zirconium sectors in China and probably elsewhere.

There are no known substitutes for titanium minerals in any of the end sectors in which they are currently used. In fact, on the contrary, it is likely technology developments are likely to increase reliance on TiO₂ materials in the future. It would not surprise me if China begins to dominant the world in R&D efforts in the not too distant future.

There has been some concern of late that the China market may be overheated and that there could be some weakness in the construction market. How do you view this sector and do you see this as a risk to zircon demand?

I have no doubts that some sectors of the Chinese economy including the property market are overheated. The Chinese government has clearly acknowledged that fact and has reacted by putting in place some cooling measures. We are starting see the impact of those cooling measures with the growth rate of the overall economy and the property sector in particular slowing to some extent. It must be remembered though that this impact is exactly the outcome the government was targeting. So rather than being a cause for panic I see this being an encouraging sign that the government is bringing things under control.

It must be remembered that the Chinese government has no intention of bringing the whole economy to a standstill. The government is simply trying to prevent the economy from getting too far ahead of itself and risking eventual collapse. They have the interests of long term sustainable growth in mind – something which I think we should all support. So rather than be concerned by the slight slowing of growth I think producers should be encouraged by it. It paves the way for a longer brighter future.

Clearly it is also important to put the controls on economic growth into perspective. We are talking a slowdown in GDP from double digits to something in the order of 9 per cent - maybe 8 per cent worst case. When we see that zircon demand growth for the past 15 to 20 years has, on average, far exceeded the GDP growth rate you could easily conclude that even at a GDP growth of 8 per cent zircon demand could exceed 10 per cent per year. At current consumption at something north of 600,000 tonnes per year this represents more than 60,000 tonnes of additional zircon demand per year in the coming years – in China alone. Given that global zircon supply is forecast to remain relatively static over the next five years or so it is hard to see how any demand growth at all in China can be met by additional supply (let alone any demand growth in the rest of the world).

If we look specifically at the property construction sector in China I would say there is more upside than downside. Activity in the mainstream market of the major tier 1 cities is certainly slowing down. However, urbanisation continues to drive huge demand for housing in tier 2 and tier 3 cities. Add that to the massive social housing program and the government sponsored infrastructure projects, like new airports and high-speed train stations, and you still have a huge amount of construction activity on the drawing board.

Can you comment on how you see high grade titanium dioxide markets developing in China. Is this an area of potentially increased demand?

As I mentioned previously I see this as big potential growth area. Traditionally China has been focussed on low grade TiO₂ inputs which they have largely been able to source locally or regionally. But it is clear now that the government is putting a very big emphasis on cleaner and more efficient technologies. Old, dirty plants are being targeted for closure and approvals for new plants focus heavily on energy efficiency and waste disposal issues.

The recent five year plan released by the Chinese government has big emphasis on cleaner industries. A sub set of this has been a focus on the Chinese pigment industry with the government actively pushing for the adoption of chloride technology and specifically the use of high grade titanium minerals as a feedstock. This could prove to be a major turning point in the huge Chinese pigment industry – with all major new plants likely to focus on chloride technologies.

We have already seen a strong movement towards the use of cleaner, more efficient technologies in the titanium sponge sector. The new titanium sponge plants are much larger in size than traditional plants and again rely on imported high grade feedstock. There is no question that we are at the beginning of a major new source of demand for products such as rutile and synthetic rutile in this sector.

Of course we then see the rapid development of the Chinese ship-building industry which demands high end flux cored-wire welding consumables. The technologies for these consumables (as in Japan and Korea) demands high grade natural rutile as a feedstock. So we expect to see continuing strong demand growth from our existing customer base in the Chinese welding sector.

Another important point here is that as manufacturing industries, such as the automotive industry, and the Chinese market in general, become more dependent on quality we are likely to see further rapid demand growth for imported high quality pigments. This, of course, fuels production growth in off-shore chloride pigment plants in places like the US, Europe and Japan. Pigment companies in those regions then also increase their demand for higher grade TiO₂ feedstock so that they can improve the overall throughput and product yield from their plants.

If the last five years or so has been the era of a Chinese-led transformation of global zircon industry fundamentals then I believe the coming five years or so will be the era of a Chinese-led transformation for high grade titanium minerals.

For further information on the mineral sands sector refer to Iluka briefing papers on its website www.iluka.com

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