Ti Feedstock – An Integrated Producer’s View
Dennis Plester
Manager Minerals Marketing
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Overview

• Introduction to Tronox
• Demand – Applications and Drivers
• Supply vs. Demand
• Historical Pricing Trend
• Product Types
• Industry Developments
• Closing Points
Tronox At A Glance

• The largest fully integrated company in sector

• Leading global producer of:
  – TiO$_2$ via chloride technology
  – Titanium feedstock
  – Synthetic rutile, natural rutile, slag, ilmenite
  – Zircon and pig iron

• Consume slag, natural rutile and synthetic rutile

• Long-life ore deposits exceed pigment production needs

• Global footprint: 17 locations worldwide
  – 3 Mineral sands mines & processing in South Africa (2) and Australia
  – 3 TiO$_2$ plants in U.S., Australia and the Netherlands
  – Corporate offices in Stamford, Connecticut, USA

• 3,800 employees; deep experienced team

• Publicly traded on New York Stock Exchange (TROX)

• Strong cash position; approximately US$1,832 million revenues (FY2012);
  US$2,220 million market cap
Tronox Pigment Production

Botlek Pigment Plant, the Netherlands

Hamilton Plant, USA
Tronox Mineral Sands Production

KZN Sands Mineral Separation Plant, South Africa

Namakwa Sands Mine, South Africa
Pigment and Mineral Sands/Feedstock Production In W. Australia

Kwinana, Australia

Cooljarloo Mine, Western Australia
Feedstock Market Demand - Applications

- The main application for titanium feedstock products is titanium dioxide pigment production.
- The remaining 14% is evenly divided between titanium sponge production and welding consumables.
- Historically, the three sectors have had different purchasing practices due to their production requirements, product specification and typical company size.
- The demand for the end products of all three feedstock applications is ultimately linked to economic conditions and growth.

Dominated by pigment feedstock requirements, but non-pigment is still significant.

2012 Feedstock Consumption

- **86%** Pigment
- **7%** Ti sponge
- **7%** Welding

Source: TZMI, Tronox
Economic Outlook

Residential Construction Spending

Global 4.7%, Region N America = 12.1%

Residential Construction Spending Growth 2011-16
(2005 USD, CAGR)

IHS Global Insight Construction Outlook, February 2013
Infrastructure Spending Hot Spots

Global 4.3%, Latin America = 7.1%

Infrastructure Spending Growth 2011-16
(2005 USD, CAGR)

IHS Global Insight Construction Outlook, February 2013
Supply vs. Demand – CP Feedstock

Feedstock Supply & Demand

- Based on existing production and approved projects, there will be slight oversupply until 2015/2016, but this can change quickly with only minor changes in production or demand.

- Other production will need to come on line to prevent shortages in the longer term, but it will require support through consistent, sustainable pricing.

- Mining and feedstock production is a relatively high risk activity, with future production volumes rarely being certain.

- Tronox is committed to bringing new supply online, such as the KZN Fairbreeze project.

Source: Tronox
Historical Pricing Trend

- Feedstock producers started reducing investment in mine expansions due to poor returns/flat pricing conditions over an extended period of time.
- Long term, price restrictive contracts were typical.
- Supply tightened towards the end of the last decade, customers scrambled for product, resulting in increasing prices within a short time frame.
- Typical contract conditions over the last two years have changed, more fluid.
- In the last twelve months demand has been easing against stable/growing supply.
- Pigment demand remains the main driver for feedstock pricing, but welding and titanium sponge also have ongoing influence.
- Pricing varies between different applications and the grades used within each application.

Source: Tronox
Feedstock Products – High Grade Feedstock

There are a range of different titanium feedstock types available:

- TiO₂ content ranging from 80% to 95%
- Varying degrees of other elements, such as P, S, Sn, Al, Si, Fe, Mn
- Particle size distribution
- Particle shape
- Naturally occurring vs synthetic
- All three main feedstock consuming applications have different preferences but due to the chlorination step used in both processes, pigment and Ti sponge have much in common
- Geographic location and final product requirements can also impact on purchasing specification
- Demand for individual grades can vary significantly from the overall trend and from year to year

Tronox has a number of different options for its own consumption and external sales:

- 9 individual grades of natural rutile/leucoxene ranging from 85% - 95% TiO₂, and both fine and coarse particle sizes
- 2 chloride grade slag and slag fines products, plus synthetic rutile
- Tronox continues to offer its products for pigment, welding consumables and titanium sponge production outside of its own requirements
Industry Developments

New mineral sand projects have been planned due to the significant price increases seen recently, not only for feedstock, but also for zircon. Are they sustainable long term?

Existing mineral sand producers are always looking at different product specifications but technically can be difficult, particularly for natural products

- Screened rutile, reconfiguring leucoxene/rutile blends, upgraded slag/SR and even lower grade slag/SR

Some pigment producers are securing stable supply through integration

- Cristal’s acquisition of Bemax
- Tronox and Exxaro Mineral Sands
- Cristal’s captive Ti slag supply project

Others are looking to consolidate or spin off their TiO₂ business

- DuPont
- Huntsman and Rockwood

Customer purchasing and usage patterns are also changing with the times

- Welding customers considering longer term contracts/relationships rather than shipment by shipment
- Grades that were previously considered to be unsuitable are re-evaluated
- Blending of different products to cut feedstock costs
- Making more use of scrap
In Summary

• Tronox is a fully integrated feedstock and titanium dioxide pigment producer supporting non-pigment applications, including titanium sponge and welding consumable production

• Demand for feedstock products is expected to continue growing through construction and infrastructure development

• Pigment is the main consumer of feedstock, but welding and titanium sponge remain important to feedstock producers

• Available supply is increasing through a number of major new projects and expansions but they must be supported with sustainable pricing

• After a period of flat pricing, prices have moved significantly in recent times

• The industry is constantly undergoing change
Thank You