



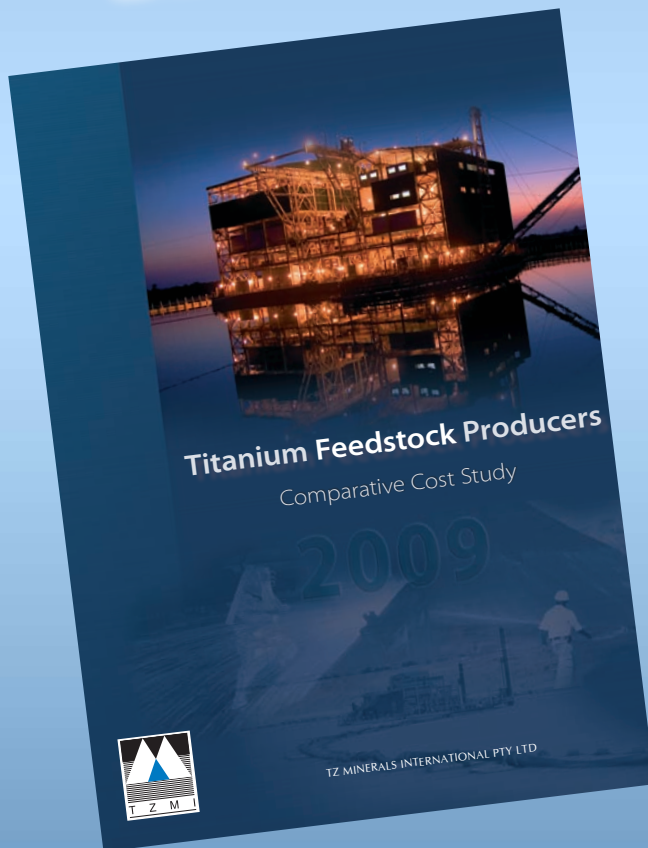
Titanium Feedstock Producers

Comparative Cost Study 2009

8TH EDITION

*The essential reference
for comparative operating costs
in the global titanium feedstock industry*

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“ Co-product revenue reaches record level for titanium feedstock producers in 2008 due to large increase in pig iron prices. ”



Titanium Feedstock Producers Comparative Cost Study 2009

8TH EDITION

The essential benchmarking publication for all industry participants including producers, new industry entrants and the financial community analysts.

This study provides:

- A detailed explanation of TZMI's methodology employed to maintain consistent comparisons of operating costs across the entire titanium feedstock industry.
- Informed discussion about the parameters used for comparing relative competitiveness in the industry.
- Updated cost data for the industry from information and research garnered over the previous year.
- Commentary on the importance of co-product credits in the current market conditions (pig iron and zircon).
- Discussion on increasing operating costs, specifically energy and mining costs.
- An analysis of the effect of exchange rates on producer performance.
- An updated titanium feedstock industry cost curve for 2008 – an invaluable tool for evaluating both existing operations and measuring the potential of new projects.

TZMI methodology

A persistent difficulty with cost studies is establishing an appropriate methodology to use for consistent comparisons of different producers. A successful methodology must take into account variations in the nature of resources, operations and products. Over a number of years, TZMI has developed a methodology that is both suitable and highly regarded as an industry standard. However, it is not necessarily consistent with the various methodologies used by individual producers. As a consequence, this cost study contains full descriptions of TZMI's methodology to provide the basis for comparative cost benchmarking throughout the feedstock industry.



Table of contents

Executive summary

- 1 Introduction**
- 2 Methodology**
 - 2.1 General observations
 - 2.2 Cost allocation methods
 - 2.3 Key principles
 - 2.4 Definitions
 - 2.5 Base year
 - 2.6 Product prices
 - 2.7 Industry weighted average
- 3 Operations included in the study**
- 4 Cost data for existing operations**
 - 4.1 Mineral production operations
 - 4.2 Mineral production costs
 - 4.3 Ilmenite beneficiation costs
 - 4.4 Costs for total operation
- 5 Cost competitiveness measures**
 - 5.1 Existing operations
 - 5.2 Comparative trends: 2007 to 2008
- 6 Discussion of factors affecting results**
 - 6.1 Co-product revenue
 - 6.2 Exchange rates
 - 6.3 Operating costs
 - 6.4 Resource characteristics
 - 6.5 Product prices
- 7 Cost competitive outlook in 2009**
 - 7.1 Assumptions
 - 7.2 Results
 - 7.3 Perspective

Appendix 1: Pro forma cost competitiveness data

Latest production cash costs

The Titanium Feedstock Producers Comparative Cost Study 2009 analyses the cash costs of production for 24 existing titanium feedstock operations, which together account for 81% of global titanium feedstock supply and 86% of global zircon supply. Graphical presentations of key data for individual operations include:

- Cost of production of HMC
- Mineral separation plant cost
- Cost per tonne of total mineral products
- Total transport costs per TiO₂ unit produced
- Total cost per TiO₂ unit
- Net cost per TiO₂ unit
- Co-product credits

TZMI's feedstock industry cost curve

TZMI's principal measure of competitiveness in the feedstock sector is the ratio of total revenue for all products to total cash operating costs, termed R/C rates. This data forms the industry cost curve showing relative competitiveness of the different operations. TZMI identifies each of the operations along the curve providing industry participants an authoritative measure to gauge their competitiveness in the market.



About the publisher

TZ MINERALS INTERNATIONAL (TZMI) is an independent consulting and publishing company, established in 1994, with offices in Australia, Europe, South Africa and China. TZMI's principals and consulting personnel have several decades of cumulative experience from their involvement in the global mineral sands and TiO₂ pigment industries.

TZMI uses its experienced consultants to provide specialised consulting services, often confidentially, for the titanium minerals, zircon, titanium sponge and TiO₂ pigment industries as well as publishing specialised market studies and reports based on its comprehensive database of production and market data. The company employs research analysts who collect and analyse data, which includes up-to-date supply/demand models, technical data and operating cost data for all major titanium feedstock and pigment producers. Many and varied consulting assignments also enable TZMI to maintain an active dialogue with existing and potential participants in the industry and to keep fully aware of new developments.

TZMI's subsidiaries include TZ Pigments International (TZPI) and Allied Mineral Laboratories (AML). TZPI was established in 2006 to manage the growth of the company's technical consulting activities in the global titanium dioxide pigment industry. The company operates offices in China and South Africa. AML is a testing facility located in Western Australia that specialises in product assessment and flowsheet development for mineral sands, iron ore and other heavy mineral deposits. The company was established in June 2007.

TZMI's Publications and Data Services support its consulting activities, providing clients with a range of authoritative data and informed commentary on all aspects of the titanium minerals, zircon, titanium sponge and TiO₂ pigment industries.

From a free weekly news service to sector-specific periodicals and data matrices, multi-client studies and the flagship monthly industry-wide Mineral Sands Report TZMI offers a comprehensive suite of products and subscription options suitable for all industry participants. For more information, visit www.tzmi.com





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