



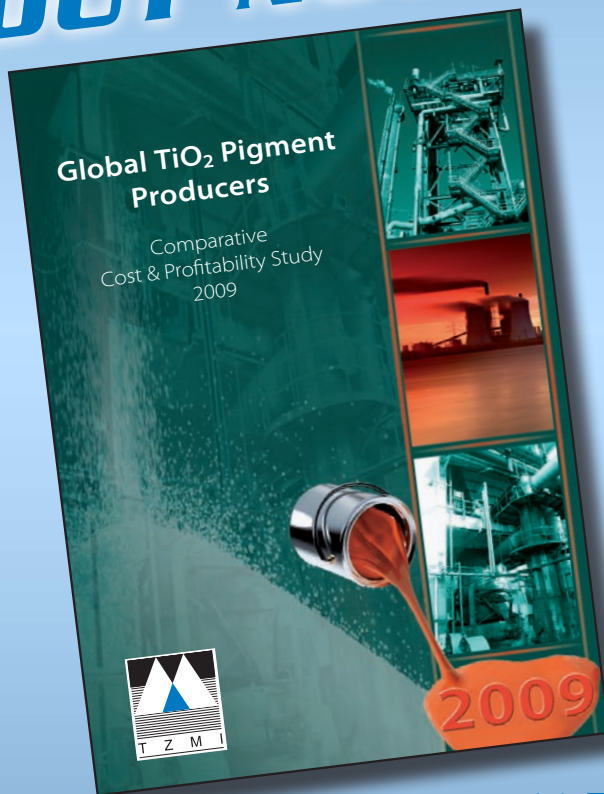
# Global TiO<sub>2</sub> Pigment Producers

Comparative Cost Study & Profitability Study 2009

5<sup>th</sup> EDITION

*The essential reference for comparative operating costs and profitability in the global TiO<sub>2</sub> industry*

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“ It is estimated that the industry returned US\$1,073 million in profits from trade in 2008, realising a weighted average profitability of 11%. ”

“ The manufacturing cash cost of chloride pigment increased by 9.4%, while the cost for sulfate pigment increased by 18.3%. ”

“ The Western European chloride producers fared relatively well, increasing costs by a relatively minor 3.3% year-on-year. ”



# Global TiO<sub>2</sub> Pigment Producers

## Comparative Cost Study & Profitability Study 2009

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

This value driven study provides:

- An introduction to the TiO<sub>2</sub> pigment industry, outlining major participants, technologies employed and market dynamics.
- An illustrative industry cost curve for 36 sulfate and 24 chloride route pigment plants, representing 100% of global chloride process capacity and 83% of global sulfate process capacity (including 11 of China's leading pigment plants).
- Operational level cost analysis, providing estimated cash costs for 2008 by plant.
- A detailed analysis of industry and plant key cost drivers and issues.
- A detailed review of plant-by-plant profitability.

### About the publisher

TZ MINERALS INTERNATIONAL (TZMI) is an independent consulting and publishing company, established in 1994, with offices in Australia, Europe, South Africa, United States and China. TZMI's principals and consulting personnel have several decades of cumulative experience from their involvement in the global mineral sands and TiO<sub>2</sub> pigment industries.

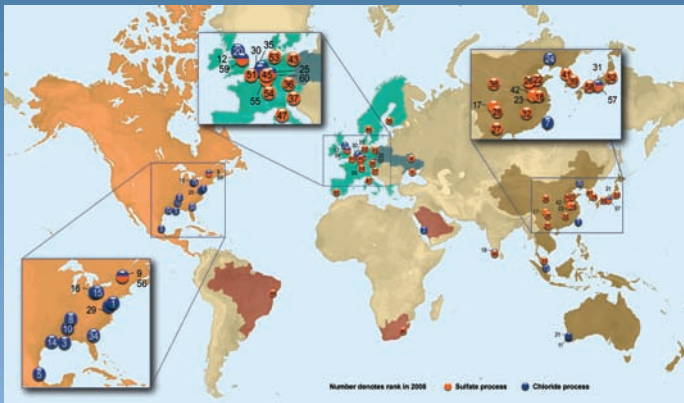
TZMI uses its experienced consultants to provide specialised consulting services, often confidentially, for the titanium minerals, zircon, titanium sponge and TiO<sub>2</sub> pigment industries as well as publishing specialised market studies and reports based on its comprehensive database of production 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, United States, the Netherlands 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 TiO<sub>2</sub> 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](http://www.tzmi.com)

## TiO<sub>2</sub> pigment plants included in the study



## Chloride process TiO<sub>2</sub> pigment plant profiles

Cristal - Yanbu, Saudi Arabia  
DuPont Titanium Technologies - Altamira, Mexico  
DuPont Titanium Technologies - DeLisle, US  
DuPont Titanium Technologies - Edgemoor, US  
DuPont Titanium Technologies - Kuan Yin, Taiwan  
DuPont Titanium Technologies - New Johnsonville, US  
Huntsman Pigments - Greatham, UK  
Ishihara Sangyo Kaisha Ltd - Jurong, Singapore  
Ishihara Sangyo Kaisha Ltd - Yokkaichi, Japan  
Jinzhou Titanium Industry Co Ltd - Liaoning, China  
Kronos Worldwide Inc - Langerbrugge, Belgium  
Kronos Worldwide Inc - Leverkusen, Germany  
Kronos Worldwide Inc - Varennes, Canada  
Louisiana Pigment Co LP - Lake Charles, US  
Millennium Inorganic Chemicals Inc - Ashtabula 1, US  
Millennium Inorganic Chemicals Inc - Ashtabula 2, US  
Millennium Inorganic Chemicals Inc - Baltimore, US  
Millennium Inorganic Chemicals Inc - Kemerton, Australia  
Millennium Inorganic Chemicals Inc - Stallingborough, UK  
The Kerala Minerals and Metals Ltd - Quilon, India  
Tiwest Joint Venture - Kwinana, Australia  
Tronox Incorporated - Botlek, Netherlands  
Tronox Incorporated - Hamilton, US  
Tronox Incorporated - Savannah, US

## Sulfate process TiO<sub>2</sub> pigment plant profiles

Annada Titanium Dioxide Co Ltd - Annada, China  
Guangxi Dahua Chemical Factory - Guangxi, China  
Chongqing Titanium Industry Co Ltd - Chongqing, China  
Cinkarna Metallurgical & Chemical Industry Celje Inc - Celje, Slovenia  
CNNC Hua Yuan Titanium Dioxide Co Ltd - Lanzhou, China  
Cosmo Chemical Co Ltd - Incheon, Korea  
Cosmo Chemical Co Ltd - Onsan, Korea  
Henan Billions Chemicals Co Ltd - Jiaozuo, China  
Huntsman Pigments - Calais, France  
Huntsman Pigments - Grimsby, UK  
Huntsman Pigments - Huelva, Spain  
Huntsman Pigments - Scarlino, Italy  
Huntsman Pigments - Teluk Kalung, Malaysia  
Huntsman Pigments - Umbogintwini, RSA  
Ishihara Sangyo Kaisha Ltd - Yokkaichi, Japan  
Jiangsu Titanium Dioxide Co Ltd - Jiangsu, China  
Jiangxi Tianguang Chemical Co Ltd - Jianxi, China  
Jinan Yuxing General Chemical Plant - Jinan, China  
JSC Crimea Titan (Krymsky Titan) - Armyansk, Ukraine  
Kemira Pigments Oy - Pori, Finland  
Kronos Worldwide Inc - Fredrikstad, Norway  
Kronos Worldwide Inc - Leverkusen, Germany  
Kronos Worldwide Inc - Nordenham, Germany  
Kronos Worldwide Inc - Varennes, Canada  
Millennium Inorganic Chemicals Inc - Arembepé, Brazil  
Millennium Inorganic Chemicals Inc - Thann, France  
OJSC Sumykhimprom - Sumy, Ukraine  
Precheza a.s. Přerov - Přerov, Czech Republic  
Sachtleben Chemie GmbH - Duisburg, Germany  
Sakai Chemical Industry Co Ltd - Onahama, Japan  
Shandong Dongjia Group - Zibo, China  
Sichuan Lomon Corporation - Mianzhu, China  
Tayca Corporation - Saidaji, Japan  
Travancore Titanium Products Ltd - Trivandrum, India  
Tronox Incorporated - Uerdingen, Germany  
Zaklady Chemiczne "POLICE" SA - Police, Poland

## TZMI methodology

TZMI has developed a methodology that surmounts the persistent difficulty with cost studies of establishing an appropriate base from which to derive consistent comparisons of different producers. The methodology developed allows all pigment plants to be compared across the industry, whilst taking into consideration the individual cost positions of each plant, specific technologies employed at each facility, plant ages, feedstock choice and particular regional cost factors.

TZMI also offers a full set manufacturing cost statements in spreadsheet form. Please contact visit [www.tzmi.com](http://www.tzmi.com) or David McCoy ([dmccoy@tzmi.com](mailto:dmccoy@tzmi.com)) for further details regarding this data set.



# Global TiO<sub>2</sub> Pigment Producers

## Comparative Cost Study & Profitability Study 2009



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