The global titanium sponge market review
About TZMI

TZ Minerals International (TZMI) is a global, independent consulting and publishing company which specialises in technical, strategic and commercial analyses of the opaque (non-terminal market) mineral, chemical and metal sectors. Our clients include the worlds largest mining, financing and OEM companies, together with a wide range of existing and new market participants.

With a worldwide presence, including head office in Australia, and offices in the US, Africa, Europe and China, TZMI’s strength in consulting services is a result of our extensive practical experience across all elements of the industries and from a comprehensive and unique database, which has been built up over many years.

TZMI has proven expertise gained from our consultants having many years of direct operating experience in the industry in chief executive, senior operational, analytical and marketing roles.

TZMI’s publications and data services provide additional benefit for our clients and ensure up-to-date, high-quality and comprehensive data, analysis and information across the mineral sands, zircon, TiO$_2$ pigment, vanadium and titanium metal industries.

To ensure TZMI provides accurate and up to date advice, TZMI maintains the most comprehensive and current databases of industry production, market information and best practices in the world, including supply and demand models, technical data and operating cost data for all major producers.
Brief history of titanium sponge
1950s were the development boom years

**Magnesium - Kroll**
- Nippon Electric Metallurgy Co in Chuo-ku, Tokyo – 1,800 lb pm (1951).
- Titanium Metals Corp in Henderson, NV - 3,600 ST pa (1952)
- Osaka Titanium in Amagasaki, Hygo Pref - 12 tpa (1952).
- Nippon Soda Co in Minato-ku, Tokyo - 3 tonnes pm (1953).
- Dow in Midland, MI - 100 ST pa pilot plant (1954).
- Le Titanium Francais (JV) in La Praz, France (1956).
- Zaporozhye, Ukraine (1956)

**Sodium - Hunter**
- Electro-Metallurgical (Union Carbide) 7,500 ST in 1956
- Mallory-Sharon Metals Corp in Ashtabula, OH 1956

*ST denotes US unit of 1 ton = 2,000lb = 903 kg*
1960s saw expansion into new countries

- BTMK – Russia (1959)
- Zunyi Titanium – China (1965)
- UKTMP – Kazakhstan (1965)
Non-Chinese sponge suppliers
Verkhnaya Salda Metallurgical Production Association

VSMPO sponge production (‘000 tonnes): 2004-2014

Source: TZMI database

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Japan is a critical player

Japanese sponge production (‘000 tonnes): 2004-2014

Source: Osaka Titanium

Source: Toho Titanium

Source: TZMI database
Japanese sponge exports have decreased recently


Source: TZMI database
US output increasing – when the market allows

US sponge production (‘000 tonnes): 2004-2014

Source: TZMI database

Source: TIMET

Source: ATI

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US sponge imports have curtailed


Source: TZMI database
Ust-Kamenogorsk Titan-Magnesium Kombinat

UKTMP Sponge production (‘000 tonnes): 2004-2014

UKTMP unwrought exports (‘000 tonnes): 2004-2014

Source: TZMI database

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Source: TZMI database

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Zaporozhye Titanium & Magnesium Combine

ZTMC Sponge production (‘000 tonnes): 2004-2014

Source: TZMI database

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Solikamsk Magnesium Works

SMG sponge production (‘000 tonnes): 2004-2014

Source: TZMI database
Output is dominated by a select number of producers

Breakdown of titanium sponge output: 2014

Source: TZMI database
Growth in capacity far exceeds demand growth

China’s sponge capacity and production: 2010 – 2014

'000 tonnes

Source: TZMI database

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Chinese sponge exports have fluctuated

China's sponge exports: 2004 – 2014

Source: TZMI database

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Where are Chinese sponge exports going?

China’s sponge exports: 2014

- South Korea: 36%
- United States: 28%
- Others: 3%
- Taiwan: 6%
- Spain: 7%
- Japan: 5%
- Germany: 4%
- Belgium: 4%
- Netherlands: 3%
- United Kingdom: 3%

Source: TZMI database
Implications of China’s 12th Five Year Plan

Industry consolidation can be expected where smaller, less efficient plants will be phased out. Total sponge capacity in China could be reduced to around 100,000 tpa.

No new sponge projects (other than expansion of existing facilities) are expected to come online in the short term, unless there is a surge in domestic demand/China is able to penetrate the overseas market. According to the Plan, sponge exports are targeted to increase to 30% of total production.

Improved plant utilisation and cost effectiveness with the rationalisation of the sector.

What is expected in the 13th five year plan (2016-2020)
India now developing sponge technology
A new facility is under construction in Saudi Arabia
The scrap & sponge dynamic

US quarter ending stocks ('000 tonnes): 2008-2015

Source: USGS

US scrap to ingot ratio: 2008-2015

Source: USGS
TZMI multi-client work

Titanium Feedstock Annual Review 2014 – OUT NOW!
Zircon Annual Review 2014 – OUT NOW!
TiO₂ Pigment Annual Review 2014 – OUT NOW!
Titanium Metal Annual Review 2014 – OUT NOW!

TZMI Data Reports
- TiO₂ Feedstock Matrix – published annually
- Zircon Trade Matrix – published annually
- Zircon Quarter-to-Quarter published quarterly

Titanium Feedstock Price Forecast
TiO₂ Pigment Price Forecast
PDF report - published quarterly

Mineral Sands Report
TiO₂ Market Insight
TiO₂ Pigment Industry Report
PDF reports - published monthly

Titanium Feedstock Producers
Comparative Cost Study
TiO₂ Pigment Producers
Comparative Cost & Profitability Study
PDF reports - published annually
End of Presentation

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