Note: Key data/information in this sample page is hidden, while in the report it is not.

## 1 Consumption

### 1.1 Mass balance for Chinese titanium dioxide

In 2010, Chinese titanium dioxide is mainly consumed in coating, plastic and papermaking industries, with the consumption volume of [redacted] tonnes, [redacted] tonnes and [redacted] tonnes respectively. Meanwhile, titanium dioxide is also consumed in other fields, including welding rod, chemical fiber, rubber, ink and so on.

### 1.2 Market overview of Chinese titanium dioxide

Generally speaking, coating, plastics and papermaking are the major three consumption fields of titanium dioxide in China in the past five years. The consumption volume in these three fields increased from [redacted] tonnes in 2006 to [redacted] tonnes in 2010, with the CAGR of [redacted]%. And in H1 2011, the consumption volume in these three fields is [redacted] tonnes, accounting for about [redacted]% of the total.

Table 1.2-1 Consumption volume of titanium dioxide in major end use segments in China, 2006-2010, tonne

| Year | Coating | Plastic | Papermaking | Others | Total |
|---|---|---|---|---|---|
| 2006 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 2007 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 2008 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 2009 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| 2010 | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| CAGR | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |

*Source: CCM International*

### 1.3 Chinese titanium dioxide consumption situations

China is one of the largest consumers of titanium dioxide in the world. The apparent consumption volume of titanium dioxide in China accounts for about [redacted]% of the global consumption volume.

From 2006 to 2010, the apparent consumption of domestic titanium dioxide increased from [redacted] tonnes to [redacted] tonnes, with the CAGR of [redacted]%, and the apparent consumption goes to [redacted] tonnes in H1 2010.

### 1.3.1 Coating

In China, coating is the largest consumption field of titanium dioxide, with about [redacted]% of the total used in the industry in H1 2011, reaching about [redacted] tonnes.

From 2006 to 2010, the consumption volume in the coating industry increased from [redacted] tonnes to [redacted] tonnes, with the CAGR of [redacted]%.There are three major categories of coating using titanium dioxide, which are architectural coating, industry coating and specialty coating.

Table 1.3.1-1 Some end-users of titanium dioxide in the coating industry in China, 2011

| No. | Company name | Titaniun dioxide demand volume, tonne | Type | Origin |
|---|---|---|---|---|
| 1 | Nippon Coating (Chengdu) Co., Ltd. | [redacted] | Rutile | Imported, domestic |
| 2 | Carpoly Chemical Group Co., Ltd. | [redacted] | Rutile, anatase | Imported, domestic |
| 3 | Jotun Coating (Zhangjiagang) Co., Ltd. | [redacted] | Rutile | Imported |
| 4 | Akzonobel Changcheng Coating (Guangdong) Co., Ltd. | [redacted] | Rutile, anatase | Imported, domestic |
| 5 | BASF (Shanghai) Coating Co., Ltd. Guilin Exterior Wall Coating Co., Ltd. | [redacted] | Rutile | Imported |
| 6 | Shanghai Jizhong High Polymer Co., Ltd. | [redacted] | Rutile | Domestic |

*Source: CCM International*

## 2 Benchmarking

### 2.1 Overview of manufacturers

In summary, four Chinese titanium dioxide manufacturers are discussed in this chapter, namely Jinzhou Titanium Industry Co., Ltd. (Jinzhou Titanium), Sichuan Lomon Titanium Co., Ltd.(Sichuan Lomon), Pangang Group Titanium Industry Co., Ltd.(Pangang Titanium), Shanghai Jianghu Titanium White Product Co., Ltd. (Shanghai Jianghu).

Jinzhou Titanium, with about [redacted] staff now, was formed on the basis of the former Jinzhou Titanium Alloy Group Titanium Dioxide Factory. Jinzhou Titanium is still the only manufacturer that adopts chloride process in titanium dioxide production, and claims that it has mastered the core technology of chloride process after ten years' research.

### 2.3 Jinzhou Titanium benchmarking analysis

The following table shows Jinzhou Titanium's situation in H1 2011, including production, distribution network, waste treatment, etc.

Table 2.3-1 Jinzhou Titanium's basic information, H1 2011

| Item | Comment |
|---|---|
| Production | The capacity is [redacted]t/a in 2010 and will reach [redacted]t/a in 2012. The operating rate at present is about 70%. It has four brands of products, covering coating, plastic, paper making, ink etc. And it has exploited a new brand CR-300, used in high-end paper making in Oct. 2011. |
| Distribution network | Sell products via agents in [redacted] market segments, like Guangdong, Shandong, Jiangsu, Zhejiang, etc. Direct sales to several large clients. |
| Waste treatment | Sell hydrochloric acid (20%) at USD[redacted]/t. Recycle vanadium from waste residue. |
| Feedstock supply | High titanium slag and rutile concentrate ore: Domestic sourcing of titanium slag from nearby Shenyang and Dandong City, as well as Sichuan Province; Close to Tianjin Port, which is the most important port of rutile concentrate ore. |
| | Petrol coke: Outsourcing |
| | Oxygen, Cl2: Self-supply |
| Technology innovation | After ten years' research of chloride process, Jinzhou Titanium claims that it has mastered the core technology of chloride process. |
| Research investment | Own a research centre, but the investment fund is less than [redacted]% of the sales, in researching product properties, and just focuses on [redacted] or [redacted] properties in application research. |

*Source: CCM International*

Table 2.3-2 Direct cost of titanium dioxide production of Jinzhou Titanium, H1 2011

| | Item | Unit consumption, kg/kg | Price, USD/kg | Unit cost, USD/kg | Share in production cost |
|---|---|---|---|---|---|
| Raw material | High titanium slag | [redacted] | [redacted] | [redacted] | [redacted] |
| | Liquid chlorine | [redacted] | [redacted] | [redacted] | [redacted] |
| | Petrol coke | [redacted] | [redacted] | [redacted] | [redacted] |
| | Others | [redacted] | [redacted] | [redacted] | [redacted] |
| **Subtotal** | | | / | [redacted] | [redacted] |
| Utility | Water | [redacted] | [redacted] | [redacted] | [redacted] |
| | Electricity | [redacted] | [redacted] | [redacted] | [redacted] |
| | Steam | [redacted] | [redacted] | [redacted] | [redacted] |
| **Subtotal** | | | / | xx | xx |
| **Labor** | | / | [redacted] | [redacted] | [redacted] |
| **Maintenance** | | / | [redacted] | [redacted] | [redacted] |
| **Total** | | / | [redacted] | [redacted] | [redacted] |

*Note: Others refer to other raw materials in post treatment processing and crystal seed.*

*Source: CCM International*