

## **China Lithium Carbonate Industry Report, 2009**

Nov/2009



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### 3. China Lithium Carbonate Development

#### 3.1 Distribution of Lithium Resources

China is one of the countries with the largest lithium reserves in the world. China's proven lithium reserves have reached 3.35 million tons after being converted into pure lithium, meaning China ranks the third in terms of salt lake brine lithium reserves and ranks the fourth in terms of lithium ore resources. China's prospective reserves of lithium resources will be more substantial.

#### *Lithium-bearing Brine Resources in China*

China Proven Brine Lithium Resources	Lithium Reserve (tons)
Taijinar Salt Lake, Qinghai	940,000
Zabuye Salt Lake, Tibet	1,530,000
Damxung Salt Lake, Tibet	170,000

Note: The reserves in this table are converted into the amount of pure lithium.

Source: ResearchInChina

China's brine lithium resources are mainly distributed in Qinghai and Tibet. In Qaidam Basin of Qinghai, the proven Taijinaier Lake lithium resources (equivalent to pure lithium) reach about 940000 tons, if adding the reserves of Chaerhan Lake, Dachaidan Lake and Yiliping, the long-term lithium reserves of Qaidam Basin may reach 3.3 million tons. Zhabuye Lake of Tibet is one of four super salt lakes with millions of tons of lithium resources in the world.

***Lithium Ore Resources in China***

China Main Lithium Mines	Lithium Reserve (ton)	Mining right possessor
Jiajika Spodumene Mine, Ganzi Prefecture, Sichuan	480,000	Sichuan Mineral Industry Co., Ltd
Barkam Spodumene Mine, Aba Prefecture, Sichuan	225,000	CITIC
Lepidolite Mine, Yichun, Jiangxi	-	-

Note: The reserves in this table are converted into the amount of pure lithium.

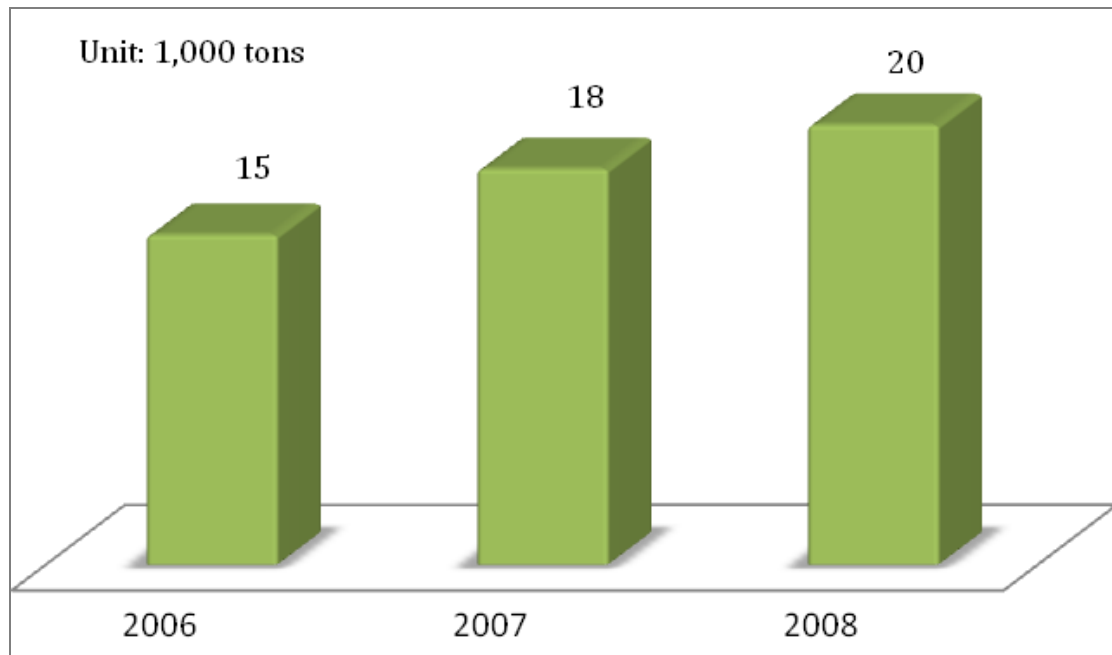
Source: ResearchInChina

China's lithium ore resources are mainly distributed in Sichuan, Xinjiang and Jiangxi. China's granite pegmatite lithium deposits are located in Sichuan, Xinjiang, Henan, Jiangxi, Fujian, Hunan and Hubei. Sichuan's Jiajika pegmatite-type spodumene deposit is the best one in the world, with 1.28% lithium oxide and 1.03 million tons of the reserves. Salt lake lithium deposits are mainly distributed in Qinghai and Tibet. Taijinaier Salt Lake in Qinghai is a semi salt lake, covering 780 square kilometers, with two layers of rock salt. Intergranular and hole brine exists on the layers. The lithium chloride reserves reach 4.66 million tons.

**3.2 Production**

China has salt lakes with rich resources, but obtained the key technology to extract lithium carbonate from the brine with much magnesium and little lithium in 2004. In 2006, China's lithium carbonate output was about 15000 tons; in 2007, the output was 18000 tons, up 20%; in 2008, the output was 20000 tons, up 11%, growing rapidly.

**China's Output of Lithium Carbonate, 2006-2008**



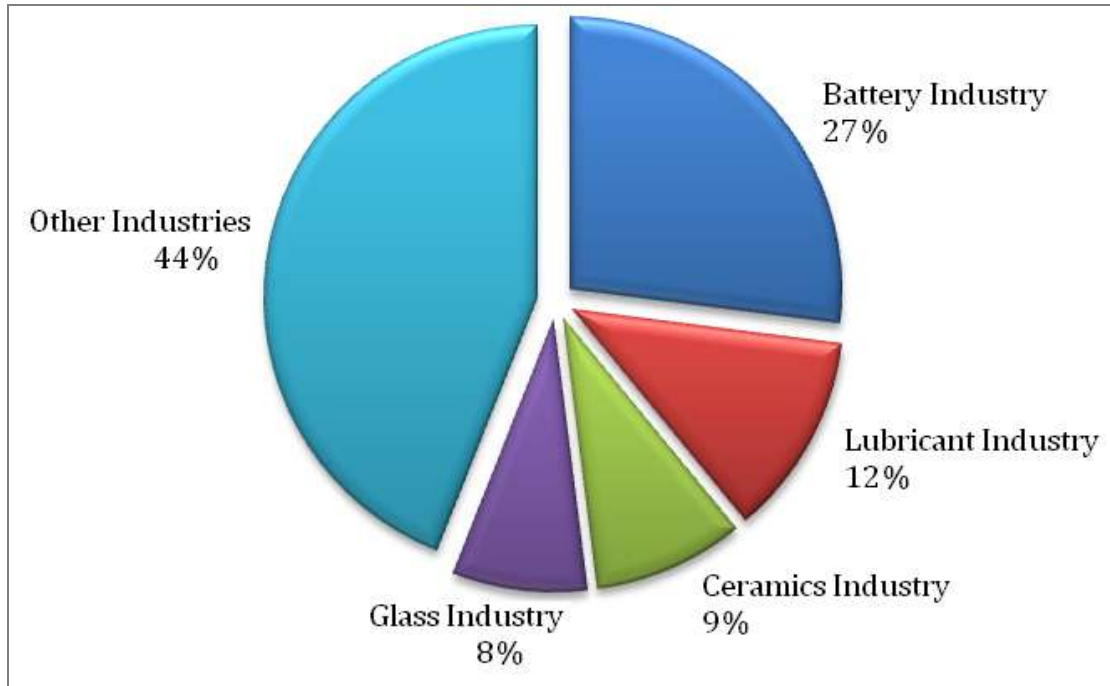
Source: ResearchInChina

In 2008, China's lithium carbonate production capacity was only 33000 tons. During 2008 to 2010, the production capacity of 45000 tons will be realized. China is a major lithium carbonate manufacturer in the world, and it will have a greater impact on the global lithium carbonate supply pattern.

### **3.3 Demand**

#### **3.3.2 Downstream Demand**

**The Structure of Downstream Demand for Lithium Carbonate, 2008**



Source: ResearchInChina

In the world, lithium carbonate products were still mainly applied to battery industry, lubricant industry, ceramics industry and glass industry in 2008, by the proportion of 27%, 12%, 9% and 8% respectively. In 2007, the proportion was 25%, 12%, 10% and 8% respectively. In 2008, battery industry consumed much more lithium carbonate, while traditional industries, such as ceramics industry, consumed less.

## 7. Key Companies

### 7.5 Tibet Mineral Development Co., Ltd

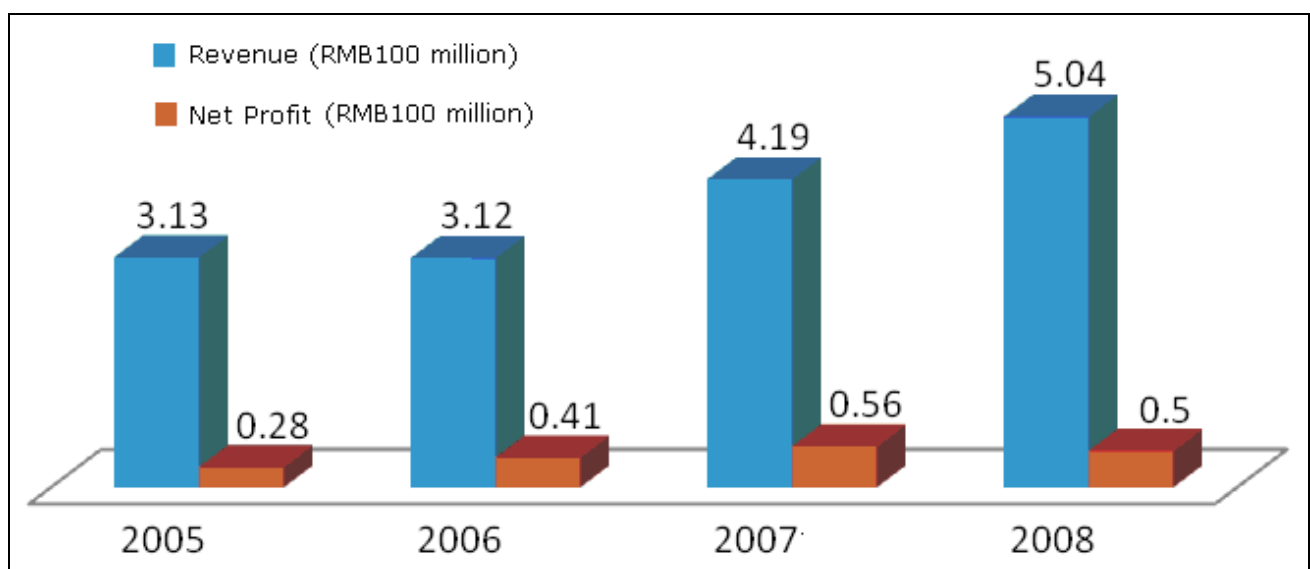
#### 7.5.1 Profile

As the largest local mineral exploitation company, Tibet Mineral Development Co., Ltd is mainly engaged in exploitation, deep processing and sales of chromite, lithium ore, copper ore, gold ore and boron ore. The company was listed on Shenzhen Stock Exchange in July 1997 and named Tibet Mineral for short. Its stock code is 000762.

The lithium carbonate project of Tibet Mineral is implemented by Baiyin Zhabuye Lithium Industry Co., Ltd, whose 51% is held by Tibet Mineral and 24.5% by Tibet Mineral Development Group, the largest shareholder of Tibet Mineral Development Co., Ltd.

#### 7.5.2 Operation

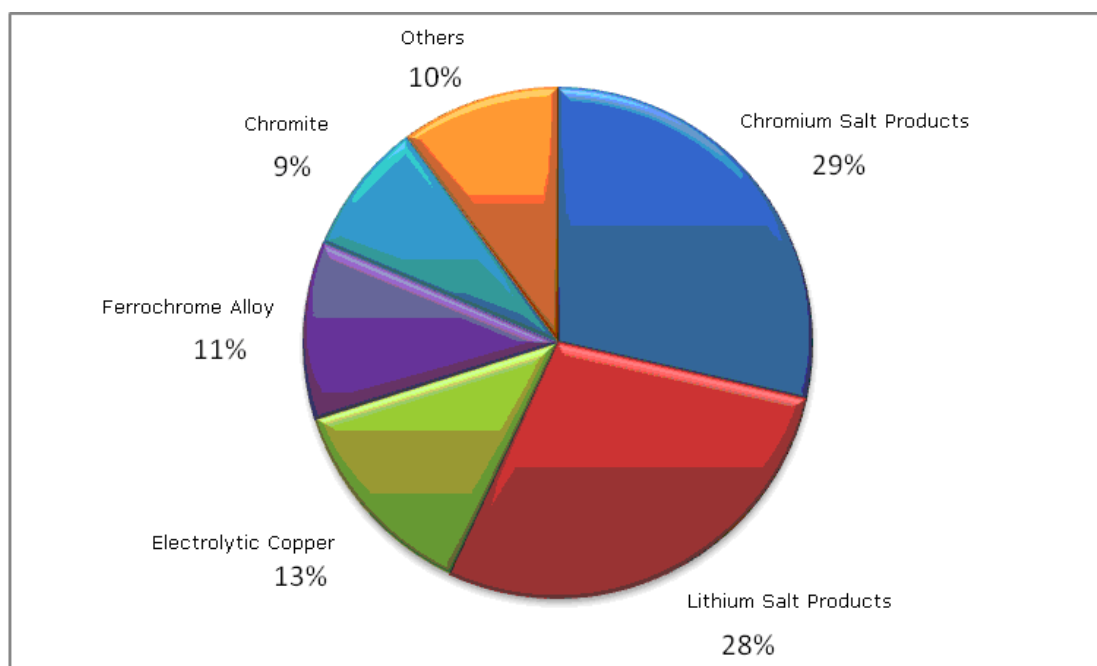
**Revenues of Tibet Mineral Development, 2005-2008**



Source: ResearchInChina; Annual Report of Tibet Mineral Development

From 2005 to 2008, Tibet Mineral Development performed well, with satisfying earnings. In 2008, the total income was RMB504 million, up 20.3%; the net profit was RMB50 million, down 10.7%. From January to September of 2009, the sales revenue was RMB149 million, declining by 64.9% compared with RMB425 million during the same period of 2008; the loss valued RMB21 million, declining by 130% compared with RMB68 million during the same period of 2008. Affected by the financial crisis, the selling prices of chrome ore, chromium salt, lithium salt and other primary products fell sharply, leading to a substantial decline in sales volume. From January to June of 2009, about 2,000 tons of crude lithium carbonate salt was produced in Zhabuye, but was not processed or sold out.

**Revenues of Tibet Mineral Development by Product, Jan.-Jun.2009**

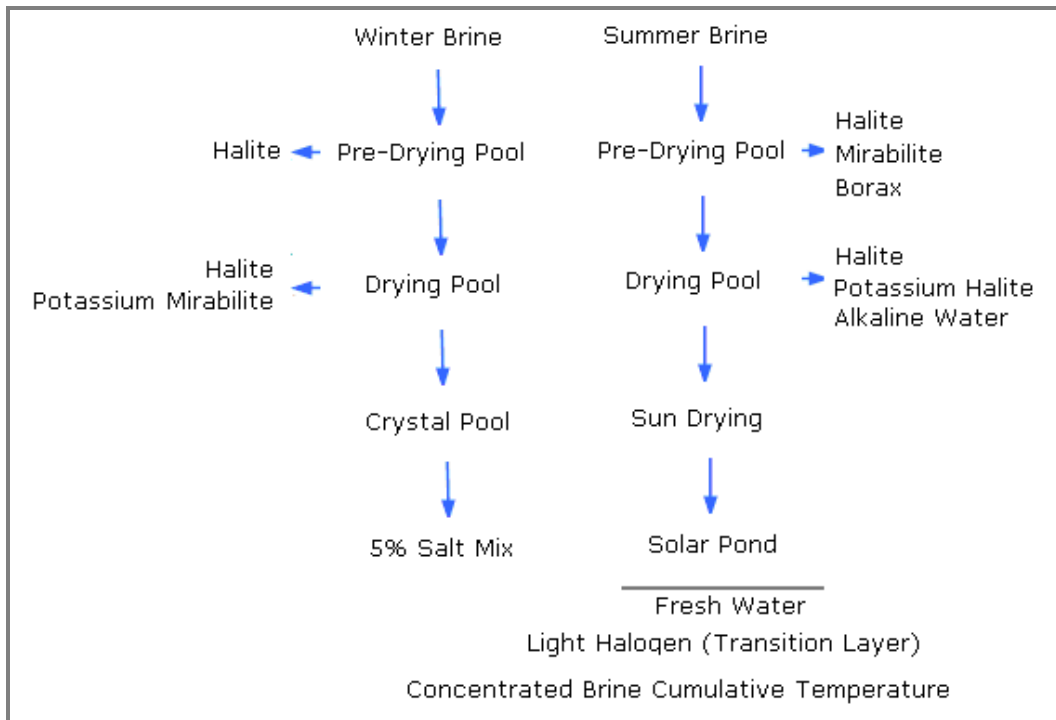


Source: ResearchInChina; Annual Report of Tibet Mineral Development

In the first two quarters of 2009, Tibet Mineral Development gained the total revenue of RMB58.28 million, including RMB16.5455 million from lithium salt products which accounted for 28% of the total revenue. Lithium salt products are the main products of the company. In addition, from January to June of 2009, chromium salt income reached RMB16.6406 million, electrolytic copper RMB7.6974 million, ferrochrome alloy RMB6.5528 million, and chromite RMB4.9504 million.

### 7.5.3 Lithium Carbonate Business

#### *Lithium Carbonate Solar Pond Concentration Process of Tibet Mineral Development*



Source: ResearchInChina

Zhabuye Salt Lake is a natural carbonate lake, its magnesium-lithium ratio is the lowest in the world. However, owing to the long distance between Zhabuye and Baiyin, unfavorable transportation, lacked water and electricity, as well as backward infrastructure, the production capacity should be improved with significant investment. In terms of resources, Zhabuye is the most potential lithium carbonate origin in the future. In 2009, Tibet Mineral Development plans to produce 150000 tons of potassium sulfate magnesium fertilizer, 150000 tons of potassium chloride, and 3000 tons of lithium carbonate; it also plans to achieve the sales revenues of RMB750 million. In the future, it intends to increase potassium chloride output by 120,000 tons through increasing brine wells by 2010.



#### **7.5.4 Development Prospect**

Tibet Mineral Development has been granted the right to exploit the resources of Zhabuye salt lake which ranks the 3rd place in the world in terms of proven lithium resource reserve for 20 years. Zhabuye Salt Lake is only existing natural lithium carbonate salt lake in the world. In addition to the lithium carbonate on the bottom and the shore, Zhabuye Salt Lake has at least 2 million tons of lithium carbonate. The current annual lithium carbonate output reaches 2,000 tons. Tibet Mineral's lithium carbonate project Phase I is planned to have the annual production capacity of 5,000 tons. In a long term, it will invest RMB1 billion in building 30000-ton capacity. The core competence of Tibet Mineral Development lies in cost advantages brought by little magnesium and much lithium. Once Tibet Mineral Development has a breakthrough in technology, it will become the most potential low-cost battery-grade lithium carbonate manufacturer.

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