

**ResearchInChina**

## **China Fluorite Industry Report Sample, 2010**

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## 2. Global Fluorite Industry Development

### 2.1 Supply of Fluorite Worldwide

#### 2.1.1 Distribution of Fluorite Resources Worldwide

Fluorite resources are distributed in all of continents. By the geological environment, the Pacific Rim has the most abundant fluorite reserves, accounting for about the half of the global fluorite reserves. The proven reserves are distributed in over 40 countries or regions; South Africa, Mexico, China and Mongolia rank top four in fluorite reserves and output in the world. The global proven fluorite resources reach about 500 million tons. As of 2009, the global fluorspar reserves had reached about \*\* million tons, and the basic reserves were \*\* million tons.

***Fluorite Reserves and Basic Reserve Distribution Worldwide, 2009 (Unit: mln tons)***

Country	Reserves	Proportion of Reserves	Basic Reserves	Proportion of Basic Reserves
China	21	**	**	**
South Africa	**	18.1%	**	**
Mexico	**	**	40	**
Russia	**	**	**	3.9%
Mongolia	**	**	**	**
Spain	**	**	**	**
USA	**	**	**	**
Namibia	**	**	**	**
Kenya	**	**	**	**
Others	**	**	**	**
Total	**	**	**	**

Source: ResearchInChina, USGS

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#### 2.1.2 Global Output of Fluorite

Fluorite resources are scarce, the available reserves are limited, and countries have restricted the exploitation to protect fluorite resources, so the annual growth rate of fluorite output is not high. From 2004 to 2008, the average annual compound growth rate was only 3.6%; in 2009, the output fell by 12.7 % year on year.

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China is the largest fluorite producer in the world, and its fluorite output accounted for 58.88% of the global fluorite output in 2009.

**Fluorite Output of Key Producing Countries, 2005-2009 (Unit: 10,000 tons)**

Country	2005	2006	2007	2008	2009
China	270				
Mexico	87.5				
South Africa	26.5				
Mongolia	36.8				
Russia	21				
Spain	14				
France	9				
Kenya	9.7				
Morocco	9.5				
Namibia	11.6				
Others	30.6				

Source: USGS

In accordance with the fluorite reserves and output in 2009, the global fluorspar reserve-output ratio was calculated to be \*\*. The reserve-output ratio of South Africa was up to %%, while the ratio of China was only \*\*, which means if the available reserves of China do not increase, China's fluorite resources will dry up in 7 years according to the output of \*\* million tons in 2009.

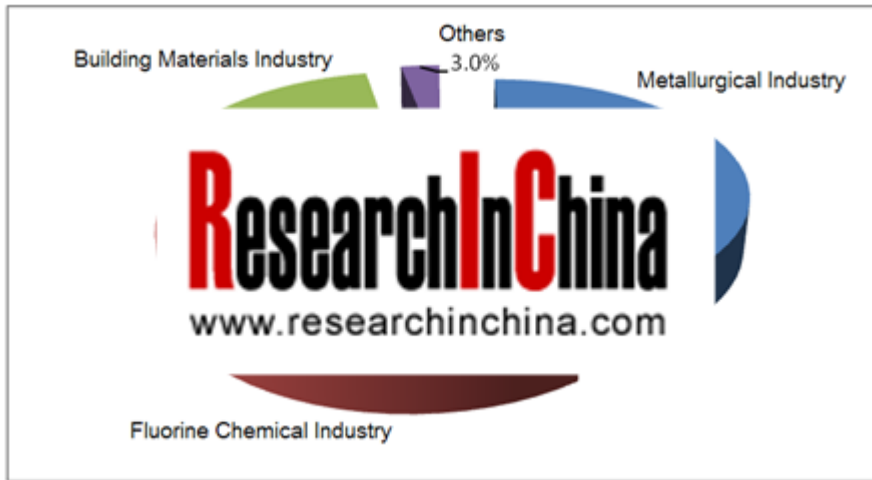
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## 2.2 Global Consumption of Fluorite

### 2.2.1 Overview

\*\* of the fluorite is applied to smelting and casting of steel and iron, \*\* in fluorine chemical industry, \*\* in manufacture of cement and glass as well as ceramic industry, and 3% in other industries.

**Fluorite Consumption Structure (by Sector) Worldwide, 2009**



Source: ResearchInChina, [www.chinaqking.com](http://www.chinaqking.com)

China is the biggest fluorite consumer. Western Europe, the United States, Japan and other developed industrialized countries are also the major fluorite consumers. The United States and Japan only produce a little fluorite, and \*\* of their fluorite is imported.

**Fluorite Consumption Structure (by Region) Worldwide, 2009**



Source: ResearchInChina, [www.chinaqking.com](http://www.chinaqking.com)

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### **3. China Fluorite Market**

#### **3.1 Related Industrial Policies**

##### **3.1.1 National Policies**

Since fluorite belongs to non-renewable resource, it is regarded as the strategic protection resource by each nation which adopts intensive measures to protect fluorite from being excessive exploration and exportation. In recent years, the Chinese Government has also unveiled a series of protection measures such as regulating mining order and incorporating fluorite export into quota management, etc.

##### **Contracted Fluorite Export**

China had adopted export quota permit system targeting fluorite resource for 10 years from 1999 to 2009. On Oct. 29th, 2009, the Ministry of Commerce of PRC launched Total Export Quotas of Agricultural Products and Industrial Products in 2010, according to which, the export quota of fluorite totaled \*\* tons. Restricted by relevant WTO rule, China was forced to cancel the export quota of fluorite in 2010 and raised its export tariff to \*\*, up 28 percentage points as opposed to 2003, as the balance measure.

In the first half of 2010, the fluorite export volume of China reached \*\* tons, a huge increase of 231.4% year-on-year. It is with great possibility that the China's fluorite export volume will fall below \*\* tons due to the excessive increase in fluorite export volume. But the contracted export will ensure enough fluorite resource for domestic fluorine chemicals industry, setting stage for marching into high-end sector.

##### **Structural Adjustment and Control of HF**

The export of HF is actually tantamount to the export of fluorite in a hidden way, so China is expected to launch policies to control HF export. In 2008, China's HF export value attained \*\* tons, equaling to 7.86 times than 2001. Provided that the fluorite consumption is \*\* tons for per ton HF, this indicates that the indirect export volume of fluorite in 2008 reached \*\* tons. It is expected that the HF export volume will reduce by 50% on current basis. Making the capacity and total export volume of primary fluorine chemicals such as HF under control will help power the structural adjustment of fluorine chemicals industry, and guild the industry reform towards intensive processing and high value-added direction.

**Fluorite Resource Protection Policy in China, 1999-2010**

Date	Fluorite Resource Protection Policy
Jan.1999	Quota permit system on China's fluorite export was adopted.
Jul.2004	Fluorite export rebate reduced to 5% from 13%
Jan.2006	cancelling fluorite export rebate
Jan.2007	imposing 10% fluorite export tariff
Mar.2008	rising fluorite export tariff to 15%
Jan.2010	The General Office of the State Council launched announcement to control the exploitation and production of refractory clay fluorite.
Feb.2010	issuing Fluorite Industry Admittance Standard
May 2010	The Ministry of Land and Resources of PRC called that the total output of fluorite block and fluorite power should be controlled within 4.71 million tons and 2.44 million tons respectively.

Source: ResearchInChina

Control in the total Exploitation Volume of Fluorite in 2010, the First Ever

In January 2010, the General Office of the State Council launched policies to control the total exploitation and production of fluorite resources, in a move to power the industry restructuring and upgrading by promoting protective exploitation of fluorite resources.

Afterwards, corresponding supporting legislations were unveiled. In February 2010, several ministrations and commissions jointly launched Fluorite Industry Admittance Standard, which marked a higher entry threshold orientated the fluorite exploitation and production was established.

On May 25th, 2010, the Ministry of Land and Resources of PRC issued related announcement which explicated China's total exploitation volume of fluorite in 2010 was \*\* million tons, and that China, in principle, will refuse to receive new application for investigation and exploration registering of fluorite ore in the following years.

**Fluorite Exploitation Control Index in China, 2010 (mln tons)**

Regions	Fluorite (Ore)	Regions	Fluorite (Ore)
Zhejiang	1,900	Guangxi	220
Inner Mongolia	**	Guizhou	**
Jiangxi	**	Shandong	**
Fujian	**	Gansu	**
Anhui	**	Shaanxi	**
Hunan	**	Hubei	**
Chongqing	**	Hainan	**
Yunnan	**	Guangdong	**
Liaoning	**	Qinghai	**
Henan	**	Xinjiang	**
Hebei	**	Jilin	**
Subtotal	**		
Reserved	**		
Total	**		

Source: Ministry of Land and Resources of PRC; ResearchInChina

The applicable tax standard of fluorite would be moved up to RMB 20 per ton from RMB 3 per ton from the beginning of June 1st, 2010, according to related circulation jointly issued by the Ministry of Finance of the PRC and the State Administration of Taxation.

### 3.2 Fluorite Supply

#### 3.2.1 Fluorite Resources

Located in the circum-Pacific metallogenic belt, China ranks among the countries of abundant fluorite resources. Fluorite deposits are widely distributed in more than 20 provinces and regions, and the proved quantity of fluorite mining area exceeds \*\* with the basic reserves as high as \*\* million tons, taking 23.6% of the global total and holding the first position worldwide; nevertheless, the reserves of fluorite turn out to be merely \*\* million tons, second to South Africa and Mexico, occupying 9.3% of the global total.

Despite the wide distribution, the fluorite resources in China are of relatively high concentration ratio, and many provinces possess fewer recoverable reserves and output of only tens of thousand tons to hundreds of thousand tons. Fluorite deposits and ore fields are mainly centralized in North China with the representative of Inner Mongolia, East China represented by Zhejiang, Jiangxi, and Fujian, as well as central south region with the typical Hunan Province. The number of mining areas and ore fields in East China amounts to 513 and accounts for 58.7% nationwide.

***Fluorite Deposit and Ore Distribution in China by Region***

Region	Province & City	Deposit Quantity	Ore Field Quantity	Subtotal	Remark
Northeast	Liaoning, Jilin, Heilongjiang	9	11	20	
North China	Inner Mongolia, Shanxi	70	111	181	Hereinto, Inner Mongolia possesses 59 deposits and 98 ore fields, accounting for 17.96% of national total
Northwest	Shaanxi, Ningxia, Gansu, Qinghai, Xinjiang	**	**	**	
Central South	Hunan, Hubei, Henan, Guangdong, Guangxi	**	**	**	
East China	Jiangsu, Anhui, Zhejiang, Jiangxi, Shandong, Fujian	**	**	**	
Southwest	Yunnan, Guizhou, Tibet, Sichuan, Chongqing	**	**	**	
Total	**	**	**	**	

Source: ResearchInChina

Chinese fluorite resources concentrate in Hunan, Inner Mongolia, Zhejiang, Jiangxi, and Fujian with the basic reserves proportions of \*\*, \*\*, \*\*, \*\*, and \*\*, respectively, while the rest provinces hold a total of 10.4%.



**China Fluorite Ore Distribution (by Province)**

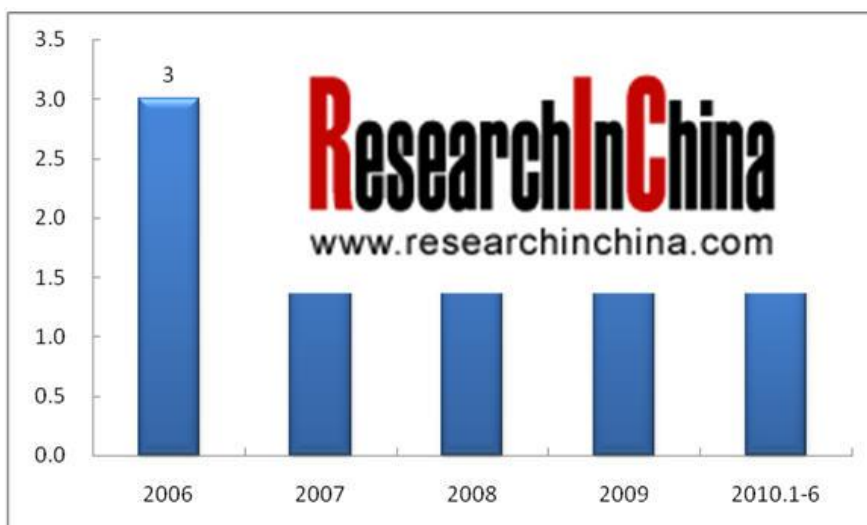


Source: www.zgyingshi.com; ResearchInChina

**3.2.3 Fluorite Output & Key Enterprises**

The fluorite output in China totaled 2.7 million tons in 2005, respectively 3.2 million tons in 2007 and 2008, and fell to \*\* million tons in 2009, mainly influenced by the financial crisis that brought along the shrunken domestic demand and export volume. And it reached \*\* million tons in H1 2010.

**China Fluorite Output, 2006-2010 (Unit: mln tons)**



Source: National Bureau of Statistics of China; ResearchInChina

Affected by the distribution of fluorite resources, the large-sized fluorite enterprises are mainly in provinces like Zhejiang, Jiangxi, Inner Mongolia, and Hunan, with such key enterprises as Hangzhou Kings Industry Co., Ltd., Zhejiang Zhongying Industrial Co., Ltd, Zhejiang Wuyi Shenlong Flotation Co., Ltd, Jiangxi Huichang Shilei Mineral Industry Co., Ltd., and Hunan Wanghua Fluorite Mining Industry Co., Ltd.

**Capacity of Major Fluorite Enterprises in China, 2010**

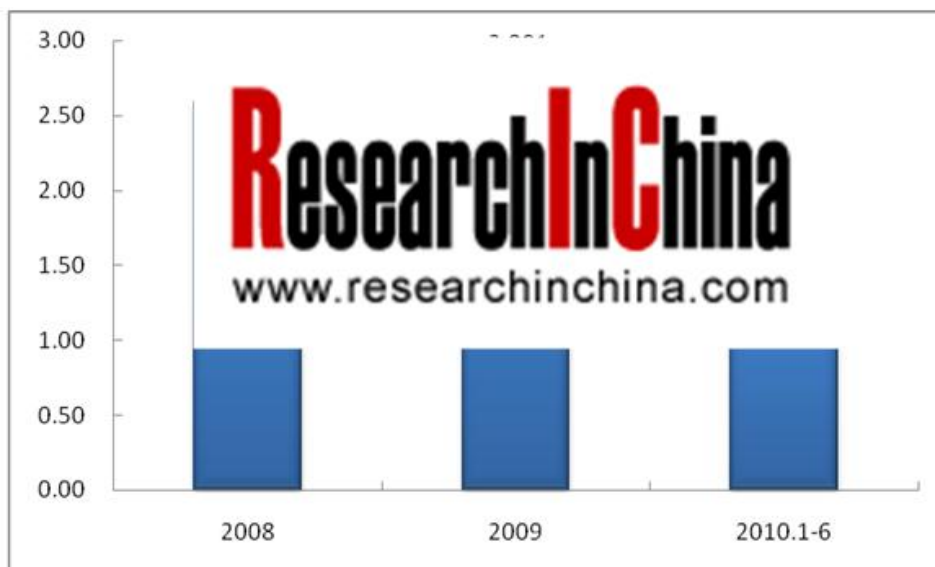
Enterprise	Capacity	Remark
China Kings Resources Group Co., Ltd.	The exploitation of fluorite ores and metallic ores as well as the ore processing output: 800 kilotons/year. Its subordinated Zhejiang Longquan Fluorspar Co., Ltd has been once the largest industrial enterprise in Zhejiang Province, with the capacity of 100-kiloton ores and 40-kiloton acid-grade fluorite powder.	Proved fluorite reserves: over 25 million tons; 9 exploration rights for possessed and under-exploration fluorite mine; 5 developed fluorite mines; the first and second largest fluorite ores founded in China during the recent 20 years; the mining enterprise with the largest fluorite reserves in China.
Zhejiang Zhongying Industrial Co., Ltd	**	**
Zhejiang Wuyi Shenlong Flotation Co., Ltd	**	**
Zhejiang Minmetals Huaxing Import & Export Co., Ltd.	**	**
Zhejiang Yiwu Mining Industry Co., Ltd. (literal translation)	**	**
Mingguang Sanshan Mining Industry Co., Ltd. (literal translation)	**	**
Jiangxi Huichang Shilei Mineral Industry Co., Ltd.	**	**
Shangrao Yinghui Foreign Trade Industrial Co. Ltd.	**	**
Inner Mongolia Xiangzhen Mining Group Company Limited (Xiangzhen Mining)	**	**
Hunan Wanghua Fluorite Mining Industry Co., Ltd.	**	**
Guizhou Wuchuan Dongsheng Mining Industry Group	**	**
Hubei Hong'an Fluorite Mine	**	**
Gansu Gaotai Hongyuan Mining Co., Ltd.	**	**
Fujian Jianyang Kings Fluoride Industry Co., Ltd.	**	**
Inner Mongolia Silver Mine Development Co., Ltd.	**	**
Hubei Furui Mining Co., Ltd.	**	**
Hunan Nonferrous Chenzhou Fluorine Chemistry Co., Ltd.	**	**

Source: ResearchInChina

### 3.3 Demand of Fluorite

In 2008, the apparent consumption of fluorite in China totaled \*\* million tons, and it rose to \*\* million tons in 2009 despite the decreased fluorite consumption worldwide.

**Apparent Consumption of Fluorite in China, 2008-2010 (Unit: mln tons)**



Source: USGS; customs-info; ResearchInChina

China's fluorite consumption structure is different from that of most countries in that the largest consumption industry is not metallurgy but cement and glass industries which hold \*\* of the total, followed by fluorine chemical industry, iron & steel industry, and aluminum smelting industry.

**Fluorite Consumption Structure in China, 2009**



Source: www.chinaqing.com; ResearchInChina

Along with the rapid development of cement and glass industries, aluminum smelting industry, steel melting industry and fluorine chemical industry in China during the recent years, the demand for fluorite has witnessed substantial increase. Across 2000-2009, China’s consumption of fluorite climbed at an annual average growth rate of 10% or so while the supply merely had a growth rate of 3.4%. For the sake of making up the price scissors between the increase of consumption and output, the export volume of fluorite in China has been in decline year by year.

**3.3.1 Building Materials Industry**

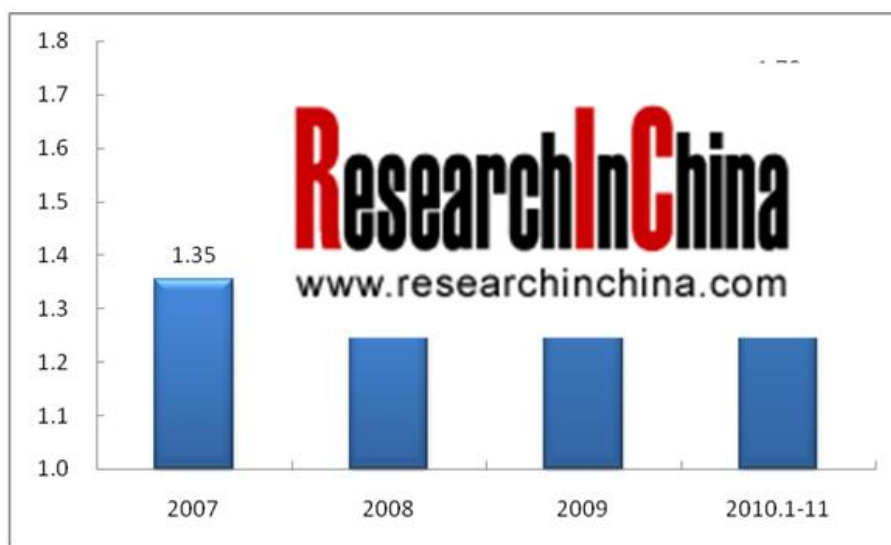
As for building materials industry, fluorite is used as additive in the production of cement, glass, ceramic and cast stone.

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As for the cement industry, the usage of fluorite can lower the sintering temperature of charging, reduce the fuel consumption and increase the viscosity of clinker liquid phase, promoting the form of Ca<sub>3</sub>SiO<sub>5</sub>. In 2009, China’s output of cement was \*\* billion tons, and that of Jan-Nov of 2010 was \*\* billion tons, up 14% from a year earlier.

Currently, China's infrastructure is backward compared to the developed world. Such fields as housing construction, railway, highway, water conservancy and public infrastructure construction still have great development potential, so the cement consumption will take an upward trend in a relatively long period. From this angle, the usage of fluorite would continue to increase. Concerned the less strict quality requirement of cement industry for fluorite (generally, the content of CaF<sub>2</sub> in fluorite is higher than 40%), the influence of the industry's increasing demand is relatively limited to fine fluorine chemical industry.

**Cement Output in China, 2007-2010 (Unit: bn tons)**



Source: National Bureau of Statistics of China; ResearchInChina

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### **3.3.2 Chemical Industry**

Fluorine chemical products are essential basic materials for new- and high-tech industries. Hydrofluoric acid is the starting point of the fluorine chemical industry chain, while fluorite is the cheapest and the most important mineral material for producing hydrofluoric acid. The hydrofluoric acid-producing industry takes about 30% of China's total consumption of fluorite.

China is one of the biggest hydrofluoric acid-consuming countries in the world. During the period of 2006-2008, the year-on-year growth of China's apparent consumption was 16.7%, and the apparent consumption in 2008 reached \*\* tons. Influenced by the global financial crisis, the market demand of organic fluorine, aluminum fluoride and cryolite was dropped in 2009 and the apparent consumption of hydrofluoric acid in this year was only \*\* tons, down 10% from a year earlier.

**Apparent Consumption and Growth Rate of Hydrofluoric Acid in China, 2003-2009 (Unit: Kt)**



Source: www.cheminfo.gov.cn; ResearchInChina

As for the inorganic fluorine chemical industry, hydrofluoric acid is widely used in the fields such as fluoride salt for aluminum, sodium fluoride, magnesium fluoride, liquid propellant, fuel propellant, nuclear fuel, petroleum, semiconductor manufacturing, pesticide, preservative, repellent, additive, fluxing agent and antioxidant. As for the organic fluorine chemical industry, hydrofluoric acid is mainly used for producing fluorine-containing alkane, which is the main raw material of fluorine-containing polymer and can be used in the industrial systems and civil-purpose cooling systems. Fluorine-containing fine chemicals industry is the sub-industry featuring the highest added-value in the industry chain.

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The largest hydrofluoric acid-consuming industry was hydrofluorocarbon industry in 2008, taking \*\* of China's total consumption, and that of fluoraluminate compound industry was \*\*, uranium fuel process, \*\*. Metal etch, \*\*, alkylation catalyst, \*\* and, others, 20%. China's hydrofluoric acid consumption structure in 2008 is as follows.

**Hydrofluoric Acid Consumption Structure in China, 2008**



Source: www.cheminfo.gov.cn; ResearchInChina

With the breakthrough of million-ton hydrofluoric acid production techniques and the steady development of fluorine chemical industry, China’s hydrofluoric acid industry has witnessed a rapid growth over the past years. During the period of 2003-2009, China’s production capability of hydrofluoric acid experienced an average year-on-year growth of 23%. By the end of 2009, China’s annual production capability of hydrofluoric acid has reached \*\* million tons and, the actual output arrived at \*\* tons. It is forecasted the newly added production capability would reach \*\* million tons during the years of 2010-2012, greatly increasing the demand of fluorite.

**Hydrofluoric Acid Capacity and Output in China, 2003-2009 (Unit: Kt)**



Source: www.cheminfo.gov.cn; ResearchInChina

### **3.3.3 Metallurgical Industry**

For fluorite can reduce the melting point of refractory minerals, it was used as fluxing agent in the melting process of iron & steel and nonferrous metals in the early days. Generally, to produce one ton of iron needs about 6-9kg of fluorite, while that of steel is 2-9kg. The fluorite ore used for melting should have a content of CaF<sub>2</sub> of more than 65%.

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## 5. Competitiveness of Key Enterprises

### 5.5 Zhejiang Zhongying Industrial Co., Ltd.

Zhejiang Zhongying Industrial Co., Ltd (named "Zhongying Group" for short) is a fluorite industry enterprise integrating production, chemicals and trade together with the business tapping into mining industry, renewable energy, pharmaceutical chemicals, tourist, real estate, international trade and many other fields.

#### ***Mining and Fluorine Chemical Subsidiaries of Zhejiang Zhongying Industrial Co., Ltd***

Mining Companies	Chemical Companies	
		HF Capacity (1,000 tons)
Jiangxi Xingguo Longping Fluorite Mining Industry	Zhejiang Ruixing Fluorine Chemistry	30
Hongan Huajiahe Fluorite Mining Industry	Jiangxi Datang Fluorine Chemistry	50
Anhui Jingde Fengxingshan Fluorite Mining Industry	Fujian Lianhe Chemical Industry	**
Jiangxi Yiyang Mopanshan Fluorite Mining Industry	Anhui Henghe Fluorine Chemistry	**
Fujian Guangze Yanggu'an Fluorite Mining Industry	Hubei Zhongying Chemicals	**
Zhejiang Suichang Kengxi Fluorite Mining Industry	Zhejiang Furui Chemicals	**
	Jiangxi Jiahua Fluorine Chemistry	**
	Hunan luorine Chemistry	**

Source: ResearchInChina

Zhongying Group's annual capacity of metallurgy-grade fluorite and chemistry-grade fluorite powder is \*\* tons and \*\* tons respectively. Moreover, Zhongying Group is also engaged in the production of fluorite chemicals series products including fluororesin and fluororubber.

#### ***Major Products and Capacity of Zhejiang Zhongying Industrial Co., Ltd***

Products	Capacity (10,000 tons/year)
metallurgy-grade fluorite	**
chemistry-grade fluorite powder	**
fluorite chemical series products	-

Source: ResearchInChina

**Fluorine Chemical Products of Zhejiang Zhongying Industrial Co., Ltd**

( 1 ) Fluorine resin products	( 2 ) Fluorine rubber products
<p>Variety</p> <p>PTFE (commonly known as plastic king, PTFE)</p> <p>thermoplastic polyvinylidene fluoride (PVDF)</p> <p>melt-processable polytetrafluoroethylene (PFA)</p> <p>Teflon - ethylene PCTFE (PTFCE)</p> <p>polyvinyl fluoride (PVF)</p>	<p>Variety</p> <p>vinylidene fluoride-vinyl fluoride rubbers</p> <p>tetrafluoroethylene - acrylic fluoro rubber</p> <p>fluorinated vinyl ethers,fluorine rubber</p> <p>fluoro silicone rubber</p> <p>fluorinated phosphine nitrile rubber</p> <p>thermoplastic fluorine rubber</p>

Source: ResearchInChina

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## → Related Reports

- **Global and China Titanium Industry Report, 2009-2010**  
<http://www.researchinchina.com/Htmls/Report/2010/5941.html>
- **China Nickel Industry Report, 2009-2010**  
<http://www.researchinchina.com/Htmls/Report/2010/5922.html>
- **China Tin Industry Statistics, 2009**  
<http://www.researchinchina.com/Htmls/Report/2010/5842.html>
- **China Magnesium Industry Report, 2009-2010**  
<http://www.researchinchina.com/Htmls/Report/2010/5832.html>
- **China Nickel Industry Report, 2009**  
<http://www.researchinchina.com/Htmls/Report/2010/5819.html>
- **China Lead-zinc Industry Report, 2009**  
<http://www.researchinchina.com/Htmls/Report/2009/5804.html>
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