

# The Current Status and Development Trends of China's Ferroalloys Industry of Manganese Series

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## 1. General Review of China's Ferroalloy industry and Ferroalloy Industry of Manganese Series

1.1 In 2001, China totally produced 4.5083 million tons of ferroalloy, increasing by 11.92% compared with 4.0292 million tons in 2000. In the same year, China totally imported 1.711 million tons of manganese ore, increasing by 42.1% compared with 1.204 million tons in 2000.

In 2001, the estimated total production of ferroalloy of manganese series was 2.2798 million tons and its export of the same year was 508,800t, accounting for 22.32% of the total production of ferroalloy of manganese series. 7.89% less than that in 2000.

1.2 Production and consumption of ferroalloy of manganese series in China recent five years are listed in Table 1

Table 1 Production and Consumption of Ferro-alloy of Manganese Series in the 1996~2000 period

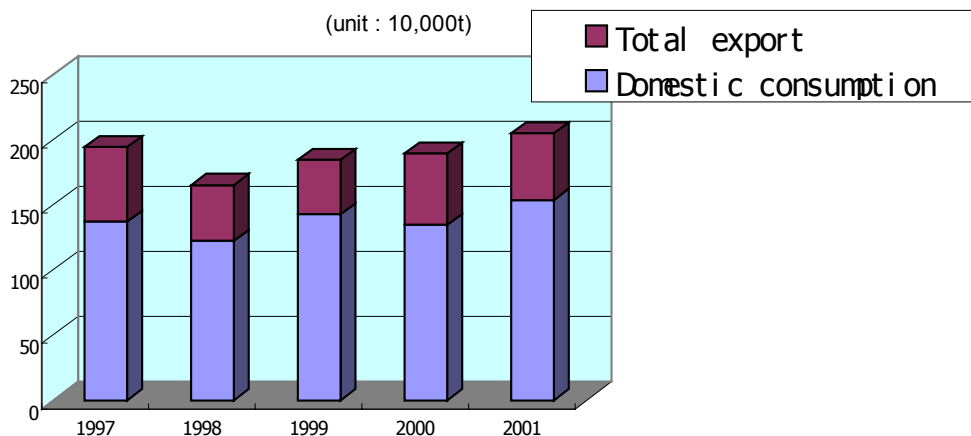
Unit:10000t

Year	Total Production of Manganese Ferroalloy	Domestic Consumption	Proportion in total Production	Total Export	Proportion in the total Production
1997	194.92	137.4	70.51%	57.48	29.49%
1998	165.58	122.8	74.13%	42.83	25.87%
1999	184.98	142.9	77.25%	42.08	22.75%
2000	189.97	134.7	70.92%	55.24	29.08%
2001	205.11	154.23	75.19%	50.88	24.81%

The above table shows that in 2001 the production of China's ferroalloy of manganese series reached the highest level of 2.0511 million tons since 1997. This production situation should be attributed to the steady growth of China's economy.

In 2001, total export of ferroalloy of manganese series is 508,800 tons, little less than that in 2000. China's exports of ferroalloy of manganese series in 1998 and 1999 were basically the same, while its exports in 1997 and 2000 were close to each other, i.e. about 550,000t/a year. On the whole, 70-75% of the output of Chinese ferroalloy of manganese series was for the domestic market, and the other 25-30% was for the overseas market, as is shown in Figure 1.

Figure 1 Production and domestic consumption of ferroalloy of manganese series in the 1997-2001 period



1.3 Table 2 below shows China's import of manganese ore and total production & export of ferroalloy of manganese series in the 1997~2001 period.

Table 2 China's Import of Manganese Ore and Total Production & Export of Ferroalloy of Manganese Series in the 1997~2001 Period

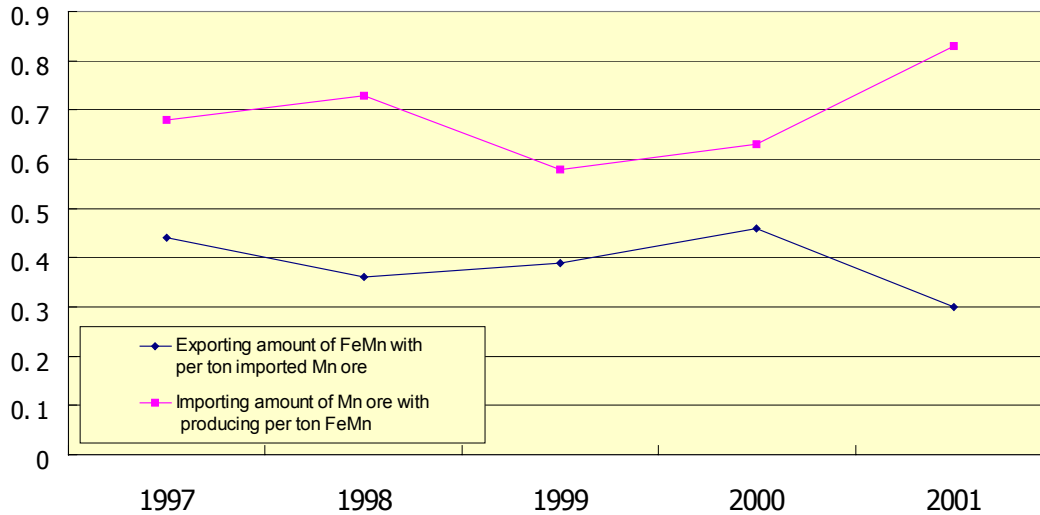
Unit:10000t

Year	Total Production of Ferroalloy of Manganese Series	Total Import of Manganese Ore	Total Export of Ferroalloy of Manganese Series	Importing Amount of Manganese Ore with Producing per ton Manganese Ferroalloy	Exporting Amount of Manganese Ferroalloy with per ton Imported Manganese Ore
1997	194.9	131.7	57.48	0.68	0.44
1998	165.6	120.6	42.83	0.73	0.36
1999	184.98	107.3	42.08	0.58	0.39
2000	189.97	120.4	55.24	0.63	0.46
2001	205.11	171.1	50.88	0.83	0.30

The import of manganese ore in 2001 was 1.711 million tons, it reached the highest level since 1997. And it is 1.204 million tons in 2000.

The relationship between total production of ferroalloy of manganese series and the import of manganese ore is characterized by a gradual increase in manganese ore import used for every ton of ferroalloy of manganese series produced. And for every ton of imported manganese ore, there is a decrease in the export of ferroalloy of manganese series. This is related with the fact that China's manganese ore resources are become poorer and poorer. As is shown in Figure 2.

**Figure 2 The Exporting amount of FeMn series with per ton imported Mn ore in China in the 1997-2001 period (unit : 10,000 t)**



1.4 As is shown in Table 3 below, China's export of ferroalloy of manganese series mainly consists of SiMn and high carbon ferromanganese. In the average proportion of export of ferroalloy of manganese series for the above-listed five years, SiMn amounted to 70.07% and high carbon ferromanganese 25.42%. These two put together, it accounted for 95.49% of the total exports. While export of medium- & low-carbon ferromanganese only accounted for 4.51%.

**Table 3 Different Product Types in the Exported Ferroalloy of Manganese Series in the 1997-2001 Period**

Unit:10000t

Year	Export of Ferrosilico-manganese	Export of High-carbon Ferromanganese	Export of Medium- & Low-carbon Ferromanganese	Total Export
1997	42.9	10.32	4.26	57.48
1998	29.77	12.06	1	42.83
1999	29.85	11.2	1.03	42.08
2000	36.27	16.23	2.74	55.24
2001	35.34	13.37	2.17	50.88

## **2. Some Significant Characteristics of the Current Chinese Ferroalloy Industry of Manganese Series**

### **2.1 Too Large a Production Capacity Caused by Low-level Duplicate Construction**

Since 1985, China's ferroalloy industry has met with the problem of low-level duplicate construction. Now the production capacity of ferroalloy of manganese series in China has

reached 2.20~2.30 million tons/a year, exceeding China's domestic demand by 60~70%.

## 2.2 The Market Order, Which Lacks Standardization, is Vulnerable to Changes of International Manganese Ore Industry

Production and operation of ferroalloy industry of manganese series in China are of small production scale, scattered, and short of capital. There is not a leading enterprise powerful enough to lead the development in this field. Standard market competition mechanism is unavailable and the self-discipline of production and marketing is weak.

Contrary to the status-quo China, the production and marketing of international manganese ore is known for its growing trend of concentration and monopolization, and enterprises have strong capital strength, and have great influence on the market. The going-up of the manganese ore price in 2000 was a good example, which shows that the containing action of magnates in the international manganese industry has a great effect on the development of China's ferroalloy industry of manganese series.

## 2.3 Scarcity of Manganese Ore Resources

China's manganese ore resources are of low-grade lean ore, which can not meet the production requirement. So, China has to import more than one million tons of rich manganese ore every year to meet the requirement of normal production. The scarcity of manganese ore resources is a key problem, which will affect the potential for future development of China's ferroalloy of manganese series

## 2.4 Backward Production Equipment, and the Lack of Environmental Protection Facilities

Some main ferroalloy producing plants in the sector of China's ferroalloy industry of manganese series were constructed very early. So their production equipment level is relatively backward, and environmental protection facilities can not work normally or are not available at all. With the execution of the strategy of sustainable development and the more stringent requirement of environmental protection in China, these factors will severely restrict the further development of these plants. The challenge of environmental protection is an important problem the ferroalloy industry of manganese series faces.

# **3. Key Factors which Affect China's Ferroalloy Industry of Manganese Series**

Economic environment, resources & energy, and market are the key factors, which affect China's Ferroalloy industry of Manganese Series. Elaboration of those three factors is as follow:

## 3.1 Economic Environment and Policies in China

In recent years, the Chinese Government has executed financial policies which mainly

aim at actively promoting the domestic demand. As a result, China's GDP has maintained a steady growth rate of about 8%. The production of iron and steel in China has also maintained a stable growth, and correspondingly, a vigorous domestic demand for ferroalloy of manganese series is seen. It can be shown from that Chinese output of ferroalloy of manganese series increased greatly and the export was decreased in 2001.

With the execution of the policy for development of the western region, the further improvement of investment environment in China, enterprises' investment behavior will become more and more rational, and capital will further flow to extra large ferroalloy enterprises. China's ferroalloy industry will develop towards the direction of optimizing production layout, adjusting product structure and strengthening market competitive edges.

### 3.2 Resources and Energy

Restricted by the availability of manganese ore resources, only a few producers out of the large number of Chinese producers of ferroalloy of manganese series really have development potential. Since 1996, great changes have taken place in distribution of production of ferroalloy of manganese series. 70%~80% of the total production has moved and will continue moving to the mid-west provinces such as Guizhou, Guangxi, Sichuan, Hunan and Yunnan which have rich resources and sufficient energy. Existing producers of ferroalloy of manganese series in the north of China and the east China have substituted their original products with other types of ferroalloy. However, the deficiency in rich manganese ore restricts the development of producers in southwest China, too.

In terms of energy consumption for production, energy price for domestically produced ferroalloy of manganese series usually reaches 3~4 US cents /KWH, with the highest reaching 5 US cents /KWH, which, comparing with the 1.5 US cent/KWH in Norway, South Africa and Russia for production of the same type of materials, lacks competitive edges. Consequently, the Chinese products of ferroalloy of manganese series have weak competitive edges on international market. Especially in the early of 2002, the increase of power price in western Provinces deepen this situation.

### 3.3 Market

In the 1990s, major markets for China's ferroalloy of manganese series were in Japan, South Korea and Southeast Asia. Long transportation distance to western countries puts China's products in an inferior position on the western country markets. Such a situation is not expected to change in the following a few years to come.

## **4. Possible Future Development Trend of China's Ferroalloy industry of Manganese Series and Potential influence of China's Ferroalloy industry of Manganese Series in the World Context**

4.1 Since the output of China's steel is increased, the production of ferroalloy of manganese series will be increased along with the increased domestic demand. And with the deepening of enterprises reform, the number of production enterprises will be reduced. Large enterprises with advantages in resources will further develop and become stronger. Meanwhile, their operation and the market order will be improved greatly.

Especially after China acceded to WTO in 2001, the strength and progress of reform and combination will obviously speed up. For existence and joining the big family of world manganese industry, they have to reform and combine before new global combination of manganese enterprises. The reform and combination of Zunyi Ferroalloy Group Corp. Ltd. is the start of Chinese reform and combination of manganese industry.

4.2 Some major products will be targeting at the domestic market demand instead of at the overseas market. Main export markets will still be Japan, South Korea, countries or regions in Southeast Asia. Product structure will be adjusted toward the direction of making products with high-added-value in order to meet the domestic and overseas market demands.

4.3 With the gradual improvement of China's market system and its entry into the WTO, major enterprises involved in production and operation of ferroalloys will closely follow the process of globalization of world economy, and actively explore and strengthen cooperation with international ferroalloy enterprises and manganese ore suppliers under the prerequisite of observing the rules of the WTO.

With the development of world iron and steel industry and manganese industry, the process of combination of world manganese industry will speed up and the cooperation between Chinese ferroalloy industry of manganese series and overseas ferroalloy enterprises and the supplier of manganese ore will be strengthened.

4.4 The potential influence of China's ferroalloy industry of manganese series in the world context includes the following two aspects:

(1) After China entry into the WTO, with the joining of overseas ferroalloys enterprises, the image of Chinese ferroalloy industry of manganese series will become better. Since standardization of the whole market, China's ferroalloy enterprises will observe the rules of the WTO, and conduct operation activities accordingly. This will guarantee the operation order of international ferroalloy industry of manganese series to develop in the direction toward a more reasonable and orderly market.

(2) Affected by the shortage of manganese ore, influence of China's ferroalloy industry of manganese series in the world context will become weaker. It will mainly devote itself to the domestic market.