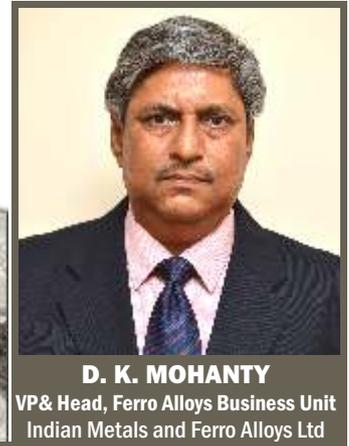


# Ferrochrome Industry - Indian Scenario



**D. K. MOHANTY**

VP & Head, Ferro Alloys Business Unit  
Indian Metals and Ferro Alloys Ltd

**F**erromanganese, Ferronickel, Ferrosilicon and Ferrochrome are some of the commonly known alloys used in making steel, depending on end use. Ferrochrome, an alloys of chrome and iron, produced through smelting of chrome ore, is mainly used in the manufacture of stainless steel; the chrome content in Ferrochrome is responsible for giving the "Stainless" property to steel and the chrome content varies from 10.5% -29% depending on grades of Stainless steel produced. Chrome ore also has applications related to the foundry, refractory and chemical industries.

Ferrochrome contains 50% to 70% chromium, depending on grade of input chrome ore. International trade organisations recognise ferrochrome in three categories: High-carbon ferrochrome with more than 4% carbon, Low and Medium carbon Ferrochrome with less than 4% carbon and Ferro-silico-chrome (FeSiCr). High carbon Ferrochrome represent about 92% of the total Ferrochrome produced. Indian industries mostly produce high-carbon Ferrochrome. No low and medium carbon ferrochrome production has been reported in the recent past.

The country has the 6th largest reserve of Chrome ore after South Africa, Zimbabwe, Kazakhstan, Turkey & Finland. The state of Odisha accounts for 93% of India's resource mostly confined to the Sukinda Valley region in Jajpur District. Small reserves are also found in Karnataka.

Ferrochrome was first produced in India in 1967. Till 1999 the total production in India had stagnated at 250,000-300,000 MT per annum. With subsequent capacity addition, today it stands at 1.7 million ton per annum. The surge in capacity was due to redistribution of Chrome ore mines to Ferrochrome producers and the thrust shifting from selling ore to "Value Addition" through Ferrochrome production and employment generation. Considering the limited availability of this strategic resource, proper utilization of the product becomes imperative.

Indian Ferrochrome industry meets most of its Chrome ore

## WORLD CHROMITE RESERVE

Country	In million tonnes	In %
South Africa	6860	74.4
Zimbabwe	930	10.1
Kazakhstan	387	4.2
Turkey	220	2.4
Finland	120	1.3
India	54	0.6
Brazil	18	0.2
China	5	0.1
Others	621	6.7
<b>Total</b>	<b>9215</b>	<b>100</b>



Year	1995	2000	2005	2010	2015
Ferrochrome Production (in MT)	303537	376693	611373	1006000	867368

(Source Data : ICDA)

a small portion allocated to Stainless steel will see a significant impact.



India's per capita consumption of Stainless steel is a mere 2kgs against 15kgs in the developed world, 10kgs in China and the world average of 6kgs. The forecast that there will be sustainable GDP growth of at least 7.5% per annum in India, augurs well for the growth of Stainless steel industry. Even if the country's economy does not follow the same growth trajectory as that of China during its golden period of double digit growth, there is still scope for at least doubling Stainless steel consumption and by implication Ferrochrome.

requirement from domestic sources, but still has to depend on import to some extent. In 2015 India imported around 0.20 million tonnes; mainly lumps from Oman, South Africa and Turkey, and some concentrate from South Africa.

With its growing importance in recent years, India has become the world's fourth largest ferrochrome producer. The industry is relatively consolidated with 6 producers accounting for about 75% i.e. IMFA, Jindal Stainless, Facor, Visa, Tata, Rohit and Balasore Alloys. Ferrochrome production is power intensive. Availability of chrome ore and power dictates the cost of production. Hence it is in the interest of Ferrochrome producers to integrate power and mines to existing facilities to be more cost competitive.

India's consumption of Stainless steel has been more or less restricted to low-end applications such as pots & pans. A shift is expected in usage pattern like that of western or developed countries i.e. to Architecture, Building & Construction (ABC) and Automotive, Railways & Transport (ART) in coming decades. The net Stainless steel production in India is expected to increase from 3 Million tonnes in 2015 to 5.2 Million tonnes by 2020.

Global Ferrochrome prices are set by South Africa by virtue of its being the largest producer in the world. China, the biggest consumer and the second largest producer influences the "Floor" & "Ceiling" prices for Ferrochrome. Currently South African & Kazakhstan are able to sustain at lower price with huge depreciation in their currencies. India unfortunately is a price follower as far as global Ferrochrome price goes.

Year	Production in MT	Total Exports in MT	% of Exports	Export to China	Export to Japan	Export to Korea
2010	1006000	537952	53.47	259676	100759	130615
2011	985428	466255	47.31	191550	63477	152674
2012	947403	455281	48.06	194945	61937	151299
2013	974092	550741	56.54	270206	63028	170454
2014	806229	433684	53.79	160853	51979	141827
2015	867368	453970	52.34	137456	45324	136528

(Source Data : ICDA)

India's Ferrochrome output volume has stabilized at around 1 million tonnes over the last 5 years. In 2015, it was 0.86 million tonnes. The country exports around half of its Ferrochrome, mostly to Far East countries like China, South Korea, Japan & Taiwan; earning valuable foreign exchange. In 2015, India's ferrochrome exports stood at 0.45 million tonnes.

Global Stainless steel demand is projected to increase by 3% per annum during 2016-19 led mostly by APAC (Asia Pacific region). However, India could provide a significant boost as the country modernises and focuses on putting up world class infrastructure. i.e. 'Smart City' projects and renewed focus on industrial infrastructure such as ports, infrastructure corridors, bridges, etc. The infrastructure spend over the next 2 decades has been estimated to be substantially high. Even

High electricity costs (the highest among all Ferro Chrome producing countries), non-availability of low-phosphorus & low-ash metallurgical coal (required for Ferrochrome production) necessitating import from countries like China, Australia, etc., lack of adequate port facility and high cost of inland transportation are other major disadvantages. The average inland freight rate is Rs 3.75/MT/km, compared to container freight rate around Rs 0.05 / MT/Km (Rs. 200/MT for a distance of approx 4,000 KM).

India will continue to remain a significant player in global Ferro chrome industry considering its proximity to Asian markets. However some major concerns need to be addressed for increased Stainless steel production to meet the demands of a country poised for unprecedented growth in coming years.