

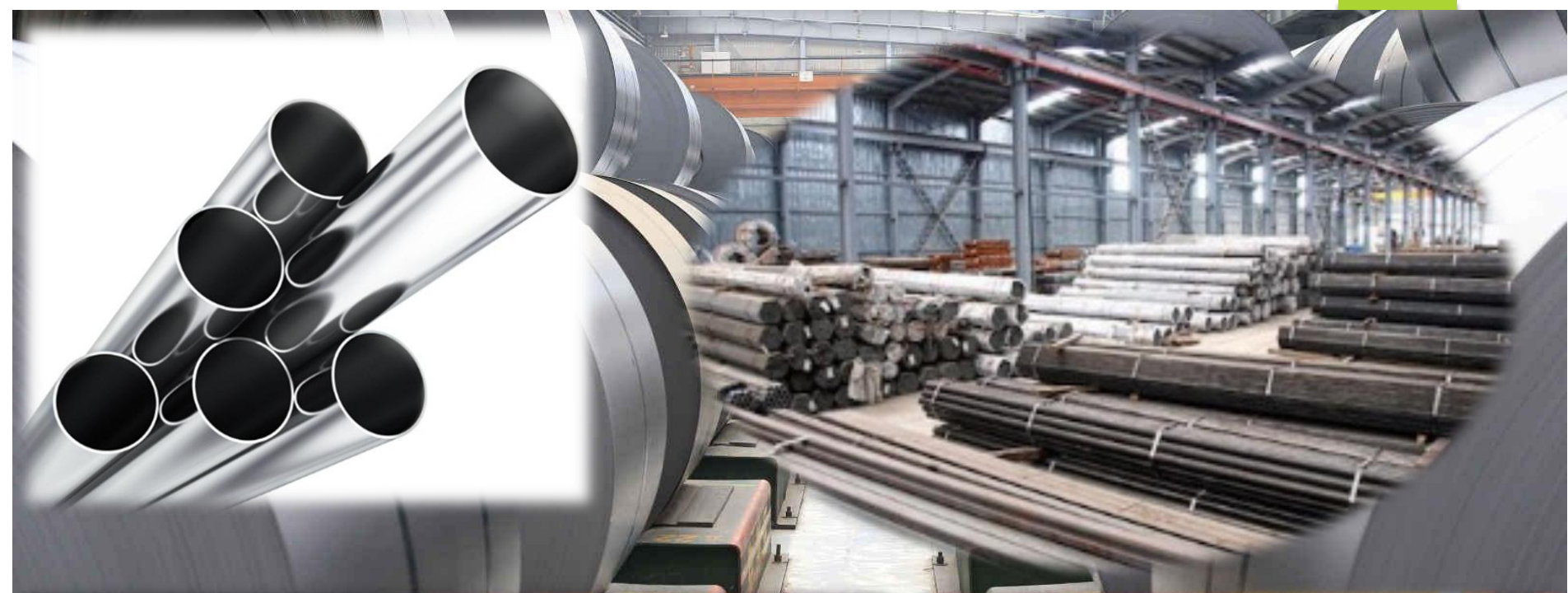


Steelmaking and Iron Products

***(Cast Iron, Compacted
Graphite Irons, Ductile Iron)***

Introduction

The iron and steel industry is one of the most important industries in India. Most iron and steel in India is produced from iron ore. The Indian Ministry of Steel is concerned with: the coordination and planning of the growth and development of the iron and steel industry in the country, both in the public and private sectors; formulation of policies with respect to production, pricing, distribution, import and export of iron and steel, Ferro alloys and refractories; and the development of input industries relating to iron ore, manganese ore, chrome ore and refractories etc., required mainly by the steel industry.



The iron and steel industry is playing a major role in the growth story of modern India. The Government of India has taken several initiatives for the growth and development of Iron and Steel Industries in India. India can be segmented into five product segments: Grey Cast Iron, Steel, Spheroidal Graphite Iron, Non-ferrous Metals, and Malleable Iron.

Iron is the second most common metal in Earth's crust, after aluminum, but because it reacts so readily with oxygen it's never mined in its pure form (though meteorites are occasionally discovered that contain samples of pure iron).

Hugely versatile, and one of the strongest and cheapest metals, it became an important building block of the Industrial Revolution, but it's also an essential element in plant and animal life. Combined with varying (but tiny) amounts of carbon, iron makes a much stronger material called steel, used in a huge range of human-made objects, from cutlery to warships, skyscrapers, and space rockets.

Cast iron is simply liquid iron that has been cast: poured into a mold and allowed to cool and harden to form a finished structural shape, such as a pipe, a gear, or a big girder for an iron bridge.

Pig iron is actually a very basic form of cast iron, but it's molded only very crudely because it's typically melted down to make steel. Pig iron is the purest form of iron ore without any impurities content in it and contains high carbon content such as coke. Pig iron is usually used in the manufacturing of ingot and billet. With the increase in demand for the long steel in the market, the demand for Pig iron increases adjacently. Demand growth will need increase in supply for which the Indian market will require more number of suppliers too.

Steel is just another type of iron alloy, but it has a much lower carbon content than cast and wrought iron and other metals are often added to give it extra properties. Steel is such an amazingly useful material that we tend to talk about it as though it were a metal in its own right—a kind of sleeker, more modern "son of iron" that's taken over the family firm! It's important to remember two things, however. First, steel is still essentially (and overwhelmingly) made from iron. Second, there are literally thousands of different types of steel. Steel is an alloy of iron and other elements, primarily carbon, that is widely used in construction and other applications because of its high tensile strength and low cost.

Steel's base metal is iron, which is able to take on two crystalline forms (allotropic forms), body centered cubic (BCC) and face centered cubic (FCC), depending on its temperature.

Being a core sector, steel industry tracks the overall economic growth in the long term. Also, steel demand, being derived from other sectors like automobiles, consumer durables and infrastructure, its fortune is dependent on the growth of these user industries. The Indian steel sector enjoys advantages of domestic availability of raw materials and cheap labour. Iron ore is also available in abundant quantities. This provides major cost advantage to the domestic steel industry.

The Indian steel industry is very modern with state-of-the-art steel mills. It has always strived for continuous modernisation and up-gradation of older plants and higher energy efficiency levels. India's crude steel production grew by 9.4 per cent year-on-year to 8.1 Million Tonnes (MT) in August 2016. During April-August 2016, crude steel production in the country grew by 7 per cent year-on-year to 39.98 MT. Over April-August 2016, steel imports fell 34.5 per cent year-on-year to 3.01 MT, while steel exports rose 23.6 per cent year-on-year to 2.38 MT. Steel consumption in the country is expected to grow 5.3 per cent year-on-year to 85.8 MT during FY2016-17, led by growth in the construction and capital goods sector.

Steel (Saleable)

Demand : Past and Future

Year	(In Million Metric Tonne)
1990-91	15.30
2000-01	31.61
2001-02	32.87
2002-03	35.35
2003-04	39.28
2004-05	43.32
2005-06	47.65
2006-07	52.18
2007-08	56.90
2008-09	60.00
2009-10	63.20
2010-11	71.20
2011-12	75.90
2012-13	79.10
2013-14	79.55
2014-15	86.80
2015-16	95.25
2016-17	98.75
2017-18	110.00
2018-19	120.70
2019-20	129.80
2024-25	195.20

Source : Intecos - CIER

Market Growth Rates (%)

Year	Steel	Structurals
1990-91-2001-02	9.50	5.30
2001-02-2006-07	9.70	2.20
2006-07-2011-12	7.80	4.90
2011-12-2019-20	7.00	4.40
2019-20-2024-25	8.50	6.50

Source : Intecos - CIER

Pig Iron

Demand : Past and Future

Year	(In Million Metric Tonne)
1990-91	1.21
2000-01	3.10
2001-02	3.88
2002-03	5.07
2003-04	5.20
2004-05	3.23
2005-06	3.86
2006-07	4.96
2007-08	5.27
2008-09	5.60
2009-10	5.90
2010-11	5.70
2011-12	5.80
2012-13	6.10
2013-14	6.60
2014-15	7.25
2019-20	8.80
2024-25	12.00

Source : Intecos - CIER

Market Growth Rates

1990-91-2000-01	9.9%
2001-02-2006-07	5.2%
2006-07-2011-12	3.2%
2011-12-2019-20	5.3%
2019-20-2024-25	6.5%

Source : Intecos - CIER

Sponge Iron

Demand : Past and Future

Year	(In Million Metric Tonne)
1990-91	0.86
2000-01	5.52
2001-02	5.55
2002-03	6.35
2003-04	7.58
2004-05	9.98
2005-06	12.50
2006-07	16.21
2007-08	15.40
2008-09	20.60
2009-10	24.50
2010-11	25.50
2011-12	20.50
2012-13	19.40
2013-14	18.10
2014-15	19.10
2015-16	23.50
2016-17	25.10
2017-18	28.75
2018-19	31.95
2019-20	35.00
2024-25	50.25

Source : Intecos - CIER

Market Growth Rates

1990-91-2001-02	20.4%
2001-02-2006-07	24.1%
2006-07-2011-12	4.8%
2011-12-2019-20	6.9%
2019-20-2024-25	7.5%

Source : Intecos - CIER

This book is intended as a resource and as an introduction to the layman about our most important metal system. This book provides basic information covering every aspect of iron and steel production as well as a practical aid for workers engaged in the field. After an introduction that deals with the history and production of iron and steel, the rest of the book examines their physical properties and metallurgy.

Beginning with a brief introduction to the ferrous alloys and metals, types and production of cast iron, production of compacted Graphite Irons, Ductile Iron, Malleable Cast Iron and current status of steel making together with the reasons for obsolescence of Bessemer converter and open hearth processes,

the book moves on to: elaborate the physiochemical principles involved in steel making; explain the operational principles and practices of the modern processes of primary steel making (LD converter, Q-BOP process, and electric arc furnace process); provide a summary of the developments in secondary refining of steels; discuss principles and practices of ingot casting and continuous casting of steels; discusses the defects in the steel produced and also the remedies for their removal.

This book provides considerable information in an easily assimilable form and makes an ideal introduction to the complex subject of steel technology.

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- *We empower our customers with the prerequisite know-how to take sound business decisions*
- *We help catalyze business growth by providing distinctive and profound market analysis*
- *We serve a wide array of customers , from individual entrepreneurs to Corporations and Foreign Investors*
- *We use authentic & reliable sources to ensure business precision*

Our Approach

Requirement collection

Thorough analysis of the project

Economic feasibility study of the Project

Market potential survey/research

Report Compilation

Who do we serve?

- *Public-sector Companies*
- *Corporates*
- *Government Undertakings*
- *Individual Entrepreneurs*
- *NRI's*
- *Foreign Investors*
- *Non-profit Organizations, NBFC's*
- *Educational Institutions*
- *Embassies & Consulates*
- *Consultancies*
- *Industry / trade associations*

Sectors We Cover

- *Ayurvedic And Herbal Medicines, Herbal Cosmetics*
- *Alcoholic And Non Alcoholic Beverages, Drinks*
- *Adhesives, Industrial Adhesive, Sealants, Glues, Gum & Resin*
- *Activated Carbon & Activated Charcoal*
- *Aluminium And Aluminium Extrusion Profiles & Sections,*
- *Bio-fertilizers And Biotechnology*
- *Breakfast Snacks And Cereal Food*
- *Bicycle Tyres & Tubes, Bicycle Parts, Bicycle Assembling*

- *Bamboo And Cane Based Projects*
- *Building Materials And Construction Projects*
- *Biodegradable & Bioplastic Based Projects*
- *Chemicals (Organic And Inorganic)*
- *Confectionery, Bakery/Baking And Other Food*
- *Cereal Processing*
- *Coconut And Coconut Based Products*
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- *Coal & Coal Byproduct*

- *Copper & Copper Based Projects*
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- *Disinfectants, Pesticides, Insecticides, Mosquito Repellents,*
- *Electrical, Electronic And Computer based Projects*
- *Essential Oils, Oils & Fats And Allied*
- *Engineering Goods*
- *Fibre Glass & Float Glass*
- *Fast Moving Consumer Goods*
- *Food, Bakery, Agro Processing*

- *Fruits & Vegetables Processing*
- *Ferro Alloys Based Projects*
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- *Ginger & Ginger Based Projects*
- *Herbs And Medicinal Cultivation And Jatropha (Biofuel)*
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- *Hospital Based Projects*
- *Herbal Based Projects*
- *Inks, Stationery And Export Industries*

- *Infrastructure Projects*
- *Jute & Jute Based Products*
- *Leather And Leather Based Projects*
- *Leisure & Entertainment Based Projects*
- *Livestock Farming Of Birds & Animals*
- *Minerals And Minerals*
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- *Medical Plastics, Disposables Plastic Syringe, Blood Bags*
- *Organic Farming, Neem Products Etc.*

- *Paints, Pigments, Varnish & Lacquer*
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- *Perfumes, Cosmetics And Flavours*
- *Power Generation Based Projects & Renewable Energy Based Projects*
- *Pharmaceuticals And Drugs*
- *Plantations, Farming And Cultivations*
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- *Plastic, PVC, PET, HDPE, LDPE Etc.*

Sectors We Cover Cont...

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- *Stationary Products*
- *Spices And Snacks Food*
- *Steel & Steel Products*
- *Textile Auxiliary And Chemicals*

- *Township & Residential Complex*
- *Textiles And Readymade Garments*
- *Waste Management & Recycling*
- *Wood & Wood Products*
- *Water Industry(Packaged Drinking Water & Mineral Water)*
- *Wire & Cable*

Contact us

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