



Indian Refractory Industry Poised to Grow Further

- Steelworld Research Team

GLOBAL REFRACTORY MARKETS

Particulars	Market Share as of 2015	CAGR Growth
Iron and Steel	68.4	2.87
Non-metallic Materials	17.60	6.69
Non Ferrous Metals	8.90	4.63
Others	5.10	==

The global refractories market is projected to reach by \$33.7 billion by 2020, registering a compounded annual growth rate of 3.9 percent between 2015 and 2020. The global market for refractories is growing at a compounded annual growth rate (CAGR) of 4.02% during 2016 - 2022.

Refractories is a material that is heat resistant, it provides linings for the heat temperature furnace, reactors and other processing units. Refractories are made of natural and manmade materials, usually

nonmetallic or combinations of other compound and minerals. Refractories material can resist high temperature without undergoing physical and chemical changes while remaining in contact with molten slag, metal and gases.

It is necessary to produce range of refractory materials with different properties to meet range of processing conditions. The refractory range incorporates fired, chemically and carbon bonded materials that are made in different combinations and shapes for diversified applications. User industry of refractories is

Innovation is the key to success. When the global economy is passing through one of the toughest times ever, engineering sector in India is looking to introduce innovative products not only to sustain in the market but also to realize much better from the same or a marginal increase in raw materials and labour costs.

That is the reason, auto sector is running full with innovative launches with electric and flying cars and engineering products like plastics and glass have kept consumer fancy in mind before announcing their new launches. Everywhere, therefore, the refractory materials with innovative designs are currently in high demand to meet the requirement of selenity, tensile and other technical requirements for producing a good engineering product.

Refractory materials are used to provide refractory lining in furnaces, kilns, incinerators, and reactors. These materials have a high melting point (greater than 1,520 degree celsius). They are subjected to various conditions such as high temperature, abrasions and chemical corrossions, slag attacks, and chemical reactions when they are used in refractory linings. Hence, these materials must be able to endure these conditions with less wear and tear and high reliability.

The Steel industry is one of the major end-users of these materials. The refractory material market in India is forecast to grow at a CAGR of 9.85 percent over the period 2013-2018.



segmented into steel, cement, glass, non-ferrous and others.

The steel industry is the largest application of refractories globally. Refractories has the characteristics which are lightweight, high temperature sustainability, and robustness, therefore, they are ideal for linings and insulation of the high temperature furnaces used in steel industry. In-addition, the increasing infrastructure and construction activities in the developing economies such as India, Brazil, Mexico, Russia, and other economies worldwide are contributing abundantly to the steel consumption and henceforth increasing refractories usage.

Geographically, Asia Pacific dominates the market segment followed by Europe and North America. Asia-Pacific region represents largest market share in the global refractories market. Rise in population drives construction industry which further drives the refractories market in emerging economies.

In North America, U.S market is largest consumer of refractories over the forecasted period. Growing production of steel and cement in U.S especially for construction purpose across the globe has increased the need of refractories. After recovery from recession companies are focusing more on profits by reducing material composites of high prices. These have boosted the refractories market growth in U.S.

Refractory in India

India's refractory industry suffered badly in 2016 due to a slowdown in the growth of steel sector. Falling steel prices led by the

INDIAN REFRACTORY MARKET SIZE

Financial Year	Revenue (\$ mln)
2008-09	474.4
2009-10	566.7
2010-11	714.4
2011-12	802.4
2012-13	837.2
2013-14	884.4
2014-15	942.8

Source : IMRA

slowdown in China economy has driven down Indian steel market growth to a rate of 3% per annum and slashed into India refractories sector, prompting calls for protectionist policies to preserve the country minerals and metals industries.

India refractory material industry has been buffeted over the last year by the sharp fall in the price of steel, which has been compounded by accelerated dumping of Chinese steel products in the Indian market. Experts have responded by halving growth projections for India domestic steel industry, from 6% to 3% in 2016.

This sustained slowdown in demand is forcing down the level of steel capacity utilisation in India, leaving a gap for imported material. Last year, imports accounted for 15% of the total steel consumed in India, with the majority coming from China at 28%, followed by Korea, at 26%, Japan, at 22% and Russia at 4%.

India currently imports more than 50% of its refractory raw material needs,

including graphite, fused and calcined alumina, magnesite and high grade clays. Experts, however, believe that the quality of domestically produced raw materials do not meet the standards required by the steel industry, while Chinese material is comparatively better for use in some applications.

Magnesia products are mainly imported from China, because India does not have magnesite of high enough purity to make refractory bricks products which only a handful of Indian companies make. Similarly, the availability of high quality refractory clays is limited, while kyanite, sillimanite and alusite remain unobtainable from Indian suppliers. Further, a lack of beneficiation and processing capacity for the raw materials available, such as bauxite, has compelled consumers to import their requirements of this refractory mineral.

India steel industry consumes 75% of the country refractory output. There are more than 100 refractory producers in India, out of which only around 14 are major manufacturers and a further 33 are medium-sized, while the rest produce relatively small volumes of materials. Steel plants in India consume 8-10 kg of refractory per tonne of steel on average, although the figure can be as high as 15kg per tonne, depending on the quality or age of the steel plant.

The slump in the global steel market and a surge in imported finished steel products has led to an oversupply of refractory and refractory minerals in India. Domestic producers are also having to contend with competition from low cost raw materials, particularly from China.

Distribution of refractory material markets

The iron and steel industry accounted for over 68% of the global refractory materials market in 2015. As the industry is the largest end user of refractory materials, the market is highly dependent on the performance of the industry. Refractory materials are used in blast furnaces, air and process gas heaters, basic oxygen steelmaking (BOS) vessels, steel and torpedo ladles, troughs, reformers, and electric arc furnaces.

The iron and steel industry is key to other

industries like construction, automotive, aerospace, and industrial machinery, and demand from these will affect the demand for refractory materials considerably. APAC is the leading consumer of refractory materials for the iron and steel industry. China (which accounts for about half of global steel production), Japan, and India are among the leading producers of iron and steel.

The abundant presence of raw materials, along with other factors like low labor cost and the presence of suitable facilities for expansion of this industry, has helped the growth of the iron and steel industry in China. Europe and the Americas come next in the use of refractory materials for the iron and steel industry. The non-metallic materials segment accounted for 17.6% of the global market in 2015.

The segment includes the manufacturing industries of materials like glass, lime, cement, and ceramics, which find considerable application in construction, automotive, aerospace, and solar panels. It is the fastest-growing industry market due to the high demand from consumers for end products that use non-metallic materials.

The increase in disposable income worldwide has resulted in the increase in demand for automobiles and residential and commercial buildings. With the rise in global population, there is the need for new buildings and residential. APAC is again the largest market for refractory materials in the non-metallic materials industry. China and India are the top two producers of cement globally.



The cement produced there are used in the domestic real-estate and construction markets. The US comes next in the consumption of refractory materials for the non-metallic materials industry.

The non-ferrous metals industry accounted for 8.9% of the global consumption of refractory materials in 2015. The segment includes aluminum and copper, which need refractory materials in large quantities for their production. As aluminum is a lightweight material that has high strength, it is used in various applications in varied industries including automotive, aerospace, construction, power generation, shipping, and mining. The surge in demand from these end-users and industries will lead to a rapid growth of both the non-ferrous industries as well as the refractory materials.

APAC is the largest market for this segment with countries like China and India among the top producers as well as consumers of aluminum. After Chile, China is the second biggest producer of copper.

Rapid industrialization in APAC and demand from end-use industries like cement, steel, and iron will drive the use of refractory materials in the non-ferrous metals industry.

Challenges

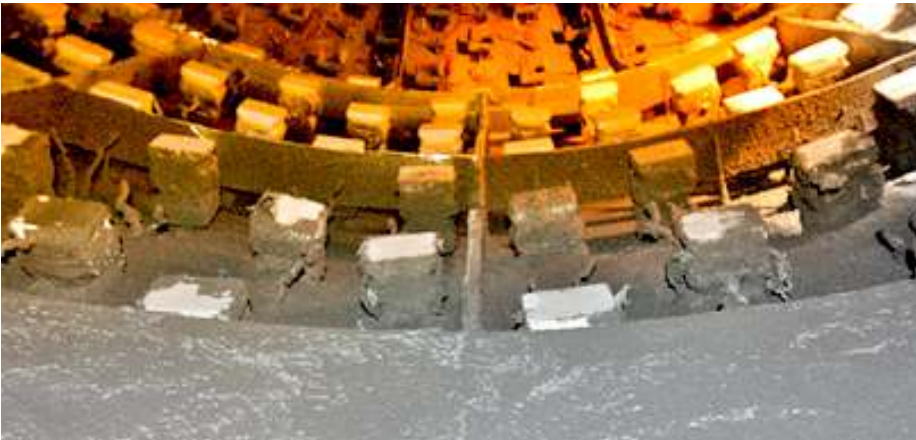
Despite challenges, revenues in India refractories sector have increased steadily over the last six years, posting a 7% year-on-year increase in 2015 compared to 2014 and a 98.7% increase last year over levels recorded in 2009. This has been attributed to the expansion of India domestic steel production, which has continued to grow, albeit at a decelerating rate, despite the wider global market decline.

If the trend towards increased imports of steel and refractory products and raw materials continues, however, the growth of India refractories market could be sent into reverse within a short time. In an effort to make sure this does not happen, refractories companies in India have proposed a number of measures to the country government which they hope will enable fairer competition between Indian and international suppliers.

The industry has urged the government to amend the present duty structure relating to imports of raw materials and finished goods – a system which at present makes imported products cheaper than those produced in India. Apart from that, the refractory manufacturers want encouragement for domestic procurement of products by Indian steel companies.

The refractory industry in India has been facing their age old technology resulting into increasing cost burden. Therefore, it is





important for industry to cut production cost to reduce their overall financial burdens. Increasing export of Indian products and developing more applications for Indian raw materials are another major challenges, Indian refractory manufacturers are facing. At present, the growth potential for India refractories industry is positive, but this outlook relies on manufacturers adopting more efficient technologies and cost coming down, particularly as specific consumption of refractories per unit of steel produced continues to decline.

Besides aforementioned, the major players of the market have certain challenges such as various companies do not have their manufacturing located where the region is growing the most in order to prevent this the major players are expanding their business with a focus on growing region. Due to high price raw material the competitors are facing certain challenges various companies are focusing in house supply of raw materials in order to reduce the burden of high cost of raw materials.

Indian Auto Industry

The Indian auto industry is one of the largest in the world. The industry accounts for 7.1 percent of the country's Gross Domestic Product (GDP). The Two Wheelers segment with 81 percent market share is the leader of the Indian Automobile market owing to a growing middle class and a young population. Moreover, the growing interest of the companies in exploring the rural markets further aided the growth of the sector.

The overall Passenger Vehicle (PV)

INDIA MAJOR STEEL IMPORT MARKETS (2015-16)	
Country	Market Share (%)
China	29
South Korea	27
Japan	21
Russia	4
Germany	2
Indonesia	2
Taiwan	1
Brazil	1
Belgium	1

Source : Joint Plant Committee



segment has 13 percent market share. India is also a prominent auto exporter and has strong export growth expectations for the near future. In April-March 2016, overall automobile exports grew by 1.91 per cent. PV, Commercial Vehicles (CV), and Two Wheelers (2W) registered a growth of 5.24 percent, 16.97 percent, and 0.97 percent respectively in April-March 2016 over April-March 2015.

In addition, several initiatives by the Government of India and the major automobile players in the Indian market are expected to make India a leader in the 2W and Four Wheeler (4W) market in the world by 2020. The sales of PVs, CVs and 2Ws grew by 9.17 percent, 3.03 percent and 8.29 percent respectively, during the period April-January 2017. In order to keep up with the growing demand, several auto makers have started investing heavily in various segments of the industry during the last few months.

The industry has attracted Foreign Direct Investment (FDI) worth US\$ 15.79 billion during the period April 2000 to September 2016, according to data released by Department of Industrial Policy and Promotion (DIPP). India automotive industry is one of the most competitive in the world.

It does not cover 100 percent of technology or components required to make a car but it is giving a good 97 percent. Leading auto maker Maruti Suzuki expects Indian passenger car market to reach four million units by 2020, up from 1.97 million units in 2014-15.

Modernization on Card

Due to modernization emerging economies have invested significantly in the infrastructural development. Increasing industrialization in some major economies, such as India, China, Germany, Italy, and France is expected to further boost the refractories market, as is the high potential from non-metallic minerals industry globally. Iron and steel is the largest end-use industry of refractories globally. In iron and steel industry, refractories are used widely for linings and insulation of the high temperature furnaces. Additionally, in refractories market the iron & steel industry is expected to boost further with the shift of various manufacturing industries, namely automotive and construction from developed to developing economies, particularly from the U.S. to China.

Because of significant economic expansion and growing steel output in countries such as China, India, and Taiwan, the refractories in iron & steel industry will continue to grow.