

# Gypsum Demand and Supply Scenario in India

Though gypsum accounts for just 2-3 per cent of the total cost of cement sales, Indian cement manufacturers are likely to face issues regarding its availability and cost in the near future. Identifying and ensuring a consistent supply of gypsum has become a challenge for cement producers.

**Ramachandran elaborates on the gypsum demand and supply scenario in India.**

**T**he Indian cement industry is the world's second largest manufacturer of cement after China, ahead of developed nations such as the US and Japan. However India's cement capacity is still far lower than China's capacity, which was 2020 mtpa in 2012. Per capita consumption of cement in India, as of 2012 was at 176 kgs as against 1210 kgs in China, indicating the huge potential for growth. It is anticipated that growing demand from rural infrastructural developments will infuse new life in cement production and will affect high per capita cement consumption, too.

India's cement consumption has shown a moderate year-on-year growth in the past few years. Along with steady growth, a boom in residential, commercial, infrastructure and office real-estate segments will further drive the cement demand in the country. Almost every Indian cement major has expanded their installed capacity in the backdrop of the government-backed infrastructure projects, as these projects have created a strong demand for cement in the country. Moreover, it is anticipated that the industry players will continue to increase their annual cement output in the coming years, due to which the country's cement production will also grow.

As per the working group for the cement industry's 12th Five-Year-plan report, the government of India plans to increase its investment in infrastructure to USD 1 trillion.

Further, infrastructure projects such as dedicated freight corridors, upgraded and new airports and ports are expected to enhance the scale of economic activity, leading to a substantial increase in cement demand. The housing sector and roads also provide significant opportunities. The cement demand is likely to be sensitive to the growth in these sectors as also policy initiatives.

It may be desirable to create some excess capacity rather than operating with shortages or supply bottlenecks. According to the working group on the cement industry report, in view of the demand and installed capacity growth projections, the additional installed cement capacity requirement during the next 15 years would be around 735 million tonnes, i.e, in addition to the existing capacity of around 350 million tonnes.

## Gypsum demand in the cement industry

On the basis of these projected cement production growth figures, as per the base line, India's cement industry will be requiring over 428 million tonnes of gypsum during the next 15 years against the local gypsum resources (natural and as by-product) of around 115 million tonnes, which means India depends on over 313 million tonnes of gypsum through imports. Natural gypsum will remain the primary source of cement commodity for decades to come. There is presently no substitute for gypsum in the production of cement.

Gypsum plays a very important role in controlling the rate of hardening of cement. During the cement manufacturing process, a small amount of gypsum (around 5 per cent) is added, in the final grinding process. The rising costs of gypsum has been putting a heavy strain on India's cement industry; in the last couple of years, most of the India's cement players have been reported that their gypsum costs have increased substantially and anticipate that the prices of our major inputs such as gypsum, coal and slag costs may also be under pressure in the coming years. The Union Budget of 2011 stated that it was decided to bring down the import duty on critical raw material gypsum by half, to 2.50 per cent along with coal. The cement industry has been asking to bring the import duty on gypsum and coal down to nil from 5 per cent, to partly offset rising manufacturing costs. In February 2011, the department related Parliamentary Standing Committee of Commerce and Industry recommended 0 per cent import duty on gypsum.

## Local natural gypsum supply

India produces around 2.50 per cent of the world's 150 million tonnes of natural gypsum. The country has a total reserve of recoverable cement and natural gypsum of 39 million tonnes, as per a 2010 report issued by the Indian Bureau of Mines (IBM); the majority of the reserves are located in Rajasthan.





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India's annual production of natural gypsum is around 3.50 million tonnes only, mainly on account of non-viability of mining deep-seated gypsum reserves in Rajasthan. Rajasthan accounts for about 99 per cent of total production of natural gypsum in the country, but as it is in north-west India, transportation costs are prohibitive for many cement producers located elsewhere in the country. Natural gypsum is used in India for manufacturing fertilizer, cement and gypsum board industries. High purity gypsum is earmarked only for the fertilizer industry and poor quality of gypsum (of purity less than 60 per cent) is supplied to cement and gypsum board industries. Natural gypsum supply to the cement industries will continue to be around 3.50 mtpa till 2021.

### Local phospho-gypsum supply

Annual production of phospho-gypsum in India is around 6 million tonnes and cement sectors use around 4 - 5 million tonnes on a yearly basis. Basically, the phospho-gypsum supplies will be constrained by issues around rock phosphate availability for DAP (diammonium phosphate) production. As per IBM reports, fluorine and phosphate contents in by-product gypsum are considered deleterious. The phosphate content affects the setting properties of cement

and fluorine content causes ring formation in kilns. The limit generally specified for use in cement is 0.15 per cent to 5 maximum.

Phospho-gypsum is radioactive due to the presence of naturally occurring uranium and radium in the phosphate ore. Phospho-gypsum contains about 1 per cent  $P_2O_5$ , 1 per cent fluorine and 10 to 30 times more radon, neither of which is desirable. As per the Environment Protection Agency, USA, reports, phospho-gypsum is unsuitable for sale as common gypsum. Phospho-gypsum supply to the cement industries will continue to be around 6 mtpa in the long term.

### Local marine gypsum supply

Marine gypsum are normally recovered from salt pans during the production of salt, mainly from Gujarat and Tamil Nadu. Marine gypsum production is in a very negligible quantity, around 0.20 mtpa, and expected to remain negligible in the long term.

### Natural gypsum supply from Pakistan

The gypsum supply by road from Pakistan is of a very small quantity. Presently the supply is around 0.30 mtpa and the maximum supplies shall be restricted to the level of 0.50 mtpa in the future due to heavy transportation costs.



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**The Indian gypsum demand will be large enough to accommodate new additional import supplies from the distant countries like Australia, Egypt, Turkey, Mexico etc.**

### Natural gypsum supply from Thailand

Thailand's local consumption of gypsum is around 4 mtpa against the production of around 11 mtpa. In Thailand, gypsum export is likely to decrease due to increased local consumption. Supply constraints are anticipated in the future because of limited reserves and huge local consumption. The estimated natural gypsum reserves (proven and probable) of Thailand as of 2010 were 200 million metric tonnes.

Gypsum export has been controlled by the Thai government





**The tightening demand–supply scenario will be reflected in an upward trend in gypsum FOB prices.**

through non-issuance of new mining license and exports are strictly under a non-marketable quota system. Its efforts are based on the result of a study that uses the concept of maximizing net present value to calculate the best way of using gypsum mineral reserves for maximum profit; it was found that the Thai government should push its gypsum FOB selling price up to the maximum level from the current minimum FOB price of USD 16.50 per tonne. In 2012, Thailand's average gypsum FOB selling price reached over USD 17 per tonne. Thailand is expected to stop exporting its gypsum and divert the remainder of its gypsum to domestic consumption only. In addition, they will be continuously pushing the gypsum FOB selling price up to a certain level, maybe as close to the 2012 Australian gypsum FOB selling price of USD 22 per tonne.

The government controls on production and export of gypsum may result in lower exports going forward. Thailand exports its gypsum to Japan, Malaysia, India, Indonesia, Vietnam, etc, and maintains a balance slate of export destinations. Thailand exports around 15 per cent (1 mtpa) of the total export volume to India; imports from Thailand to India may go up to a maximum 1.50 mtpa in the future.

### Natural gypsum supply from Iran

In spite of large gypsum reserves, Iran exports only around 10 per cent of its total gypsum production and the balance quantity is consumed by local cement and construction industries. Iran's local gypsum consumption is around 9 mtpa against the production of 12 mtpa; due to increasing local demand, total exports are expected to remain capped between 2–3 mtpa. In addition, the increasing gypsum production cost and high inflation in Iranian economy will affect local gypsum production and exports. Iran exports its gypsum to Kuwait, UAE, and India, among other nations. Further, importing gypsum from Iran is becoming difficult for Indian consumers because of various issues including restrictions/sanctions imposed by the UN and the US. Iran exports around 30 per cent (0.50 mtpa) of the total export volume to India and this may go up to a maximum of around 1.20 mtpa in the future.

Thus, the situation of potential shortfall in supply, coupled with a huge increase in demand for gypsum in India resulting from rapidly increasing cement production capacity, is expected to cause a significant price increase for gypsum in the years to come. It is in this backdrop that the potential supply of

gypsum from the Sultanate of Oman becomes a very interesting prospect. Even in this shortage of supply scenario, the Indian gypsum demand will be large enough to accommodate new additional import supplies from distant countries like Egypt, Turkey, Mexico, but it will lead to very high FOB and ocean freight prices for Indian consumers.

### Tough times ahead

The tightening demand–supply scenario will be reflected in an upward trend in gypsum FOB prices and delivery prices into India. Gypsum from the Sultanate of Oman will be the preferred source of imports. Oman's gypsum export jumped from around 53 per cent to 1.95 million tonnes in 2012, from 1.25 million tonnes in 2011. However, even after considering the highest quantity of gypsum supply from Oman, the gypsum demand – supply deficit will widen on a yearly basis and this situation will be reflected in an upward trend in gypsum prices. **ICR**

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