PROJECT REPORT

OF

READY MIX CONCRETE

Ready-Mix Concrete (RMC Plant)

Ready-mix concrete is concrete that is manufactured in a factory or batching plant, according to a set recipe, and then delivered to a work site by truck mounted in– transit mixers. This results in a precise mixture, allowing specialty concrete mixtures to be developed and implemented on construction sites. The first ready-mix factory was built in the 1930s, but the industry did not begin to expand significantly until the 1960s, and it has continued to grow since then.

Ready-mix concrete is often preferred over on-site concrete mixing because of the precision of the mixture and reduced work site confusion. Ready-mix concrete, or RMC as it is popularly called, refers to concrete that is specifically manufactured for delivery to the customer's construction site in a freshly mixed and plastic or unhardened state. Concrete itself is a mixture of Portland cement, water and aggregates comprising sand and gravel or crushed stone.

Uses

1. It is used in the construction of bridge, dam etc.

2. It is used in the construction overhead roads, pools, multistoried building etc.

3. It can be directly used at the construction site.

4. It help greater element of automation and precision concrete mixing.

5. A much higher quality and more constituent uniformity and increase standardization and speed which is done ten times faster as compared to site mixed concrete.

Advantages of Ready Mixed Concrete

1. **Quality of Concrete:** Ready-mix concrete uses sophisticated plant and equipment, which enables it to produce quality concrete. There is strict control on the quality of all ingredients through rigorous testing, applying stringent controls on process parameters, meticulously monitors key properties of concrete. All these result in providing uniform and assured quality of concrete to customers. In contrast, in a typical site-mixed concrete there is poor control on the quality of input materials, batching of ingredients and mixing of concrete, thus the resultant quality of concrete is poor, non-uniform and inconsistent.
2. **Speed of Construction**: Mechanized operations at ready-mix plants ensure that construction activities are speeded up. While the production output from a typical site-mixed concrete operation using 8/12 mixer is around 4-5 m3/hour, the output form a 30-60-m3/hour. Thus there is nearly 10-fold increase in the output which translates into direct savings to the customer.
3. Elimination of Material Procurement Requirements and Storage Hassles: With the use of RMC, customers are not required to procure and store cement, aggregates, sand, water and admixtures at site. This not only drastically reduces the space requirements at construction sites

but also minimizes efforts on the part of customers to procure different materials, ensure their proper storage and check their quality parameters from time to time.

4. Saving in Labour Requirement: Site-mixed concrete is a labour-intensive operation and managing large labour force is a big hassle for the customer. With the use of RMC the labour requirements are minimized considerably, thus benefiting customers.
5. Reduction in Wastage: In site-mixed concrete job, wastage occurs in handling of all materials, including cement. The latter is generally of the order of about 2- 3 kg per 50 kg bag of cement. All such wastages are considerably minimized at RMC plant facility.
6. Improved Life Cycle Cost: Increased speed of construction coupled with reduction in labour cost and wastage results in considerable savings to customers. Further, the improved quality of concrete translates into enhanced long-term durability of concrete, thus minimizing the maintenance and repair costs. Overall, when one considers the life cycle costs, the use of RMC become cost-effective in the long run. The benefits directly accrue to the customers.
7. RMC is Eco-Friendly: All plants of RMC pass the pollution control norms and are duly certified by the state pollution control authorities. As mentioned earlier, wastages are reduced drastically with the use of RMC. RMC plant can optimizes the mix proportions using the maximum possible potential from each material ingredient. All these improve the environmental performance of concrete.

Market Outlook:

The RMC sector in India is growing rapidly at a pace of 25-30 per cent annually the business is still in its infancy – the gap between the organized and unorganized sector wide. In industrialized countries ready mix concrete forms around 70-75 per cent of the market share. With India building up its infrastructure and cities see a spurt in verticalisation the ready mix sector is expected to play an increasingly dominant role mainly because it is seen as the most viable option to speed up construction. RMC is also being increasingly preferred alternative for most real estate developers because site mixed concrete is dependent on the availability of labour.

Overall ready-mix penetration in India is around 9% but it is projected to be 14% by 2017-18. The demand is highest from the housing segment followed by infrastructure and industry respectively. While earlier, demand for RMC was largely seen in the metros, the industry has now grown to all parts of the country including Tier 2 and 3 cities.

The global ready-mix concrete market size was valued at USD 492.2 billion in 2015. The market is anticipated to witness immense growth over the next eight years on account of increasing construction spending for infrastructure development in emerging economies of China, India, Mexico, South Korea and Singapore.

RMC is being increasingly used as a building material for residential & commercial buildings, manufacturing facilities, energy generation plants, roads and runways. Infrastructure development in emerging economies coupled with increasing trend of urbanization is some of the key factors which are expected to drive industry growth over the forecast period.

Materials Required For RMC

Admixtures:

A substance added to the basic concrete to alter one or more properties of the concrete, i.e. fibrous materials for reinforcing, water repellent treatment and coloring compounds.

- Air-entrainment admixtures (mainly used in concrete exposed to freezing and thawing cycles)

- Water reducing admixtures ,plasticisers (reduce the dosage of water while maintaining the workability)

- Retarding the admixtures(mainly used in hot weather to retard the reaction of hydration)

- Super plasticizer or high range water reducer(significantly reduce the dosage of water while maintaining the workability)

- Miscellaneous admixtures such as corrosion inhabiting, shrinkage reducing, coloring. Pumping etc.

Aggregate:

Inert particles (i.e. gravel, sand, and stone) added to cement and water to form concrete.

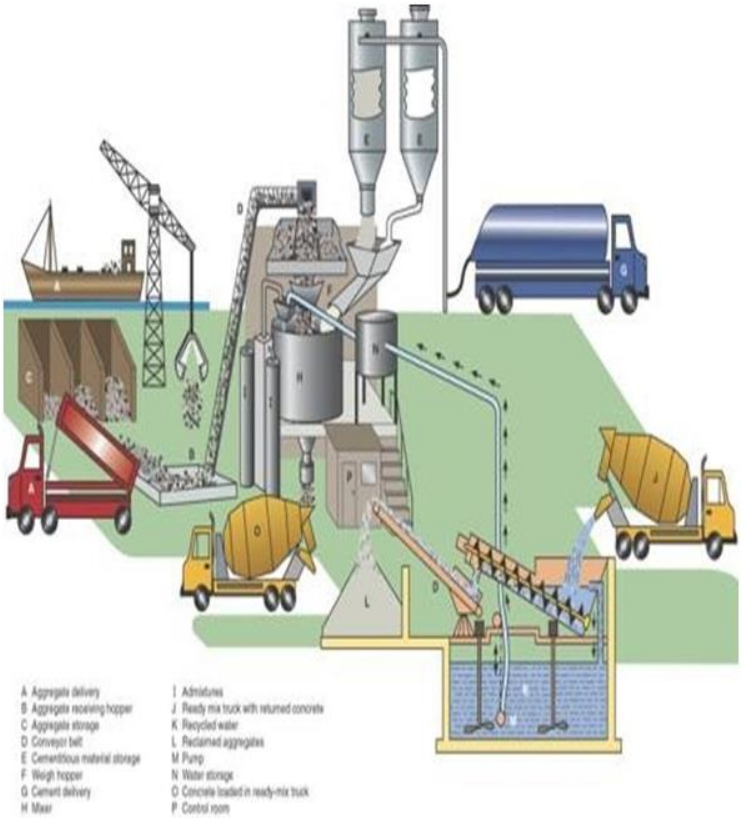
Mainly used aggregate size is 10mm & 20mm.

Cement:

Dry powder that reacts chemically with water to bind the particles of aggregate, forming concrete. Portland cement is typically used in concrete production.

Fly Ash:

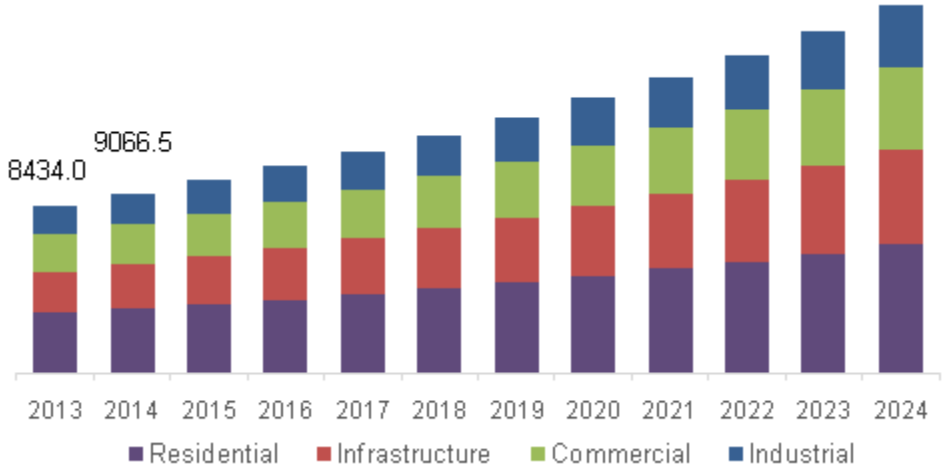
Fly ash is a byproduct of coal fired electricity generating power plants. Mainly composed of combustible elements such as carbon, hydrogen and oxygen (nitrogen and sulfur being minor elements), and non-combustible impurities (10 to 40%) usually present in the form of clay, shale, quartz, feldspar and limestone. As the coal travels through the high-temperature zone in the furnace, the combustible elements of the coal are burnt off, whereas the mineral impurities of the coal fuse and chemically recombine to produce various crystalline phases of the molten ash. The molten ash is entrained in the flue gas and cools rapidly, when leaving the combustion zone (e.g. from 1500°C to 200°C in few seconds), into spherical, glassy particles. Most of these particles fly out with the flue gas stream and are therefore called fly ash. The fly ash is then collected in electrostatic precipitators or bag houses and the fineness of the fly ash can be controlled by how and where the particles are collected.



Market Survey

The ready-mix concrete market is expected to witness a steady growth rate during the forecast period, 2018 – 2023.

Global Ready-Mix Concrete Market Volume, By Application, 2013 To 2024 (Million Tons)

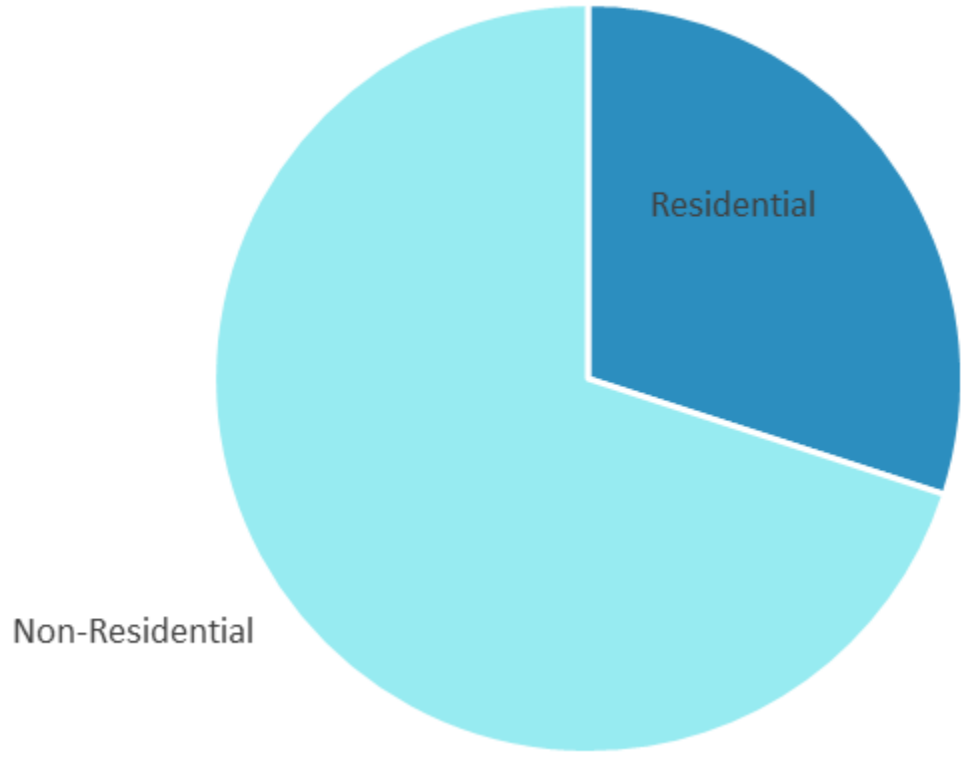


The growing number of infrastructure projects, including bridges, roads, dams, and airport expansion works, especially in developing nations is fueling the demand for ready-mix concrete. The global ready-mix concrete market is thus expected to witness high growth in the coming years. Some of the other reasons behind the growth of the market are high government spending on construction, manufacturing, and power plants, the growing population, and the trend of urbanization.

Ready-mix concrete is a type of concrete that improves durability and sustainability. It is an easier option purchasing the raw materials individually and experimenting every time with handling and proportioning, is not involved. The global ready-mix concrete market is a very dynamic market and is expected to witness high growth over the forecast period. The global ready-mix concrete market has been segmented by production (on site and off site), by application (Commercial, Residential, Infrastructure, Industrial utilities) and by region (the Americas, Europe, Asia-Pacific and RoW). Increased construction of residential and commercial complexes is also expected to boost ready-mix demand during the coming years. Rapid population expansion, coupled with the infrastructural requirement in Saudi Arabia, has led the government to initiate several large-scale construction works in order to ease pressure on existing infrastructure, which, in turn, will spur the market growth over the forecast period. Growing population and increasing disposable income in China and India will drive the construction growth, which in turn, will spur the demand for RMC.

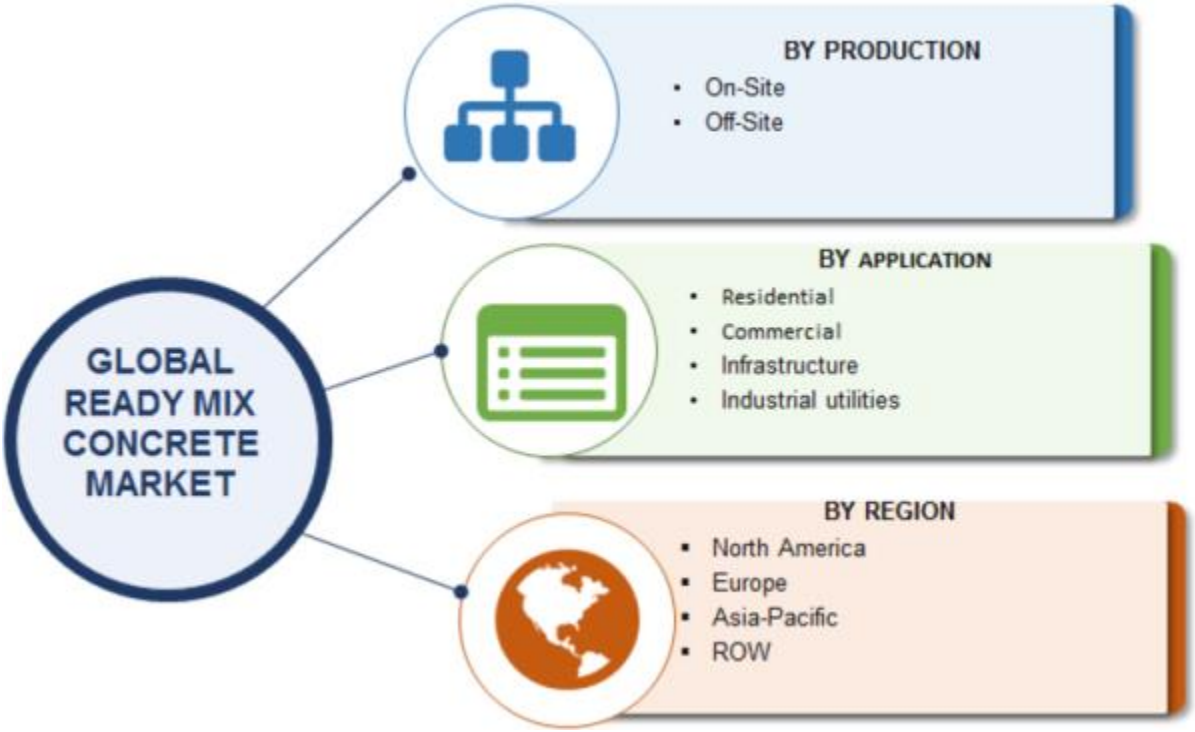
Ready-mix concrete owing to their superior features are widely used in non-residential applications, such as in commercial, infrastructure, and industrial. India has even experienced significant interest from foreign investors in its infrastructural sector.

Ready-Mix Concrete Market, Application (in %), Global, 2017



RMC is being preferred over traditional concrete owing to ease of use, greater convenience, economy, and better quality. Furthermore, wastage reduction, low inventory costs, and efficient utilization will lead to the lowering of the overall project expenditures which in turn will augment the product demand over the upcoming years.

Ready-Mix Concrete Market-By Segment:



The global ready-mix concrete market can be segmented on the basis of geography into Asia Pacific, North America, Europe, and the Rest of the World. In terms of geography, Asia Pacific accounted for the majority market share during 2016 and will continue to dominate the market for the next four years. Asia Pacific will lead in the market owing to a growing number of new infrastructural projects in India, Singapore, China, and Thailand. Rapid industrialization and urbanization in these countries are behind the growth of the market in Asia Pacific. Some of the major factors responsible for the market's growth in the region is the rapid industrialization, population growth, urbanization, and favorable government policies, availability of cheap resources and skilled workforce, and low operational and labor costs. On the other hand, it is expected that the introduction of new infrastructure construction projects will create a heightened demand for ready-mix concrete. This will ensure a continued growth of the market in the coming years.

Growing population and increasing disposable income in China and India will drive residential construction growth which in turn will spur the demand for RMC. Moreover, establishment of manufacturing facilities and power plants to keep up with the growing demand for energy on a global scale will further stimulate the product requirement over the forecast period.

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TO WHOM SO EVER IT MAY CONCERN

This is to certify that the proposed capital investment of M/s R.B. Ready Mix, Prop: Mrs. Sachin Sharma, Plot No.7, Bhagwanpur Industrial Estate Behind Hotel Arya Pride, Kalinga Vihar Road Patrapada, BHUBANESWAR- 751019, represented through its proprietor Mrs. Sachin Sharma, 19 Laxmi vihar, Nandankanan Road, Patia- Bhubaneswar- 751024, Includes undepreciated investment in Land, Building, Plant & Machinery and Electrical installation (excluding working capital) as given below.

Sl No.	Particulars	COST OF INVESTMENT (Rs.)
1	Plant & Machinery	93,71,000
2	Electrical Fitting	1,00,000
3	Furniture	2,00,000
4	Rent of Building (5 years) (20000x12x5)	12,00,000
	TOTAL	1,08,71,000

The above information is started on the basis of information furnished by authorized person which may vary after completion and renovation and other relevant documents produced before us for verification.

R. GOPAL & ASSOCIATES * BHUBANESWAR * CHARTERED ACCOUNTANTS

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