

# CEMENT INDUSTRY IN INDIA: PRODUCTION & CONSUMPTION

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## Abstract

Cement is very important material for any type of construction work and for infrastructure development. It was invented in England in the year 1824 which is known as Portland cement. In India first Cement Company was established in the year 1914 at Porbandar, Gujarat with capacity of 10,000 tonnes. After that the cement production was gradually increase in India. Now a days with seven sectors in India, India is at the second position in worldwide production of cement after china which are followed by USA, Indonesia, Turkey and other countries of the world. The production was 283.46 in MTPA was 2015-16 is increase and reach to 337.32 in 2018-19. Till December'19 it reaches to 247.43 in only nine months and it is expected to reach 401 MTPA in 2020-21. Compound Annual Growth Rate (CAGR) in production of cement in India is 5.59%. while in consumption is 5.20%. It is expected to achieve 550-600 Million Tonnes per annum (MTPA) constantly by 2025 because of the expanding requests of different divisions' i.e. housing, commercial construction and industrial construction. If the sector-wise consumption checked then it is 65% belongs to housing and real estate sector, 25% consumption by public infrastructure and rest 10% by industrial development. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it.

**Keywords:** Cement, production, second position, CAGR, sector wise consumption

## INTRODUCTION

Cement is the concrete material used in construction work. Cement industry in any country plays vital role in development of country as well as in economic growth also. There are main three needs of human being. (1) Food (Roti) (2) Cloth and (3) House/Shelter (Makan). For fulfillment of first two needs the agricultural is very helpful but for fulfillment of third need the infrastructure development is very important. Cement plays very important role in development of infrastructure.

Ever since civilizations stepped in the earth, people sought a material that would bind stones into a solid, formed mass. In ancient time when the cement was not invented then the people used stone and mud to build house which was known kachha house. The Assyrians and Babylonians used clay for this purpose and the Egyptians advanced to the discovery of lime and gypsum mortar as a binding agent for building such structures as the Pyramids. The Greeks made further improvements and finally the Romans developed cement that produced structures of remarkable durability. The secret of Roman success in making cement was traced to the mixing of slaked lime with pozzolana, a volcanic ash from Mount Vesuvius. This process produced cement capable of hardening under water.

Joseph Aspdin of Leeds, Yorkshire, England, a British stone mason registered the first patent for invention of cement on 21<sup>st</sup> October, 1824 which is known as Portland cement. It is basically a mixture of compounds, consisting mainly of silicates and aluminates of calcium, formed out of calcium oxide, aluminum oxide and iron oxide.<sup>1</sup> Afterwards it was produced and used worldwide for construction work like roads, house, bridges, ports, reservoir, and railway infrastructure, commercial and industrial infrastructure. Thus, it can be said that the cement industry is a significant contribution to the Government exchequer and one of the pillar of overall planned development of an economy.

### **Cement Definition**

The term cement, meanwhile, derives from the Latin word caementum, which meant stone chippings such as were used in Roman mortar – not the binding material itself.

### **Definition:**

A powdery substance made by calcining Lime and Clay, mixed with water to form mortar or mixed with sand, gravel and water to make concrete. It is a binder, a substance that sets and hardens independently and can bind other materials together.

Lime + Clay + Water = Cement

A powder of alumina, silica, lime iron oxide and magnesium oxide burned together in a kiln and finely pulverized and used as an ingredient of mortar and concrete.<sup>2</sup>

Cement is produced by grinding and mixing of argillaceous and calcareous materials like clay and limestone and then burning the mix at very high temperature (approx. 1450<sup>0</sup> C) for calcinations.

- The calcaneal product is known as Clinker.
- The clinker is cooled and small quantity of Gypsum is added which is finally grounded.

## **TYPES OF CEMENT**

There are different types of cement used globally. The types of cement in India have increased over the years with the advancement in research, development, and technology. The Indian cement industry is witnessing a boom as a result of which the production of different kinds of cement in India has also increased. Mainly there are three types of cement produced which are as below.

1. Ordinary Portland Cement (OPC)
2. Portland Pozzolona Cement (PPC)
3. Special Cement
  - a. Rapid Hardening Portland cement (RHPC)
  - b. Low Heat Cement
  - c. Hydrographic Cement
  - d. White Cement
  - e. Sulphate Resistance Cement
  - f. Quick Setting Cement
  - g. Oil Well Cement
  - h. Clinker Cement
  - i. Blast Furnace Slag Cement
  - j. High Alumina Cement
  - k. Colored Cement
  - l. Air Entraining Cement
  - m. Expansive Cement

## **CEMENT INDUSTRY IN INDIA**

Cement is an essential component of infrastructure development and most important for construction industry, particularly in the government's infrastructure and housing programs, which are necessary for the country's socio-economic growth and development. The demand for cement, being a derived one, depends primarily on the pace of activities in the business, financial, real estate infrastructure sectors of the economy.<sup>3</sup> Thus, the cement industry is one of the important industry for economic development in any country. The total utilization of cement in a year is used as an indicator of economic growth.<sup>4</sup>

India entered into the cement Era in 1914, when the Indian Cement Company Ltd. started manufacturing cement in Porbandar (Birth place of father of nation Shri Mahatma Gandhi), Gujarat with an available capacity of 10,000 tonnes and production of 1,000 tonnes. After that there were so many plants installed all over India. There was a heavy growth seen after liberalization in 1989 when the Government of India declared cement as "free commodity". Presently, there are seven clusters, where Satna (Madhya Pradesh) cluster is the leader in capacity as well as production (CMA 2007). Others are Chandrapur (North Andhra Pradesh and Maharashtra), Gulbarga (North Karnataka and East AP), Chanderia (South Rajasthan, Jawad and Neemuch in

MP), Bilaspur (Chattisgarh), Yerraguntla (South AP) and Nalgonda (Central AP). A total of 210 large cement plants together accounts for 410 million tonnes of installed capacity in the country, while 350 mini cement plants make up the rest. Of the total 210 large cement plant in India, 77 are located in the states of Andhra Pradesh, Rajasthan and Tamil Nadu.

With 509 million tonnes per year (MTPA) of cement production capacity as of March 2019, India is the second largest cement producer in the world and accounts for over 8% of the global installed capacity. Cement production is reached to 337.32 million tonnes in 2018-19.

As of July 2019, the production of cement stood at 28.1 million tonnes. The cement production capacity is estimated to touch 550 MTPA by 2020. Of the total capacity, 98% lies with the private sector and the rest with the public sector. The top 20 companies account for around 70% of the total production.

The demand of cement industry is expected to achieve 550-600 Million Tonnes per annum (MTPA) constantly by 2025 because of the expanding requests of different divisions' i.e. housing, commercial construction and industrial construction.

**Production of Cement in India:** As we discussed earlier, India is the second largest producer of cement worldwide. During the year 2018-19 China and India fulfilled the almost requirement of cement of world requirement. The cement production by different countries in the world is shown in Table no.1.

**Table No. 1**  
**Top Cement Producers in 2019E\* (in MTPA)**

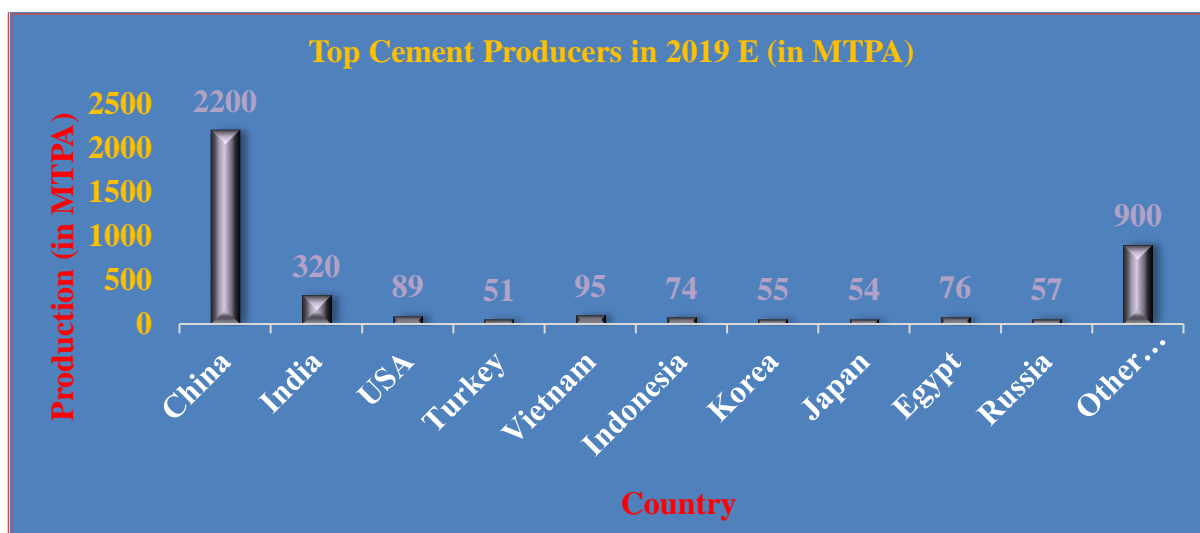
Country	Production (in MTPA)
China	2200
India	320
USA	89
Turkey	51
Vietnam	95
Indonesia	74
Korea	55
Japan	54
Egypt	76
Russia	57
Other Countries	900

(Source: CMA, USGS Mineral Commodities Summary 2019, CRISIL)

\*E= Estimates

As we seen from above table that China was top for manufacturing of Cement in whole world with 2200 MTPA while India is stood at Second position with production of 320 MTPA and following by other countries of world.

The graphical presentation of Top Producer of cement in 2019E is presented in Graph No. 1as below:



## YEAR WISE CEMENT PRODUCTION IN INDIA

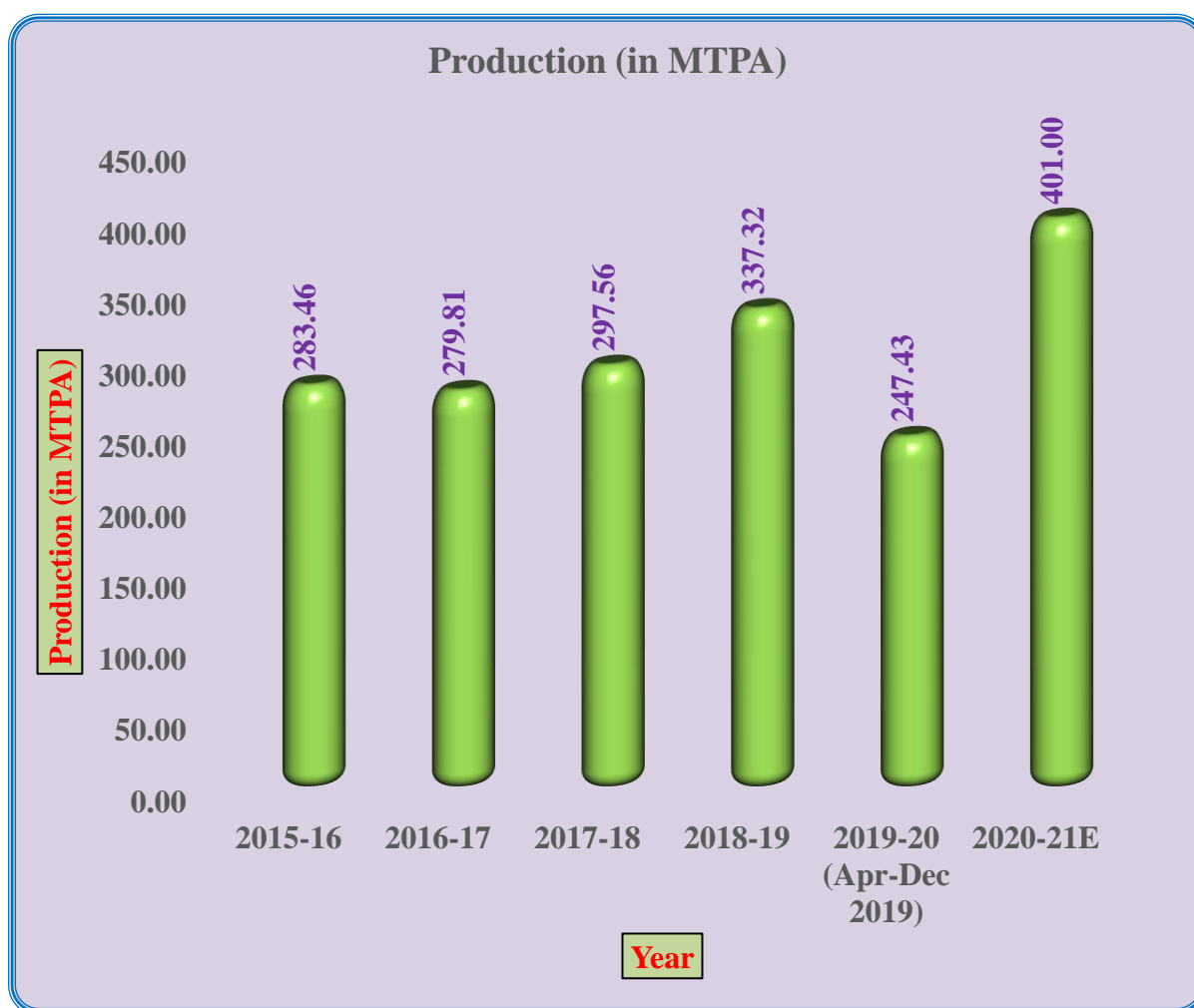
Government of India has decided for fast construction of road, housing for all and dams and other infrastructure development the production is continuously increase in the cement by producers in India. The production was 283.46 in MTPA was 2015-16 is increase and reach to 337.32 in 2018-19. Till December'19 it reaches to 247.43 in only nine months and it is expected to reach 401 MTPA in 2020-21. India's cement production is expected to rise between 5-7 percent in FY20, backed by demands in roads, urban infrastructure and commercial real estate. Compound Annual Growth Rate (CAGR) in production of cement in India is 5.59%. The year wise production is shown in the table no.2 as below:

**Table No. 2**  
**Year wise Production of Cement**

Year	Production (in MTPA)
2015-16	283.46
2016-17	279.81
2017-18	297.56
2018-19	337.32
2019-20 (Apr-Dec 2019)	247.43
2020-21E	401.00

(Source: Media sources, CARE Ratings, Ultratech Cement, ICRA)

The Graphical presentation is presented in the Graph no. 2 as under.



## CONSUMPTION OF CEMENT IN INDIA

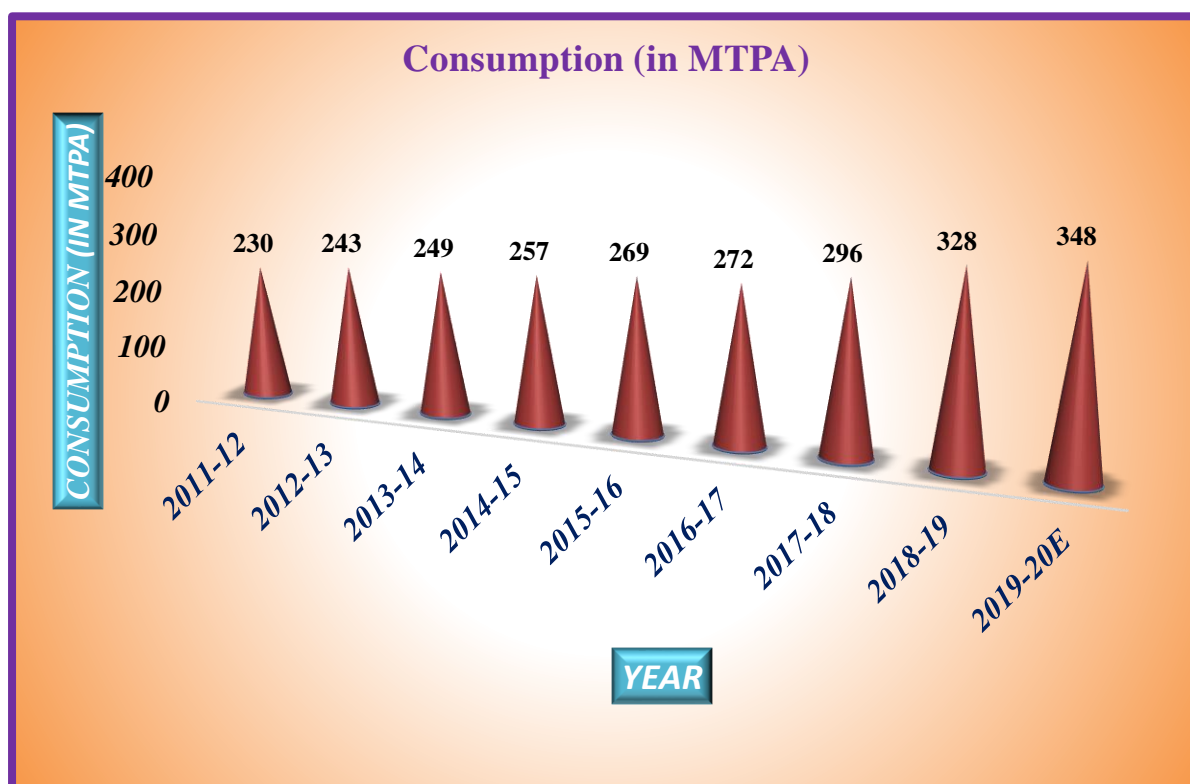
The domestic consumption of the cement is to outpace supply, thanks to the rapid infrastructure development of growth of real estate. For boosting the consumption Government had taken initiatives like sanction of schemes for improving roads and highways connectivity and housing facility related programs and growing demand from the commercial real estate sector. Out of the different end user industry of cement, the housing segment accounted for the highest demand in FY 2018. Within this, 38% demand was generated by the rural housing sector, followed by the urban housing sector was 32%. Such high demand for cement from the housing sector may be attributed to the fast execution of affordable government housing schemes like Pradhan Mantri Awas Yojna and Housing for all by 2022. Apart from housing, commercial and industrial investments, the infrastructure segment accounted for considerable demand for cement in India. The CAGR for consumption of cement is 5.20%. The detail regarding consumption of cement in India in different years is shown in the table no. 3.

**Table No.3**  
**Year wise Consumption of Cement**

Year	Consumption (in MTPA)
2011-12	230
2012-13	243
2013-14	249
2014-15	257
2015-16	269
2016-17	272
2017-18	296
2018-19	328
2019-20E	348

(Source: Media sources, CARE Ratings, Ultratech Cement, ICRA)

The Graphical presentation of cement consumption is presented in the Graph no. 3 as under.



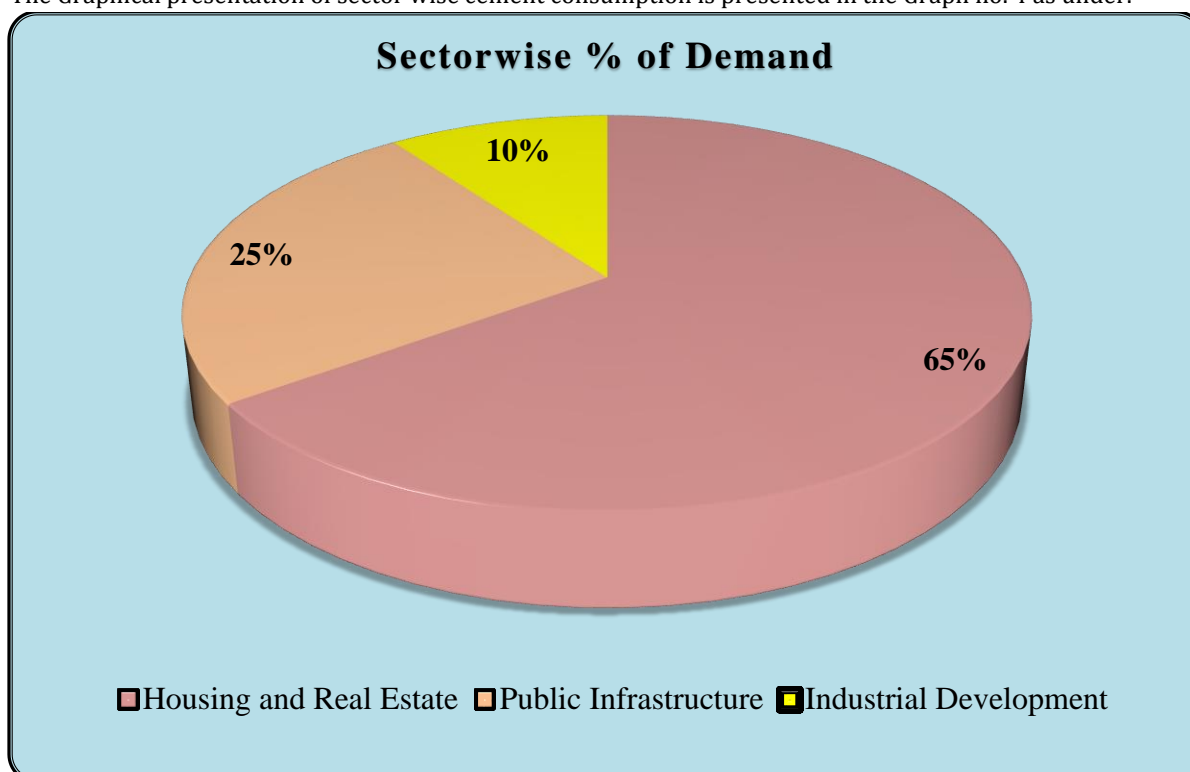
Share of different Sector in Consumption of Cement:

The housing sector urban and rural cumulative is the biggest demand driver of cement, accounting for 65 percent of the total consumption in India. The other major consumers of cement include infrastructure at 25 percent and industrial and commercial construction at 10 percent of the total consumption of cement in India. The detail is shown in the table no. 4.

**Table No. 4**  
**Sector-wise Demand of Cement**

Sector	% of Demand
Housing and Real Estate	65%
Public Infrastructure	25%
Industrial Development	10%

The Graphical presentation of sector wise cement consumption is presented in the Graph no. 4 as under.



(Source: Ministry of External Affairs (Investment and Technology Promotion Division), AT Kearney, CARE Ratings, NAREDCO and APREA)

## REVIEW IN CEMENT INDUSTRY IN CONTEXT OF FINANCIAL YEAR'19

The highlights for Financial Year 2018-2019 are as below:

1. The Indian cement industry witnessed a year of favorable demand scenario, achieving double-digit volume growth, last seen in FY10. With healthy volume off-take and comparatively lesser new capacity addition of 12 MTPA during FY19, capacity utilization for the industry improved to 71%, about 5% higher than the previous year.
2. Cement production grew by 13.3% to 337.32 Million Tonne in FY19 compared with 6.3% growth in FY18. This has been the fastest growth in cement production recorded in one single year over the last decade. Production grew at a CAGR of 5.6% from 230 MT in FY12 to 337.3 MT in FY19.
3. India's exports of cement, clinker and asbestos cement increased at CAGR of 10.5% between FY12-FY20 (April-July 2019) to reach US\$ 177.9 million.
4. During the same period imports of cement, clinker and asbestos cement increased at a CAGR of 8% to US\$ 57.6 million in FY20.
5. To enhance the source of capital for infrastructure financing, Credit Guarantee Enhancement Corporation for which regulations have been notified by the RBI, will be set up in 2019-20.

6. FDI inflow in industry related to manufacturing of Cement & Gypsum products reached US\$ 5.3 billion between April 2000 and June 2019.
7. The growth in production volume during FY19 was higher on the back of increased demand for cement from infrastructure and low-cost/rural/affordable housing segment.

## MARKET OVERVIEW

- India-world's second largest cement market, both in production and consumption.
- Supported by high level of activity going on in real estate and high government spending on smart cities and urban infrastructure.
- Cement production capacity was 509 MTPA as of 2018.
- Capacity addition of 20 Million Tonnes per annum (MTPA) is expected in FY19-FY21.
- The outlook for domestic cement sector is stable for October 2018 to March 2019 as overall demand conditions remain steady.
- In 2019 E, the production of cement in India is estimated at 320 MTPA.

## CONCLUSION

The Government of India is strongly focused on infrastructure development to boost economic growth and is aiming for 100 smart cities. The government also intends to expand the capacity of the railways and the facilities for handling and storage to ease the transportation of cement and reduce transportation costs. These measures would lead to increased construction activity thereby boosting cement demand. As per Union Budget 2019-20, Government is expected to upgrade 1,25,000Kms. of road length over the next five years. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent major initiatives such as development of 100 smart cities are expected to provide a major boost to the sector.

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