

Ceramics

Prelims: Current events of national and international importance | Industry & Minerals

Why in News?

As of early April 2026, many ceramic factories in Morbi, India's ceramic hub, have suspended operations for over 3 weeks due to severe gas supply shortages caused by the ongoing West Asia conflict.

- **Ceramic** - They are ***inorganic, non-metallic, solid materials***.
- **Raw materials** - Clay, silica, feldspar, kaolin, alumina.
- **Process** - Shaping to drying to firing at high temperatures.
- **Structure** - Primarily crystalline, glassy, or a mixture of both.
- **Properties** - Extremely hard and strong in compression, but brittle (prone to fracturing).
- **Durability** - Chemically non-reactive and heat-resistant.
- **Electrical** - Generally good insulators, although some can be conductive or superconducting.
- **Historical Significance** - Ceramics date back to ***Neolithic Age***, earliest pottery for storage and cooking.
- Used in ***Indus Valley Civilization*** for art, utility, and trade.
- Ancient civilizations (China, Mesopotamia, Egypt) perfected ceramic techniques for tiles, pottery, and ornaments.
- Symbol of cultural heritage and technological advancement.
- **Critical Minerals and Ceramics** - Ceramics rely on critical minerals like alumina, silica, zirconium, rare earths.
- Critical minerals policy directly impacts ceramic industry supply chains.
- Advanced ceramics essential for semiconductors, renewable energy, defense applications.
- India's push for critical mineral exploration aligns with strengthening ceramic technology for strategic sectors.
- **Morbi, The Ceramic Hub of India**
 - **Located in** - Saurashtra region of Gujarat

- **Accounts for - 90%** of India's ceramic tile production.
- **Crisis** - Dependent on propane-LPG imports from Persian Gulf; disrupted by Strait of Hormuz blockade.
- Exports to USA, Europe, Middle East.

India is world's 2nd largest ceramic tile producer.

- **Modern Applications of Ceramic**

- **Construction** - Tiles, sanitaryware, flooring.
- **Electronics** - Capacitors, insulators, superconductors.
- **Medicine** - Bio-ceramics for dental implants, bone grafts.
- **Defence** - Ceramic armour, heat-resistant coatings.
- **Energy** - Ceramic membranes, fuel cells.
- **Space** - Thermal protection systems in spacecraft.

Central Glass and Ceramic Research Institute (CGCRI)

- **Established in** - 1950, under CSIR (Council of Scientific & Industrial Research).
- **Located in** - Kolkata.
- **Mandate** - Research in glass, ceramics, refractories, and advanced materials.
- **Contributions** - Optical fibers, bio-ceramics, structural ceramics, nuclear waste immobilization.

Reference

[Indian express | Ceramic](#)

