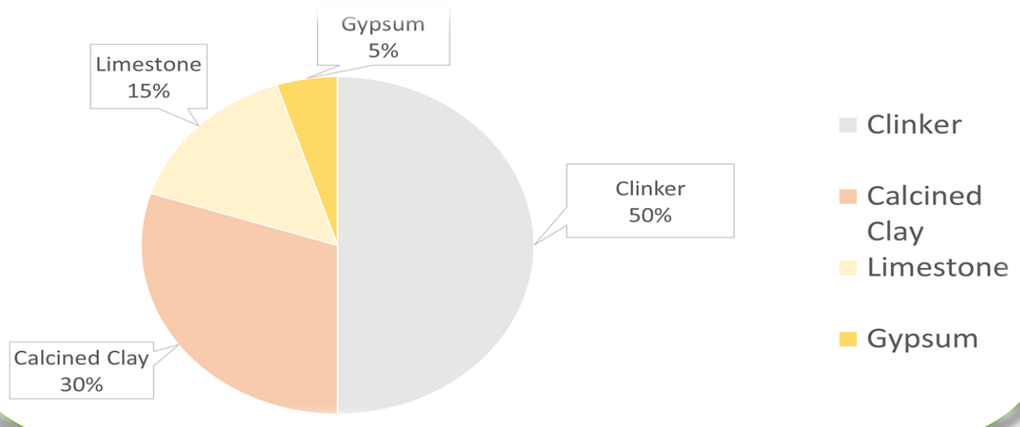
Limestone Calcined Clay Cement (LC3) – Cement for sustainable future

What is LC³?

LC³ (Limestone calcined clay cement) - works out to be a high impact alternative for cement as it makes use of limestone and low-grade clays which are available in abundant quantities.



Significance of LC³?

LC³ – could nearly double the end product (cement) with existing limestone reserves.

LC3 approach can double the cement production for the same quantity of limestone reserve available

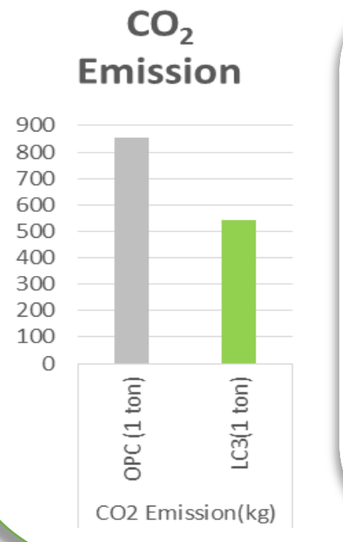
Low carbon

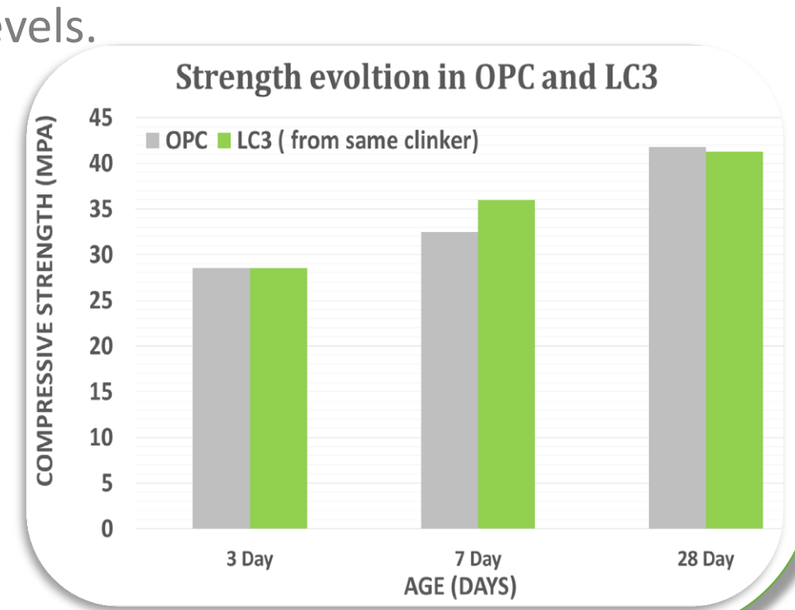
Why LC³?

- **LC³ -** offers a cost effective solution as Limestone and calcined clay can be sourced near the existing cement plants
- Require less capital intensive modifications to existing cement plants.
- Less clinker in cement
- Grinding limestone is less energy intensive
- Calcination of clay occurs at much lower temperature (800^{0}C)
- Reduces CO_2 emissions in cement production by nearly 30%

Potential of LC³?

LC³ – shows comparable strength evolution with ordinary portland cement even at high substitution levels.

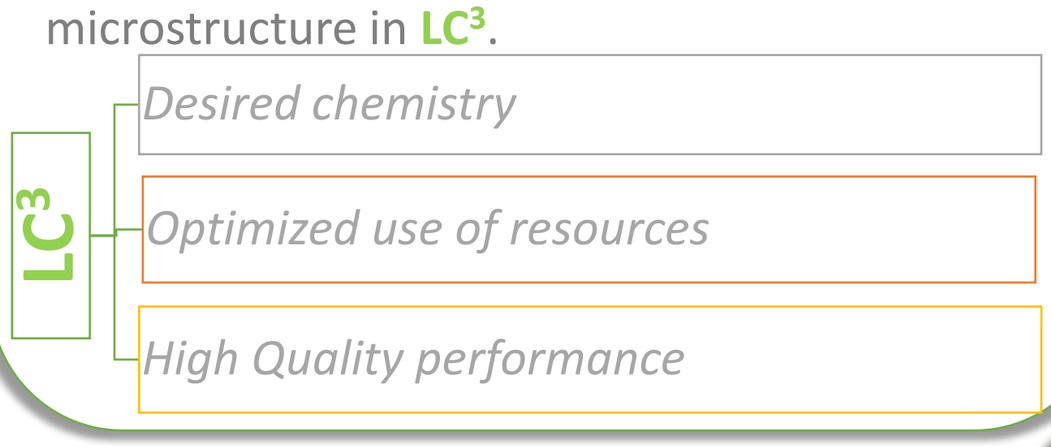




Low cost

How LC³ works?

LC3's- innovation lies with its chemistry. The synergistic reaction from low grade calcined clay in the presence of limestone, which leads to carboaluminate formation resulting in better microstructure in **LC³**.



Applications of LC³?

Hollow blocks

Roof tiles

Demonstration building in Jhansi, Uttar Pradesh, India

LC³ can be used for a wide range of applications from low cost construction materials to High performance concrete for structural applications –*Research ongoing*

Low capital

LC³ - Project

LC³ is a global project with several universities and industry partner working together in assessing cement hydration, microstructure, rheology, mechanical characteristics, creep/shrinkage, durability, chloride/carbonation induced corrosion , and eco-efficiency (CO_2 and H_2O footprint).

LC³ - Indian Team

IIT Delhi, IIT Madras, **IIT Bombay and TARA** are currently involved in making industry scale production of **LC³** cement, evaluating various properties, and transferring technology to the field – an effort towards a sustainable future.

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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Swiss Agency for Development and Cooperation SDC

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

CIDem centro de investigación y desarrollo de estructuras y materiales

TARA

For more details:
www.lc3.ch