

## Cellular Concrete - Advanced Building Methods

Diamond International Constructions offers Cellular Concrete Technology from Germany. We cover the complete spectrum from providing foaming agents, equipment and machinery, up to building your structures in Cellular Concrete on site or pre-cast.



### Benefits of Cellular Concrete

- High Thermal Insulation (500% better than regular concrete). Resulting in enormous fuel savings for cooling down rooms
- High Fire Protection. A Cellular Concrete wall of 10 cm thickness and only 600 kg/cbm achieves a 4 hour fire rating
- Efficient Transport and Crane Handling. 30 – 50% reduction of pay-load cost compared to normal concrete, due to higher volume of raw materials and building elements (loading of more effective material)
- Less Steel-Reinforcement required compared to regular concrete, due to less dead-load
- Superior Sound Absorption (e.g. takes away step-on sounds on floors)
- Raw Material Savings (No gravel and less sand required; more volume due to foaming)
- High flowing capability: Can fill hollow spaces
- Low water absorption
- Very Economical. Cellular Concrete costs less than regular concrete due to expanded volume
- Environmental Friendly. Fewer raw materials required. Foamed concrete can be air cured. No energy for curing required, no toxic or harmful additives required or released.
- Easy to use, produce and handle

## Application of Cellular Concrete

- **Pre-Cast Elements and Panels**

The cellular concrete is cast directly into element or panel moulds. After its setting, the moulds are removed and the cellular concrete element has to harden under standard climatic conditions (air curing) or under steam influence to reduce curing time. This method is used for wall, slab or ceiling panels.



- **Lightweight Concrete Blocks**

A common method in the field of cellular concrete is the block production. The cellular concrete can be cast directly into cassette moulds with the final block dimensions, or big blocks are manufactured and cut to final dimensions.



- **Cast in-situ**

- Flooring system: Cellular concrete is very useful as additional layer in floors. Not only does it even out the floor level, it also reduces subsonic noises.
- Filling of holes and hollow spaces: Due to good flowing properties and low shear forces, cellular concrete is very popular for filling and stabilizing tubes, shafts, tanks, wells, mines or any other hollow spaces.

- Substructures of streets: In road construction, cellular concrete can be used as sub-grade, as substitute or in addition to the common stone sub-grade. This is particularly applicable on soft grounds.
- Roof Insulation: Cellular concrete is used for insulation purposes at flat roofs.



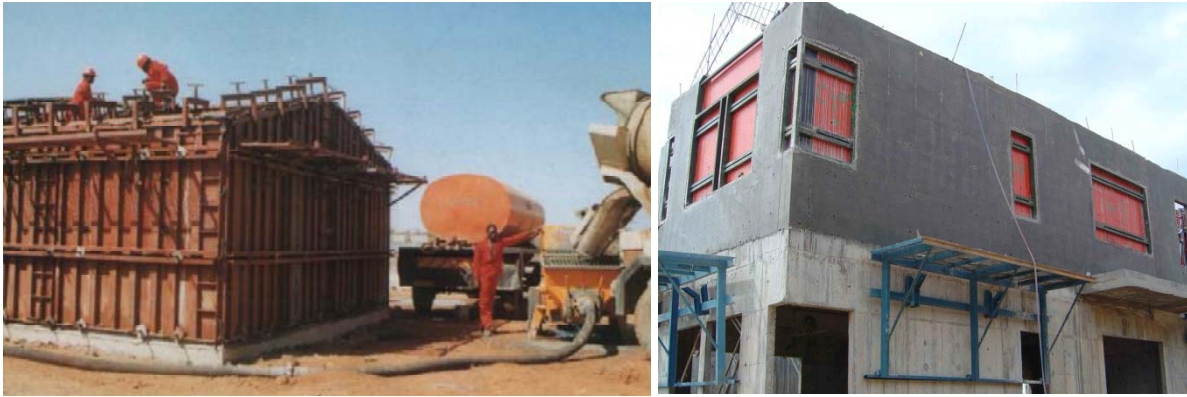
- Structural and Non-Structural Walls: Cellular concrete is used for wall constructions. Wall formwork (including reinforcement, conduits, etc) has to be set up and filled with foamed concrete. After removing the formwork, walls are finished for painting.



## Method References

- 5,000 apartments in Cairo/Egypt
- 10,500 apartments in Singapore
- 7,500 houses in Libya
- 10,000 houses in Brazil
- 2,100 villas in Medina
- 3,000 houses in Tunisia
- 1,300 houses in Botswana

## Cellular Concrete cast in-situ to replace structural concrete frames and brick walls in private housing



### Advantages:

- Faster construction (less manual steps)
- More Accurate, using proper formwork system
- No columns, no inward looking inner corners
- Building weight is equally spread over walls
- No crack formation
- Superior Thermal insulation
- Better sound insulation
- Higher fire rating
- Moisture and water vapour resistant
- No plastering required
- Environmental friendly
- Economical

### Application:

- Steel Reinforcement, Conduits, door and window frames or blockouts are fixed on Formwork System
- Formwork System is put in place
- Regular Concrete (without gravel) is foamed on site to become cellular concrete and placed into formwork. No compacting is required
- After setting, formwork system is stripped and re-assembled at next floor.
- Walls and slabs to be cleaned and ready for painting

## Cellular Concrete Pre-Cast Panels to replace inner, non-structural brick walls



### Advantages:

- Faster construction (less manual steps)
- Manufactured to Standard
- More Accurate
- No crack formation
- Superior Thermal insulation
- Better sound insulation
- Higher fire rating
- Moisture and water vapour resistant
- No plastering required
- Environmental friendly
- Economical

### Application:

- Standard sized panels are “glued” into position
- Gap in between two panel’s edges is filled with grout
- Door openings are simply cut in at required position
- Conduits and electrical cables are placed in horizontal/vertical guidance