

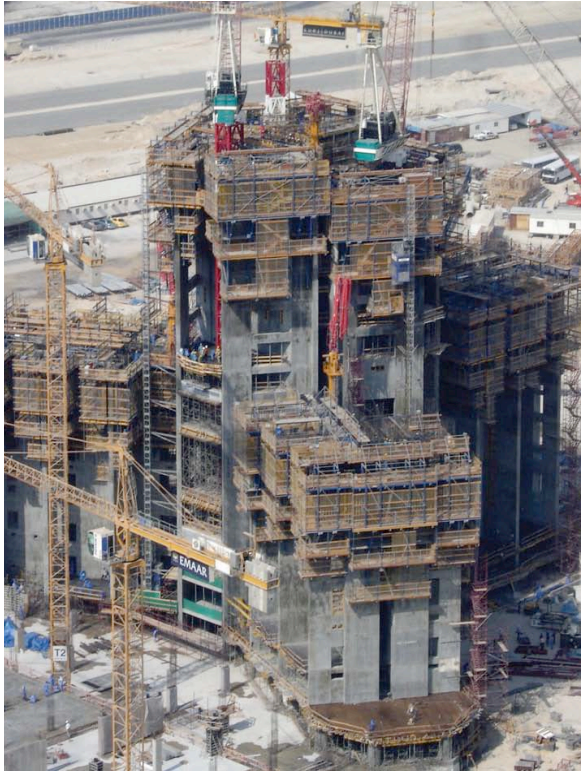
# Job reference

800m Burj Khalifa and  
BASF push the boundaries  
of concrete engineering

 **BASF**  
The Chemical Company

## Challenges

The Burj Khalifa now stands at over 800m tall. To reach this world record the structure of the building had to comply with strict design and durability criteria. One unique challenge was ensuring the concrete mix design for the structural core of the tower was capable of being pumped to formidable heights. The structural core of the tower required nearly 170000m<sup>3</sup> of concrete designed for 80N/mm<sup>2</sup> compressive strength.



## Solution

A series of concrete trials preceded initiation of the project and BASF's Glenium® SKY 504 won hands down. It was the only concrete admixture that could offer the required early strengths and workability retention at ambient temperatures of above 45° C in a mix to be pumped to a height of at least 601m - using a single pump at ground level.

## Application

Getting the mix right – consistently – was critical. Concrete pumps employed a pair of pistons to push the mix through a pipeline to the point of delivery. There is enormous pressure on the concrete in the pipeline from the pistons at these record-breaking heights. In addition, there is the weight of the concrete itself to factor in. Any deficiency in the mix design would create a blockage in the pipeline. Glenium® SKY enabled exacting mixes to be supplied consistently, on an industrial scale, and pumped to the required heights. The hyperplasticiser achieved 100Mpa working on a water cement ratio of 0.27 (i.e., a high cementitious content).



## Other BASF Structure References:

### United Arab Emirates

- Al attar tower - Dubai
- Dubai arch tower - Dubai
- Infinity Tower - Dubai
- Jebel Ali Power Station - Dubai
- Dubai Airport Expansion - Dubai
- Grosvenor House Hotel - Dubai
- Palm Jumeirah Sewage Works - Dubai
- Adwea Headquarters - Abu Dhabi
- Al Jaber Tower - Fujairah

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