



News Release

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Admixtures from Master Builders Solutions[®] optimize construction of the tallest seafront residential tower in the Mediterranean

- » **MasterGlenium SKY enables pumping to a height of 170 meters**
- » **MasterLife protects steel reinforcement against chlorides**
- » **MasterMatrix provides cohesive concrete mixes**

The tallest seafront residential tower in the Mediterranean has been built in Limassol in Cyprus: At a height of 170 meters, the ONE-Tower features 37 floors and is scheduled to become the island's new landmark. Experts from Master Builders Solutions[®] supported the contractor in every stage of construction, providing admixtures MasterGlenium SKY, MasterSet, MasterLife, MasterRoc and MasterMatrix. They made a substantial contribution to the success of this project and enabled a 30% faster concrete placing compared to conventional products, a cost reduction by 30% and a 100% longer corrosion protection. "Our customers benefit of our wide range of admixtures for the most specific challenges," points out Dr. Michael Fischer, responsible at Master Builders Solutions for regional market management for concrete additives in Europe. "In case of the ONE-Tower, the contractor was able to deal with the height of the building, the challenging marine environment and the tight time schedule."

Another benefit was that all admixtures were fully compatible with the Cypriot cements and guaranteed an excellent concrete performance even under high temperatures with a 45 minutes concrete transportation.

Approximately 7.000 m³ of concrete has been poured for the pile construction, 10.000 m³ for the three meters height raft foundation and 20.000 m³ for the vertical pumping of concrete to the upper section of the tower. “In order to pump the concrete in a height of 170 meters, our superplasticizer MasterGlenium SKY 695 was used,” explains civil engineer Georgios Garatziotis, technical support at Master Builders Solutions. “It ensures a constant high-quality ready-mix concrete at a low water/cement ratio and extended workability at high temperatures, without delayed strength development. This is possible thanks to our innovative chemistry.” The particular configuration of the MasterGlenium SKY 695 molecules allows their delayed adsorption onto the cement particles and disperses them effectively over a long period of time. Furthermore, the molecules leave sufficient area on the cement surface to allow a rapid hydration reaction, resulting in high early strength development. “Although the water/cement ratio was very low – effective 0.37 – thanks to MasterGlenium SKY 695 we achieved an aesthetically pleasing concrete of C50/60, with perfect workability, flowability, rheology, cohesiveness, pumping and the ability to pass through the dense multiple reinforcement layers”, says Georgios Garatziotis. By using MasterSet R106XR and MasterSet R200BM set-retarding admixtures the setting time characteristics of the concrete were sufficiently delayed thereby keeping to the tight time schedule.

Challenge of the marine environment

Another challenge was the towers proximity to the Mediterranean with its harsh marine environment. As a watertight protection, experts from Master Builders Solutions used MasterLife WP1000. This crystallizing agent is the perfect solution where watertight concrete is required, which is durable enough to withstand deterioration due to harsh environmental conditions.

During pilling construction (40-meter depth) MasterMatrix UW 444 was used as an anti-washout agent, exhibiting superior resistance to wash-out of cement and fines.

“To protect the steel reinforcement against chlorides from sea water, we used the corrosion inhibitor MasterLife CI 35,” explains Georgios Garatziotis. “It provides reliable protection by adsorbing onto the reinforcing steel to form a corrosion

resistant protective film. This protective film dramatically slows the corrosion process by preventing chlorides from reacting with the reinforcing steel, and by depriving the corrosion process of moisture and oxygen, thus slowing the rate of corrosion once it begins.”

To reach the optimal durability of the building, experts from Master Builders Solutions also added MasterRoc MS 610 to the concrete mixture: This high-quality silica fume powder for high performance concretes changes the porous structure of the concrete making it denser and more resistant to any type of external influence.

With this perfect combination of admixtures from the broad portfolio of Master Builders Solutions, concrete durability for the 170-meter height ONE-Tower is guaranteed.

For more details on the products of Master Builders Solutions, please visit: www.master-builders-solutions.basf.com

Success stories from the Master Builders Solutions sustainability campaign can be found at: www.sustainability.master-builders-solutions.basf.com/en

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The Construction Chemicals division's approximately 7,000 employees form a global community of building experts. To solve our customers' specific construction challenges from conception through to completion of a project, we draw on our specialist know-how, regional expertise and the experience gained in countless constructions projects worldwide. We leverage global BASF technologies and our in-depth knowledge of local building needs to develop innovations that help make our customers more successful and drive sustainable construction.

The division operates production sites and sales offices in more than 60 countries and achieved sales of about €2.5 billion in 2018.

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