

Chryso Southern Africa's products travel 2,300 km to St Helena Airport Project

Products from Chryso Southern Africa travelled 2,300 km over the South Atlantic Ocean to St Helena, one of the most remote islands in the world, to be used at the Basil Read St Helena Airport Project (BRSHAP). All of the materials used in the production of the concrete required, apart from the crushed aggregate, were sourced off the island. Dune sand was obtained from Walvis Bay, while the cement came from Ohorongo Cement in Namibia, the fly ash from Ash Resource's Lethabo plant in Vereeniging and admixtures from Chryso's plant in Cape Town.

"It was extremely important to keep quantities of materials to a minimum as there was limited space on the Basil Read cargo ship NP Glory 4," Brenton Brouard, Chryso Southern Africa, technical manager, explains. "When designing different concrete mix designs, for example, we could not use vast quantities of dune sand because that still had to be transported to the island."

Concrete was specified for the airport runway, terminal building, air traffic control building, fire department building and permanent wharf. Chryso® Plast Omega 101 was used in all of the general concrete as well as the concrete for the runway and the precast concrete used to construct the 700 precast Core-loc armour units and hollow blocks for the wharf. The 100-m-long, 10-m-high and 13-m-wide wharf has a rock breakwater that had to be protected from any possible damage caused by ships.

"When formulating the concrete mix design for the precast units, it was important to achieve a mix with optimised properties. The concrete had to fill complex mould shapes with limited bleed and settlement. Excessive bleed water would lead to unsightly voids in certain element sections, as well as increasing the risk of both plastic settlement and shrinkage cracking," Brouard says.

Therefore 12-mm Chryso® Fibre Plus polypropylene micro fibres were used to increase the cohesiveness of the mix, while

Chryso® Plast Omega 101 assisted in creating an optimised slump. Chryso® Dem Oleo SM was used on all of the moulds to ensure an easy release once the concrete had set, without causing damage to the moulds or concrete.

Concrete also had to be transported over long distances on the island, affecting the slump retention and workability. Chryso® Tard CE retarder was used to retard the concrete setting time. When necessary, Chryso® Rescue Pack slump revival admixture was added to the concrete in a readymix truck immediately before discharge.

"This increases workability and makes it easier to pump or discharge concrete from trucks that may have travelled long distances or been stationary on site for extended periods," Brouard says. Chryso's biodegradable, environmental-friendly cleaning agents Barracuda, Fusion and Truck Wash were used to clean and line the readymix trucks to ensure they remained in good condition.

In order to reduce the need for future maintenance, it was decided to build the runway with concrete instead of asphalt. Manufactured from 27,000 m³ of concrete, the runway is 1,950 m in length, 45 m wide and has a maximum thickness of 350 mm in parts, with reduced thickness to the 'off-keel' sections. The runway is mostly unreinforced.

Commenting on the complexity and size of the project, Jimmy Johnston, project director, BRSHAP, says: "The long logistical chain made planning vital, and BRSHAP needed reliable suppliers such as Chryso that can provide the correct product at the required amount on an agreed date and time." ■

**More information from Kirsten Kelly,
Tel: +27(0)11 395 9700 /www.chryso.com**



Over 700 units of precast Core-loc armour units (7 tonnes per unit) and hollow blocks (27 tonnes per unit before being filled with stone) were placed by crawler cranes via GPS around the wharf from the surface bed to just above sea level.