

Building an airport in

Construction products have 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 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 Resources' 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 Basil Read's cargo ship, NP Glory 4," Brenton Brouard, Chryso Southern Africa's 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

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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 microfibres 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 delay the concrete setting time. When necessary, Chryso Rescue Pack slump revival admixture was added to

