

# Container Terminal No. 9, Hong Kong

In May 2002 the construction of the Container Terminal No.9 commenced in Hong Kong. Controlled Permeability Formwork (CPF) was specified for the casting of quays.

The client required a dense concrete in all reinforced concrete quays and edge structures, exposed at any time to salt water or salt-water spray. Formtex<sup>®</sup> CPF-liner was chosen to secure a dense concrete with extended durability in this aggressive environment.



Figure 1. The construction site at Container terminal No. 9.

## Process

The contractor, Hyundai, carried out a trial in Nov 2001 to determine the effect of different CPF liners.

Formtex<sup>®</sup> was glued to the same metal formwork as the competing products, and the liners were tested in the same casting, so they had exactly the same conditions to perform.

## Follow-up

The concrete cast with the competing CPF-liners appeared smooth but with some cracks. The concrete cast without using formliner appeared rough and with many blowholes. Concrete with Formtex<sup>®</sup> appeared smooth and dense. On the bases of these results and a consecutive testing at an independent test laboratory, Formtex<sup>®</sup> was selected for the Container Terminal No. 9 Project.



Figure 2. The trial beam, with the competing product (left), without formliner (middle) and Formtex<sup>®</sup> (right).



Figure 3. Achieved concrete for competing product (Left), without formliner (middle) and Formtex<sup>®</sup> (right)



# Container Terminal No. 9, Hong Kong, Pictures



Figure 4. Formtex is installed on the base of the formwork for the beam.



Figure 5. The formwork for the huge beams is inspected.



Figure 6. A large crack in the surface of the test of the competing product.



Figure 7. Several cracks in the surface of the test of the competing product.



Figure 8. Surface achieved with Formtex<sup>®</sup>



Figure 9. Test formwork is prepared with the competing product on the left and Formtex<sup>®</sup> on the right.