

FireBarrier 135 Tunnel Fire Protection Systems

Installation of FireBarrier 135 to protect the Al-Azhar Tunnel in Cairo, Egypt against fire.



The Al-Azhar tunnel is a 2.5 km long twin tube concrete tunnel that runs under the city of Cairo close to the famous Al-Azhar Mosque. FireBarrier 135 was installed to the newly-built tunnel to protect the tunnel from collapse during a 1350 °C hydrocarbon fire of 2 hours duration (the RWS fire curve).

In order to prevent collapse, the concrete must be prevented from spalling in a fire. For the type of concrete used in the Al-Azhar tunnel, spalling could take place at a temperature as low as 200 °C. FireBarrier 135 was subjected to a large number of fire tests at the SINTEF laboratory in Norway to verify that this high level of fire insulation could be achieved with a lining thickness of 47mm.

57,000 m² of FireBarrier 135 were installed on the twin tubes of the tunnel by spraying it onto a mesh reinforcement. The use of FireBarrier 135 provided important advantages over the alternative spray-applied fire protection system being considered:

- Can be sprayed in one single layer saving time
- Virtually no wastage during installation, saving time and providing cleaner installation
- Excellent surface finish can be achieved that was painted and used as the final tunnel finish, avoiding the need to use cladding

- High temperature refractory material with verified fire performance in the application conditions
- High-strength allowing the lighting system to be supported from the lining in the roof
- Can be washed by high-pressure water jets without damage



Despite high Summer temperatures, installation of the FireBarrier 135 lining was completed one month ahead of schedule and with material usage exactly in-line with the quantity estimated before installation.

