



SIKA AT WORK

METRO LINE 3, MUMBAI, INDIA

PRODUCTS FOR TBM: Stabilizer for Backfill Grout

BUILDING TRUST





PROJECT DESCRIPTION

The Metro Line 3 will be around 33 km long, running from the north in Mumbai to the south, mainly underground and crossing a large part of the city. It will have 26 underground stations.

Due to the complexity and size of the full project, the construction of the full line was divided in seven contracts, awarded in 2016 to different companies.

TBM DESCRIPTION

In order to excavate the full tunnel (twin tubes), 17 TBMs (including rock, EPB and mix-shields) are used. Even with specific characteristics, all the TBMs have an excavation diameter of around 6.5 m and are supplied by different manufacturers from Europe and Asia.

During normal conditions, each of these TBMs can easily reach an excavation rate of over 15 m per day.

PRODUCT DESCRIPTION

Excavation with shield TBMs means that precast concrete segments are installed to form the tunnel and an annular gap remains between the segments and the excavated ground. The filling of this annulus is a very important requirement as it ensures homogeneous contact with the ground, transfers load from the TBM gantry, and also can help to water-proof the tunnel.

For this project, a two component grout is prepared by mixing a blend of water/cement, bentonite and retarder (component A) with an accelerator (component B). These get mixed just before the component A is injected through the shield on the back of the TBM and transforms from a creamy liquid to a gel in around 10 – 15 seconds. The final mix has a comparable compressive strength to that of the surrounding ground and can fill every gap and void before it sets and hardens.

For the required flow and retarded set effects SikaTard® R is used. SikaTard® R is locally developed to stabilize the backfilling grout during the full project. The gel time can even be optimized with variation in the dosage. The compressive strength of the grout (at 1 and 24 hours) is proven to be optimized the best with SikaTard® R. Additionally the compatibility and good reaction with other components of the grout mix, such as bentonite and accelerator, was shown to be very effective.

PROJECT PARTICIPANTS

Owner: Government of India and the State Government of Maharashtra State

Client: Mumbai Metro Rail Corporation Ltd (MMRC)

Construction: Sika supplies all the 7 packages of the full project:

- Larsen & Toubro and Shanghai Tunnel Engineering Co (2 sections)
- Doğuşand Soma
- Hindustan Construction Co and Moscow Metrostroy

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



Sika Services AG
Tueffenwies 16
CH-8048 Zurich
Switzerland

Contact
Phone +41 58 436 40 40
www.sika.com

BUILDING TRUST

