



# SIKA AT WORK

## ESAN ECZACIBAŞI POLY- METALLIC LEAD-ZINC MINE, TURKEY

DEEPEST TURKISH POLYMETALLIC MINE

BUILDING TRUST



# DEEPEST TURKISH POLYMETALLIC MINE

## PROJECT DESCRIPTION

The Esan Eczacıbaşı polymetallic lead-zinc mine is located in the historic Balya lead-zinc-silver mining district of north-western Turkey. The mine in the Balya property is operated by Esan Eczacıbaşı Endüstriyel Hammaddeler San. ve Tic. A.Ş. ("Esan") a private Turkish company. Esan operates numerous mines and processing plants in Turkey, and is one of Turkey's leading producers of raw materials and base metals.

Mineralization at Balya consists of Pb-Zn rich skarn and carbonate replacement zones hosted in limestones and dacites in a series of multiple, stacked horizons. Eczacıbaşı is a flotation mill operation with extensive underground infrastructure using cut-and fill mining method. Esan started processing ore at the Balıkesir Balya plant in 2009 and today, the mine is Turkey's deepest lead-zinc operation. Underground drifts amount to 92 km in length with the deepest workings being located around 836 meters below surface. Several adits provide access. Due to heavy mine traffic and demanding development schedules, efficient operation solutions as well as technologies for rapid mine development are sought after. Sika Turkey is a long standing partner of Esan at this mine site.

Front image: Sika admixture tank farm at the mine site.



Overview of the mine site and the processing facilities.

## RAPID MINE DEVELOPMENT

Over the years, Sika was involved in various projects at the mine site. Sika Turkey strongly assisted the mine site crew with improved shotcrete efficiencies, upgrading the concrete mix design for wet sparging as well as shortening cycle times using latest, powerful Sika accelerator technologies that allow shorter re entry time after the shotcrete has been applied. Sika also introduced modern fiber technology to the site, using the world leading SikaFiber® macrosynthetic fiber in order to reduce screen installations and counter corrosion of the primary support.

Due to heavy haulage traffic, main drifts as well as the ramp are equipped with heavy duty concrete slabs. In order to provide rapid installation and curing of these slabs, Sika provided a special concrete mix design, including latest Sika Rapid®-Sika Viscocrete® and SikaFiber® technology in order to provide rapid curing, optimal workability and sufficient open time to cope with long transportation distances. Furthermore, adequate compressive as well as flexural strength was critical. Sika has proven to be a reliable partner for many other projects at the site such as hydraulic backfill, abrasion resistant ore pass liners, cementitious bolting and cable grouting as well as rock consolidation and injection works.

## PROJECT REQUIREMENTS

- Rapid early strength development of shotcrete and haulage slabs
- High final strength
- A minimum dosage of accelerator for the shotcrete
- Excellent yielding properties of the shotcrete liner
- Long slump keeping of concrete and shotcrete and cope with high underground temperatures

## SIKA SOLUTION

Sika's world leading Sigunit® and Viscocrete® technology is among the key elements for the shotcrete and concrete works at Esan Eczacıbaşı. For the shotcrete, the mine relies on the proven Sika Fiber® technology with excellent load bearing capacity at a low fiber dosage. For the haulage slabs, SikaRapid® technology was used extensively. Sika Turkey is not only supplying mine consumables but is also present on site to give ongoing technical support with everything related to underground construction.



Concrete slabs along the main haulage ways of the mine.



Shotcrete testing and shotcrete quality control underground.



Spray equipment for ore pass- and vent raise lining.

# ESAN ECZACIBAŞI, TURKEY



Underground adit.

## SELECTION OF SIKA PRODUCTS

- Sika Viscocrete® Hi-Tech 3621: High range water reducer
- Sika Viscocrete® PC-15: HRWR for high early strength
- SikaTard®-930: Consistency stabilizer
- Sika Rapid®-1: Concrete accelerator
- Sigunit® L5402 AF: Alkali-free, high performance shotcrete accelerator
- SikaFiber® Force-60: Polypropylene Macro-fiber
- Many other Sika construction products

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



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