CONCRETE
SIKA TECHNOLOGIES
FOR MINING
Concrete solutions for mining

If it cannot be grown it has to be mined

In our fast growing world natural resources like iron, copper or coal are crucial for the products of our daily lives. The growth of the world population and the increasing demand for higher living standards all over the world feed the hunger for those resources. Therefore the mining industry is growing fast, new mines are opening or existing mines are expanding towards deeper areas and increased output. The need for fast rock support like shotcrete (sprayed concrete) or durable transport infrastructure made out of concrete is growing accordingly. Sika can provide dedicated products, expert knowledge and service in modern day mining.

Sika Technologies for Mining

Shotcrete

Sika® ViscoCrete® SC
Superplasticizer
SikaTard®
Shotcrete retarder
SikaPump®
Pumping agent
FlexoDrain®
Water drainage system
Sigunit®
Accelerator
SikaFiber®
Micro/macro synthetic and steel fiber
Sika®-PM
Concrete spraying systems
Aliva® rotary machines
Concrete spraying machines
Sika® Shot-3
Ready mixed gunite

Concrete

Since 1910 Sika has made a notable contribution to the development of concrete as a durable building material. Sika, a full range supplier, meets the diverse complexity of the entire concrete production and construction process with solutions for all requirements.

Sika® ViscoCrete®
Superplasticizer
Sika ViscoFlow®
Admixture
Sika Rapid®
Accelerator
Sika Stabilizer
Viscosity modifying agent
Sika Pump®
Pumping agent
Sika Pump® Start-1
Lubricant agent
Sika Fume®
Silica Fume
Sika Fiber®
Micro/macro synthetic and steel fiber
Sika Care
Equipment protection
Sika offers a range of coating products that either protect your structure from abrasive and chemically aggressive fluids or seal entire containment structures. Sika’s coating products protect specific mining infrastructure on a large scale such as process water retention basins, thickeners, leach tanks, flotation cells and tailings processing and storage facilities.

**Sikalastic®**
Sika’s standard coating product, it is polyurea based and is suited to a whole range of applications. A highly chemical resistant modification of Sikalastic® is used to protect equipment and structures that are exposed to aggressive and chemical fluids.

**Sikagard®**
The standard epoxy coating from Sika for a wide range of coating applications.

**Sikadur®, Sikagrout®**
A range of high performance, high precision, cementitious, acrylic or epoxy grouting materials.

**Icosit®-KC**
A 2-component polymer grout, especially designed for fixing heavy machinery and reducing vibration transmission.

**SikaFix®**
Fast reactive injection product which expands with or without contact with water, mainly injected using a 2-C pump. The SikaFix® range of injection products are suited for immediate water blocking under high water ingress and high pressure conditions.

**Sikafloor®**
Fast commissioning and high chemical, thermal and mechanical resistant floor for truck workshop locations that have to endure constant heavy loads and impacts.

**Sikafloor Epocem®**
For repair and leveling of existing concrete. Pavement joints are sealed with elastic polyurethane.
SIKA TECHNOLOGIES FOR MINING
SHOTCRETE APPLICATIONS

SLOPE STABILIZATION
Slope stabilization is used among other methods for increased critical slope angles and mine portals to secure the working area.

ROCK SUPPORT
High efficiency in the application as well as development of highest early strength are required for the application of shotcrete in underground mining.

SHOTCRETE EQUIPMENT
Sika® Aliva® und Putzmeister are able to supply shotcrete equipment for all types of shotcrete.

SIKA SERVICE
Sika is ready to support our mining customers from pretesting to continuous mine site support. From logistics to ongoing optimization and meeting new challenges.

MAIN REQUIREMENTS OF SHOTCRETE IN MINING

High early strength with Sigunit®
Earliest setting for a safe and efficient application are key elements for shotcrete in mining.

Long slump retention with Sika® ViscoCrete® SC technology
Depending on the location and size of the mine, very long transport distances are necessary to supply the shotcrete to the application site.

Laboratory testing
Sika has developed a testing device called “MiniShot” where local raw materials (e.g. binder system), shotcrete accelerators etc. can be tested in a fast and resource saving way. MiniShot labs are located in all major mining regions.

On site testing
After the preselection with the MiniShot system the findings are tested under real conditions. For this purpose well trained shotcrete technicians complete the local shotcrete team to achieve best cost performance for the specific mining application.

Trouble-free application
High performance, speed and therefore no interruptions are important requirements for shotcrete in mining. This is achieved by the perfect mix design of shotcrete in combination with an efficient and reliable admixtures.
SIKA PRODUCTS

Sika® ViscoCrete® SC
Superplasticizer with very strong water reduction and long workability time.

SikaTard®
Slump retention admixture, especially formulated for shotcrete, to control workability time for all temperature conditions.

SikaPump®
Special pumping aids to improve pumpability under difficult circumstances and/or long transport distances.

FlexoDrain®
FlexoDrain® is an easy to use drainage system to handle water ingress in mining.

SikaTell®
Rebound reduction and improvement of the cohesion of the shotcrete can be achieved by the use of SikaTell®.

Sigunit®
Shotcrete accelerators for high early strength requirements. Sigunit® is available as a liquid solution or as a powder to meet the challenging logistics for mining operations.

Sika® Shot-3
Sika® Shot-3 is a cement based, powerfully accelerated single component, ready mixed gunite with precise granulometry and sealing additives.

SikaFiber®
Fibers can significantly improve the ductility and the tensile strength of concrete.

Sika®-PM
A range of robust and reliable concrete spraying machines built for the rough working conditions underground.

Aliva® rotary machines
The Aliva® rotary machines are universal machines for the application of dry and wet shotcrete in the thin-flow process.
SIKA TECHNOLOGIES FOR MINING
CONCRETE APPLICATIONS

Main Requirements of Concrete in Mining

High early strength with SikaRapid® technology
In order to decrease cycle times in underground operations, high early strength is needed to achieve the required compressive strength as fast as possible.

Long workability time with Sika® ViscoCrete® & ViscoFlow® technology
The workability time of the concrete is essential in mining applications, especially for pumped concrete. The transport distances and the temperature are challenging factors to the workability requirements of the concrete.

Good pumpability with SikaPump®
A pumping agent reduces friction and resistance in the pipe, reduces the wear on the pump and the pipes and increases the volume output. A lubricant mix is intended to coat the internal walls of the pipe with a high-fines layer to allow easy pumping from the start.

High resistance against abrasion with SikaFiber®
In order to boost resistance against percussive or striking impact, the toughness and flexural strength of the concrete must be improved.

High flowability with Sika® ViscoCrete® technology
An efficient way of fast and easy placing of concrete is the use of self-compacting concrete. It is able to flow under its own weight, completely filling formwork and achieving full compaction without vibration, even in the presence of congested reinforcement.

Rock Reinforcement

Strong, fast and reliable rock reinforcement is the key in underground mining. The designed concrete has to withstand the demanding conditions of underground mines.

Road Concrete

Transport routes especially those experiencing high volumes of traffic and/or concentrated loads like heavy mining equipment, are subject to high mechanical stress and strong abrasion.

Backfilling

Backfilling becomes more and more important to mining operations and with the use of admixtures various characteristics of the backfill can be positively enhanced.

Slickline Concrete

A suitable concrete mix design and the right admixtures are essential for the concrete to be transported without segregation and blocking of the lines.
SIKA PRODUCTS

**Sika® ViscoCrete®**
Superplasticizer with very strong water reduction and long workability time.

**Sika ViscoFlow®**
Special designed admixture for long workability times under demanding conditions.

**SikaRapid®**
The acceleration of strength development, especially high early strength, is easily achievable with the use of the SikaRapid® technology.

**SikaStabilizer®**
Variations in the raw materials can be compensated by the use of a SikaStabilizer® to improve the cohesion of concrete mix.

**SikaPump®**
Special pumping aids to improve pumpability under difficult circumstances and/or long transport distances.

**SikaPump® Start-1**
SikaPump® Start-1 is a lubricant for the tubes in and reduces the wear and tear of the pumping equipment.

**SikaFume®**
SikaFume® strongly enhances the durability of the concrete.

**SikaFiber®**
Fibers significantly improve the ductility and the tensile strength of concrete.

**SikaCare**
SikaCare is an easy appliable protecting agent against rust and concrete sticking to metal parts of the equipment.
WHO WE ARE
Sika AG, Switzerland, is a globally active specialty chemicals company. Sika supplies the building and construction industry as well as manufacturing industries (automotive, bus, truck, rail, solar and wind power plants, façades). Sika is a leader in processing materials used in sealing, bonding, damping, reinforcing and protecting loadbearing structures. Sika’s product lines feature high quality concrete admixtures, specialty mortars, sealants and adhesives, damping and reinforcing materials, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

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