

PRODUCT DATA SHEET

Sikacrete[®]-520

SHOTCRETE MATERIAL FOR DRY-MIX PROCESS APPLICATIONS

PRODUCT DESCRIPTION

Sikacrete[®]-520 is a pre-blended and pre-packaged shotcrete material formulated for dry-mix process applications. It contains Portland cement, silica fume, blended aggregates, and other carefully selected components to enhance shooting characteristics and physical properties.

USES

Sikacrete[®]-520 can be used for applications including but not limited to:

- Rehabilitation of concrete structures,
- New construction including slope stabilization, soilnailing, shaft and tunnel linings,
- Initial and secondary tunnel support.

CHARACTERISTICS / ADVANTAGES

Sikacrete[®]-520 provides the following benefits:

- Improved adhesive and cohesive plastic properties,
- Significantly reduced rebound, resulting in lower material usage,
- Lower equipment and labor costs compared to alternative application processes.

Sikacrete[®]-520 is blended with the combination of the following optional features and benefits:

Gradation (No Descriptor)

- Blended to meet ACI 506 - Guide to Shotcrete, Table 1.1.,
- Both Gradation No. 1 and Gradation No. 2 are available options,
- By default Sikacrete[®]-520 is blended with Gradation No. 2.

Accelerator (X)

- Improved performance in presence of running water,
- Allows for earlier re-opening of traffic lanes in tunnels,
- Ability to build greater thicknesses in a single pass in both vertical and overhead orientations.

Product	Dosage Level
Sikacrete [®] -520 X	Level 1
Sikacrete [®] -520 X10	Level 2

Poly Fiber (PF)

- Reduces cracking caused by intrinsic stress,
- Temperature reinforcement,
- Alkali, acid, and salt resistant,
- Product with descriptor: **Sikacrete[®]-520 PF.**

Steel Fiber (ST)

- Significantly increased load carrying capacity,
- Significantly increased energy absorbing capacity (toughness),
- Significantly increased impact resistance,
- Reduced permeability,
- Reduced cracking due to drying shrinkage,
- Product with descriptor: **Sikacrete[®]-520 ST.**

PRODUCT INFORMATION

Packaging	Available in 1,675 lb (760 kg), 1,700 lb (771 kg), 3,350 lb (1,520 kg), and 3,400 lb (1,542 kg) bulk bags.
Shelf Life	Shelf life when stored in dry warehouse conditions between 40°F and 95°F (5-35°C) is one year from the date of manufacture.
Storage Conditions	Sikacrete®-520 must be stored in a dry environment. If exposed or unprotected Sikacrete®-520 will absorb moisture resulting in an unusable product. Physical properties may be adversely affected if stored in temperatures below 40°F (5°C) and material should be allowed to warm to ambient underground temperatures before use.

TECHNICAL INFORMATION

Compressive Strength		ASTM C1604
	1 day	1,500 psi (10 MPa)
	7 days	3,000 psi (20 MPa)
	28 days	4,500 psi (30 MPa)
Freeze-Thaw Stability	Durability Factor: 95%	ASTM C666
Porosity	BOILED ABSORPTION 5% MAXIMUM VOLUME OF PERMEABLE VOIDS 14%	
Flexural toughness	Sikacrete®-520 PF	ASTM C1018
	First-Crack	986 psi (6.8 MPa)
	I ₅	508 psi (3.5 MPa)
	I ₁₀	725 psi (5.0 MPa)

APPLICATION INFORMATION

Coverage	Approx. 0.5 yd ³ per 1,700 lb bulk bag (0.38 m ³ per 771 kg bulk bag) Approx. 1.0 yd ³ per 3,400 lb bulk bag (0.76 m ³ per 1,542 kg bulk bag)	
	REBOUND	EXTERNAL CONSULTANT
	Vertical	< 12%
	Overhead	< 20%
Thinner	Sikacrete®-520 X	ASTM C403
	Initial	10 min
	Final	15 min

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

AVAILABILITY/WARRANTY

Each of the following descriptors / features can be used in a specific mix design, either on their own or in combination with any other descriptors / features.

Descriptors / Features of accelerator dosages:

Accelerator	X - Level 1
	X10 - Level 2

Descriptors / Features of fiber dosages:

Steel Fibers	ST
Poly Fibers	PF

Descriptors / Features of other technologies:

Gradation No. 1	(No descriptor)
Gradation No. 2	(No descriptor)

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

APPLICATION INSTRUCTIONS

- Apply in accordance with ACI 506 - Guide to Shotcrete.
- Performance of in-place shotcrete relies heavily upon application techniques. The shotcrete material, equipment, and key personnel should be pre-qualified prior to project start-up to ensure optimum quality of in-place shotcrete.

OPTIMUM PERFORMANCE

- Product should not be applied when ambient, substrate, and material temperatures are below 40°F (5°C) or above 95°F (35°C).
- For adverse temperatures follow ACI recommendations for Cold/Hot Weather Concreting.
- For cold temperature applications, use Sikacrete®-520 X or Sikacrete®-520 X10.
- When using Sikacrete®-520 PF or Sikacrete®-520 ST the minimum recommended inside diameter of shotcrete hoses is 2 inches (50 mm).

Contact your Sika STM Technical Representative for more information.

EQUIPMENT

- Special precautions needed when using predampeners with dry blended powdered accelerated shotcrete.

Contact your Sika STM Technical Representative for more information.

SURFACE PREPARATION

- **Repair or rehabilitation:** All surfaces to be in contact with Sikacrete®-520 and its variations must be free from dust, oil, grease or any other foreign substances that may interfere with the bond of the material. Remove all loose or delaminated concrete providing a roughened surface and a minimum of 1 inch (25 mm) clearance behind any corroded reinforcing steel. The perimeter of the repair area should be saw-cut a minimum of ¼ inch (20 mm). Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD).
- **Rock surfaces:** All surfaces to be in contact with Sikacrete®-520 must be free from dust, oil, grease or any other foreign substances that may interfere with the bond of the material. Remove all loose or delaminated rock. Clean the area with potable water, leaving the substrate saturated but free of standing water (SSD).

CURING TREATMENT

- Curing is essential to optimize physical properties of the shotcrete and minimize plastic shrinkage. Product should be cured immediately after material has reached initial set in accordance with ACI 308 - Guide to External Curing Concrete. Continuously moist cure for a minimum period of seven (7) days. Alternatively, moist cure for a minimum period of 24 hours and apply a curing compound that complies with ASTM C309. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, high winds and low humidity.
- **Underground Environments:** Good curing conditions are beneficial to optimizing physical properties. Although the high relative humidity commonly found in underground environments provides for good curing conditions, additional curing is often appropriate and should be performed in accordance with ACI 308 - Guide to External Curing Concrete.

CLEANING OF TOOLS

- Clean all tools and equipment after use with water. Once hardened, the product can only be removed mechanically.

OTHER RESTRICTIONS

See Legal Disclaimer.

LEGAL DISCLAIMER

- KEEP CONTAINER TIGHTLY CLOSED
- KEEP OUT OF REACH OF CHILDREN
- NOT FOR INTERNAL CONSUMPTION
- FOR INDUSTRIAL USE ONLY
- FOR PROFESSIONAL USE ONLY

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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Product Data Sheet

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