

PRODUCT DATA SHEET

Sikacrete[®]-421 CI Rapid

One-component, early strength-gaining concrete containing factory blended coarse aggregate

PRODUCT DESCRIPTION

Sikacrete[®]-421 CI Rapid is a one-component, early strength-gaining concrete containing factory blended coarse aggregate. This concrete is air entrained and also contains a migrating corrosion inhibitor.

USES

- Full depth repairs
- On grade, above, and below grade on concrete
- On horizontal surfaces
- Vertical and overhead surfaces when formed and pumped or poured
- As a structural repair material for parking facilities, industrial plants, walkways, bridges, tunnels, dams and balconies
- Filler for voids and cavities

CHARACTERISTICS / ADVANTAGES

- High early strength
- Fast-setting
- Integral corrosion inhibitor
- Prepackaged coarse aggregate: Eliminates need to extend material in the field; Eliminates the risk of reactive aggregate
- Excellent workability and finishing characteristics
- Rapid hardening as defined by ASTM C-928 (Type R3)

PRODUCT INFORMATION

Packaging	65 lb (29 kg) bag
Appearance / Color	Gray powder
Shelf Life	12 months from date of production if stored properly in original, unopened and undamaged sealed packaging
Storage Conditions	Store dry at 40–95 °F (4–35 °C). Protect from moisture. If damp, discard material

TECHNICAL INFORMATION

Compressive Strength	<u>2 hours</u>	<u>3,000 psi (20.7 MPa)</u>	(ASTM C-39) 73 °F (23 °C) 50 % R.H.
	<u>1 day</u>	<u>5,000 psi (34.5 MPa)</u>	
	<u>7 days</u>	<u>6,000 psi (41.4 MPa)</u>	
	<u>28 days</u>	<u>6,500 psi (44.8 MPa)</u>	
Flexural Strength	<u>28 days</u>	<u>1,000 psi (6.9 MPa)</u>	(ASTM C-293)
Splitting Tensile Strength	<u>28 days</u>	<u>650 psi (4.5 MPa)</u>	(ASTM C-496) 73 °F (23 °C) 50 % R.H.
Shear Strength	<u>1 day</u>	<u>1,700 psi (11.7 MPa)</u>	(ASTM C-882 Modified)
	<u>7 days</u>	<u>2,300 psi (15.9 MPa)</u>	
	<u>28 days</u>	<u>3,000 psi (20.7 MPa)</u>	
* Mortar scrubbed into substrate (73 °F (23 °C) and 50 % R.H.)			
Shrinkage	<u>Water Cured</u>	<u>0.012 %</u>	(ASTM C-157 Modified per ASTM C-928)
	<u>Air Cured</u>	<u>-0.016 %</u>	
28 days results at 73 °F (23 °C) and 50 % R.H.			
Freeze-Thaw Stability	<u>300 cycles</u>	<u>> 90 %</u>	(ASTM C-666)
Rapid Chloride Permeability	<u>28 days</u>	<u>600 (Very Low)</u>	(ASTM C-1202 AASHTO T-277)

APPLICATION INFORMATION

Mixing Ratio	5.5-6 pints (2.6-2.8 L)	
Coverage	0.5 ft ³ (0.01 m ³) per bag (Coverage figures do not include allowance for surface profile and porosity or material waste)	
Layer Thickness	Min.	Max.
	<u>1" (25 mm)</u>	<u>8" (203 mm)</u>
Product Temperature	65–75 °F (18–24 °C)	
Ambient Air Temperature	> 40 °F (4 °C)	
Substrate Temperature	> 40 °F (4 °C)	

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

- Surface must be clean and sound. Remove all deteriorated concrete, dirt, oil, grease, and other bond-inhibiting materials from the area to be repaired.
- Be sure repair area is not less than 1" (25.4 mm) in depth.
- Preparation work should be done by high pressure water blast, scabblor or other appropriate mechanical means to obtain an exposed aggregate surface profile of $\pm 1/8"$ (3.2 mm) (CSP-7-8).
- To ensure optimum repair results, the effectiveness of decontamination and preparation should be assessed by a pull-off test.
- Saw cutting of edges is preferred and a dovetail is recommended.
- Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application.

PRIMING

- **Reinforcing steel:** Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be high pressure washed with clean water after mechanical cleaning. For priming of reinforcing steel use Sika® Armatec® 110 EpoCem (consult PDS).
- **Concrete Substrate:** Prime the prepared substrate with a brush or sprayed applied coat of Sika® Armatec® 110 EpoCem (consult PDS). Alternately, a scrub coat of Sikacrete®-421 CI Rapid can be applied prior to placement of the mortar. The repair mortar has to be applied into the wet scrub coat before it dries.

MIXING

- Start mixing with 5.5 pints (2.6 L) of water.
- An additional 0.5 pint (0.2 L) can be added if needed.
- Do not overwater as excess water will cause segregation.
- Add Sikacrete®-421 CI Rapid while continuing to mix. Mix to a uniform consistency, maximum 3 minutes. Mechanically mix with a low-speed drill (400–600 rpm) and paddle or in appropriate-size mortar mixer or concrete mixer.

APPLICATION

- Pre-wet surface to SSD.
- Ensure good intimate contact with the substrate is achieved. To accomplish this, material should be scrubbed into the substrate or other suitable means should be employed such as vibration of the material or pumping under pressure.
- Vibrate form while pouring or pumping.
- Pump with a variable pressure pump.
- Continue pumping until a 3 to 5 psi increase in normal

- line pressure is evident then STOP pumping.
- Form should not deflect.
- Vent to be capped when steady flow is evident, and forms stripped when appropriate.

CURING TREATMENT

- As per ACI recommendations for Portland cement concrete, curing is required.
- Moist cure with wet burlap and polyethylene, a fine mist of water or a water based* compatible curing compound.
- Curing compounds adversely affect the adhesion of following lifts of mortar, leveling mortar or protective coatings.
- Moist curing should commence immediately after finishing. Protect freshly applied mortar from direct sunlight, wind, rain and frost.

* Pretesting of curing compound is recommended.

LIMITATIONS

- As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as Sikadur 32 Hi-Mod.
- Elevated temperatures will decrease working time and slump.
- Rate of strength gain will be reduced at colder temperatures. On site testing is recommended.

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.

OTHER RESTRICTIONS

See Legal Disclaimer.

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.

DIRECTIVE 2004/42/CE - LIMITATION OF EMISSIONS OF VOC

0 g/l

(EPA method 24)

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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