BUILDING TRUST

PRODUCT DATA SHEET

SikaGrout®-500 Aqua

High Performance, Nonshrink, Cementitious Grout For Underwater Applications

PRODUCT DESCRIPTION

SikaGrout®-500 Aqua is a ready to use, pumpable, cementitious, nonmetallic, nonshrink grout, specially designed for use in underwater applications. SikaGrout®-500 Aqua is formulated to exhibit positive expansion.

USES

SikaGrout®-500 Aqua may only be used by experienced professionals.

- In free flow or pumped grouting applications underwater or within tidal zones.
- For bridge columns, wharf piles, concrete piling, slipways, offshore rigging, dams, etc.
- Filling confined cavities, voids, gaps and recesses.
- In applications below the waterline where a nonshrink grout is needed for maximum effective bearing area for optimal transfer of load.

CHARACTERISTICS / ADVANTAGES

- Reduces the risk of significant 'wash-out' when placed underwater
- Provides good impact, vibration and thermal resistance
- Exhibits shrinkage compensating properties
- Nonmetallic; noncorrosive to steel or iron
- Effectively displaces water when installed by tremie method or pumped properly
- Offers rapid strength gain

APPROVALS / STANDARDS

SikaGrout®-500 Aqua meets the performance requirements of ASTM C1107 and CRD-C 621 specifications.

PRODUCT INFORMATION

Chemical Base	Portland cement based formulation containing select fillers, aggregates and special additives
Packaging	50 lb (22.7 kg) bag; 56 bags per pallet (typical)
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 powder from moisture. If permitted to become damp, discard material.
Appearance / Color	Gray powder

TECHNICAL INFORMATION

Compressive Strength	1 day	4,000 psi (27.6 MPa)	(ASTM C109) 73 °F (23 °C), 50% R.H.
	7 days	8,000 psi (55.2 MPa)	
	28 days	9,000 psi (62.0 MPa)	
Modulus of Elasticity in Compression	28 days	5.2 x 10^6 psi (35,853 MPa)	(ASTM C469) 73 °F (23 °C), 50% R.H.
Flexural Strength	28 days	1,200 psi (8.3 MPa)	(ASTM C293) 73 °F (23 °C), 50% R.H.
Splitting tensile strength	28 days	550 psi (3.8 MPa)	(ASTM C496) 73 °F (23 °C), 50% R.H.

APPLICATION INFORMATION

Mixing Ratio	8-1/2 to 9 pints (4.0 to 4.3 liters) of clean, potable water per 50 lb (22.7 kg) bag	
Coverage	0.43 ft^3 (0.01 m^3) per bag at Fluid consistency (Coverage figures do not include allowance for surface profile and porosity or material waste)	
Layer Thickness	**Minimum** 1/2 inch (13 mm)	**Maximum** 6 inches (152 mm)
	For applications thickness greater than 6 inches (152 mm), consult Sika® Technical Services Department.	
Product Temperature	Condition 65 - 75 °F (18 - 24 °C) before use.	
Ambient Air Temperature	40 °F (4 °C) minimum / 95 °F (35° C) maximum *Also refers to ambient water temperature	
Substrate Temperature	40 °F (4 °C) minimum / 95 °F (35° C) maximum	
Pot Life	Approximately 30 minutes	
Thinner	Initial	> 3 hours (ASTM C191) 73 °F (23 °C), 50% R.H.
	Final	< 7 hours

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.

LIMITATIONS

- Do not use SikaGrout®-500 Aqua as an overlay or in an unconfined patch repair. Exposed surfaces should be minimal.
- Avoid application in direct sunlight, during precipitation, when strong winds and/or significant water currents prevail.
- Use only clean, potable water when mixing.
- Apply to sound and well prepared substrates.
- Do not use resin based or solvent based curing compounds on exposed SikaGrout®-500 Aqua surfaces.
- SikaGrout®-500 Aqua does not form a vapor barrier.
- Egg beater paddles are not recommended for use with SikaGrout®-500 Aqua as they tend to entrap excessive air in the mix.
- 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. in dry conditions with an appropriate epoxy such as Sikadur®-32 Hi-Mod.
- Elevated temperatures will decrease working time.
- Rate of strength gain will be reduced at colder temperatures. On site testing is recommended.

ENVIRONMENTAL, HEALTH AND SAFETY

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

Concrete

- Surfaces must be clean and sound. Remove all deteriorated concrete, dirt, dust, oil, grease,

contaminants, laitance and other bond inhibiting materials from the area to be grouted within the form.
- Be sure the grout area is not less than 1/2 inch (13 mm) in depth.
- Preparation work should be done by needle scaling, abrasive blasting, scarifying, high pressure water jetting, scabbling or other appropriate mechanical means. Obtain an exposed aggregate condition with a minimum surface profile of + 1/16 inch (2 mm) [ICRI CSP-4] on clean, sound concrete.
- Prior to placement, mechanically prepared surfaces above the waterline should be brought to a saturated surface dry (SSD) condition.

Steel

- Reinforcing Steel: Should be thoroughly prepared by mechanical cleaning to remove all traces of rust and scale. Above the waterline where corrosion has occurred, steel should be high pressure water jetted with clean water after mechanical cleaning. For corrosion protection of reinforcing steel located above the waterline use Sika® Armatec corrosion protection products or Sikadur®-32 Hi-Mod epoxy (consult applicable current Product Data Sheets).
- Corrosion Resistant Metals: As specified for wet environments, should be mechanically prepared in accordance with industry standards (e.g. stainless steel - profiled by abrasive blast cleaning; galvanized steel - free of rust and scale by hand or power brushing).

FORMING

- When utilizing SikaGrout®-500 Aqua as a pourable or pumpable grout, construct forms to retain grout without leakage.
- Forms should be constructed in such a manner to ensure that minimum surface areas are left exposed.
- Forms must be able to rigidly confine the grout during placement and its positive expansion process.
- Forms around baseplates should be constructed high enough to accommodate head of grout.
- Ensure that an adequate volume of mixed grout is available to allow for a continuous and uninterrupted placement.
- Avoid the entrapment of air pockets in the form by installing bleed tubes and/or provide openings that will allow air and/or displaced water to escape.
- In many underwater applications, it will be necessary to install grouting ports or use tremie pipes that enable the formed cavity to be filled with grout from bottom to top. This will force any air and displaced water upwards, helping to eliminate the possibility of air / water entrapment.
- Forms scheduled for removal after grout has sufficiently cured, should be lined with a suitable bond breaker or form release agent.
- In the absence of grout pumping equipment, construction of a grout headbox is recommended to assist the flow of SikaGrout®-500 Aqua and maintain a continuous placement.

MIXING

- After assembly and preparation of forms, make sure all mixing, placing and clean up materials are on hand.
- Initially wet down all contact parts of mixing equipment.
- Pour the appropriate volume of clean water, approximately 70 °F (21 °C) into a suitable mixing container or appropriate mortar mixer. DO NOT OVER WATER!
- Ambient and material temperatures should be as close as possible to 70 °F (21 °C). If higher, use cold water; if colder, use warm water.
- While mixing, slowly add the entire bag's content of powder to the water.
- Mix thoroughly with a low speed (400 - 600 rpm) drill using a Sika® mixing paddle (reference Sika product code:108139), a jiffy paddle, mortar paddle, or in an appropriate mortar mixer to avoid entraining too much air and until homogenous with no lumps. Scrape side walls of container to ensure a proper mix.
- Mix until uniform in consistency for a maximum 3 minutes (typical).

APPLICATION

- Immediately after mixing, place grout into forms in a manner to avoid air entrapment.
- When SikaGrout®-500 Aqua is being placed underwater, ensure that the end of the hose or tremie pipe is kept within the grout as it is being placed. The hose or tremie pipe can be raised during placement to reduce the development of back pressure but should not be raised above the level of the grout. Tap forms and/or vibrate during placement as necessary, to achieve flow and compaction. SikaGrout®-500 Aqua must be confined in the horizontal and/or vertical directions, leaving minimally exposed grout surfaces.
- After grout has achieved sufficient cure, forms may be removed. Grind or trim exposed grout shoulders to desired profile.
- Refer to ACI 305R, the "Guide to Hot Weather Concreting" or ACI 306R, the "Guide to Cold Weather Concreting" when there is a need to place SikaGrout®-500 Aqua while either hot or cold ambient and substrate temperatures prevail. Thinner placements will be more sensitive to actual temperature

conditions.
- A mockup should be completed on site and inspected by qualified on site personnel (e.g. the design professional) to ensure that means and methods of placement yield satisfactory results.

CURING TREATMENT

- Depending upon actual ambient and substrate temperatures, formwork should be left in place for at minimum 5 days (longer if possible), to prevent moisture evaporation and provide restraint to early age hardened expansion.
- In above ground applications once formwork is removed, per ACI recommendations for Portland-cement concrete, moist curing is required.
- Moist cure exposed surfaces above the waterline with wet burlap and/or polyethylene, a fine mist of water or apply a suitable water based, compatible* curing compound that meets ASTM C309 (e.g. Sika® Antisol®-250 W).
- Curing compounds may adversely affect the adhesion of follow up installations of mortars or protective coatings.
- Protect newly applied material from direct sunlight, wind, rain and frost.
- To prevent freezing of above ground applications, cover with an insulating material (e.g. curing blanket).

* Pretesting of non-Sika water based curing compound for compatibility is recommended.

CLEANING OF TOOLS

Uncured material can be removed from equipment surfaces and finished surfaces with water. Surfaces should be cleaned immediately after use. Cured material can only be removed from surfaces by mechanical means.

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**

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Sika Corporation
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: +1-800-933-7452
Fax: +1-201-933-6225
usa.sika.com