

PRODUCT DATA SHEET

SikaGrout[®]-428 FS

High performance, fast setting, non-shrink, cement grout

PRODUCT DESCRIPTION

SikaGrout[®]-428 FS is a non-shrink, non-metallic, cementitious precision grout powered by ViscoCrete technology. SikaGrout[®]-428 FS is designed to achieve high early strength and exceptional ultimate strengths at a fluid consistency. A structural, precision grout, SikaGrout[®]-428 FS can be placed from plastic to fluid over a temperature range.

USES

- For quick turnaround applications, when rate of strength gain is a significant consideration.
- Grouting of railing posts, foundations, windmills, compressors, etc.
- Non-shrink grouting of machinery and equipment, base plates, sole plates, precast panels, beams, columns and curtain walls.

PRODUCT INFORMATION

Packaging	65 lb (29.5 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

- Applications where a non-shrink grout is needed for maximum effective bearing area.
- To transfer optimum load.
- For grouting rebar, bolts, dowels and pins, etc.

CHARACTERISTICS / ADVANTAGES

- Quick rate of strength gain
- Multiple fluidity with one material
- Outstanding performance in fluid state
- Excellent fluidity, sufficient time for placement
- Non-metallic, will not stain or rust

APPROVALS / STANDARDS

- Meet ASTM C-1107 (Grade C)
- Shows positive expansion as per ASTM C-827

TECHNICAL INFORMATION

Compressive Strength

<u>Plastic</u>	<u>40 °F</u>	<u>73 °F</u>	<u>90 °F</u>	(ASTM C-109) 50 % R.H
5 hours	750 psi (5.2 MPa)	2,500 psi (17.2 MPa)	6,000 psi (41.4 MPa)	
6 hours	1,000 psi (6.9 MPa)	3,500 psi (24.1 MPa)	7,000 psi (48.3 MPa)	
1 day	4,000 psi (27.6 MPa)	7,000 psi (48.3 MPa)	9,000 psi (62.1 MPa)	
3 days	5,500 psi (37.9 MPa)	9,500 psi (65.5 MPa)	11,000 psi (75.8 MPa)	
7 days	7,500 psi (51.7 MPa)	12,000 psi (82.7 MPa)	12,000 psi (82.7 MPa)	
28 days	11,000 psi (75.8 MPa)	13,000 psi (89.6 MPa)	13,000 psi (89.6 MPa)	

<u>Flowable</u>	<u>40 °F</u>	<u>73 °F</u>	<u>90 °F</u>
5 hours	500 psi (3.4 MPa)	2,000 psi (13.8 MPa)	5,000 psi (34.5 MPa)
6 hours	750 psi (5.2 MPa)	3,000 psi (20.7 MPa)	5,500 psi (37.9 MPa)
1 day	3,500 psi (24.1 MPa)	7,000 psi (48.3 MPa)	7,000 psi (48.3 MPa)
3 days	5,000 psi (34.5 MPa)	9,000 psi (62.1 MPa)	9,500 psi (65.5 MPa)
7 days	7,000 psi (48.3 MPa)	11,000 psi (75.8 MPa)	11,000 psi (75.8 MPa)
28 days	10,500 psi (72.4 MPa)	12,500 psi (86.2 MPa)	12,500 psi (86.2 MPa)

<u>Fluid</u>	<u>40 °F</u>	<u>73 °F</u>	<u>90 °F</u>
5 hours	< 200 psi (1.4 MPa)	1,000 psi (6.9 MPa)	4,000 psi (27.6 MPa)
6 hours	< 500 psi (3.4 MPa)	3,000 psi (20.7 MPa)	6,000 psi (41.4 MPa)
1 day	3,250 psi (22.4 MPa)	7,500 psi (51.7 MPa)	8,000 psi (55.2 MPa)
3 days	6,000 psi (41.4 MPa)	8,500 psi (58.6 MPa)	8,500 psi (58.6 MPa)
7 days	7,500 psi (51.7 MPa)	10,000 psi (69 MPa)	10,000 psi (69 MPa)
28 days	10,000 psi (69 MPa)	12,000 psi (82.7 MPa)	12,000 psi (82.7 MPa)

Effective Bearing Area > 95 % (ASTM C-1339)

Splitting tensile strength 28 days > 1,000 psi (6.9 MPa) (ASTM C-496)
73 °F (23 °C)
50 % R.H

Pull-Out Resistance	40 °F	73 °F	90 °F	(ASTM C-1583) 50 % R.H
	1 day	200 psi (1.4 MPa)	> 400 psi (2.8 MPa)	
7 days	400 psi (2.8 MPa)	> 500 psi (3.4 MPa)	> 500 psi (3.4 MPa)	
28 days	450 psi (3.1 MPa)	> 550 psi (3.8 MPa)	> 550 psi (3.8 MPa)	

Tensile Adhesion Strength	1 day	7 days	28 days	(ASTM C-882 modified)*
	1,800 psi (12.4 MPa)	2,200 psi (15.2 MPa)	2,500 psi (17.2 MPa)	

* Mortar scrubbed into substrate at 73 °F (23 °C) and 50 % R.H.

Expansion	40 °F	73 °F	90 °F	(ASTM C-827)
	1 day	Positive	Positive	
7 days	Positive	Positive	Positive	
28 days	Positive	Positive	Positive	

Rapid Chloride Permeability	28 days (60 Volts)	< 1,000 C	(ASTM C-1202 AASHTO T-277)

APPLICATION INFORMATION

Mixing Ratio	Plastic	Flowable	Fluid
	6.5 pts (3.1 L)	7.0 pts (3.3 L)	8 pts (3.8 L)

Coverage	0.50 ft ³ (0.02 m ³) per bag (Coverage figures do not include allowance for surface profile and porosity or material waste)
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Layer Thickness	Min.	Max.
	Neat	1/4" (6.4 mm)
Extended	1" (25.4 mm)	6" (152.4 mm)

Flowability	40 °F	73 °F	90 °F	(ASTM C-939 Modified - 3/4" nozzle)
	< 45 sec	> 30 sec	> 30 sec	

Product Temperature	65–75 °F (18–24 °C)
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Ambient Air Temperature	> 40 °F (4 °C)
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Substrate Temperature	> 40 °F (4 °C)
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Pot Life	~ 10 minutes
	As the temperature will affect the pot life, application temperature: <ul style="list-style-type: none"> ▪ Above 73 °F (23 °C) will reduce the fluidity ▪ Below 73 °F (23 °C) will extend the fluidity

Set Time	initial Set	>30 minutes	(ASTM-266) 73 °F (23 °C) 50 % R.H.
	Final Set	>45–60 minutes	

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.

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)

LIMITATIONS

- Do not use as a patching or overlay mortar or in unconfined areas.
- 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.

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.
- Anchor bolts to be grouted must be de-greased with suitable solvent.
- Preparation work should be done by high pressure water blast, scabbler or other appropriate mechanical means to promote mechanical adhesion.
- To ensure optimum repair results, the effectiveness of decontamination and preparation should be assessed by a pull-off test.
- Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application.

FORMING

- For pourable grout, construct forms to retain grout without leakage.
- Forms should be lined or coated with bond-breaker for easy removal.
- Forms should be sufficiently high to accommodate head of grout.
- Where grout-tight form is difficult to achieve, use SikaGrout®-428 FS in dry pack consistency.

MIXING

- Make sure all forming, mixing, placing, and clean-up materials are on hand.
- Add the appropriate amount of water (depend on the desired flow) of clean potable water (approx 70 °F) into a suitably sized and clean mixing container, using a calibrated measuring jug, or similar, to ensure strict control of the water content (do not over-water).
- Add 1 bag while continuing to mix with a low-speed drill (400-600 rpm) and Sika mixing paddle or a jiffy paddle or in an appropriate mortar mixer.
- Once all the powder has been added, mix for approximately 3 minutes, until a lump-free and uniform consistency is achieved.
- Do not over mix.
- For warmer temperatures use cold water and for colder temperatures use warm water.
- For cold temperature start with 7/8 of a gallon and add remaining 1/8, only if needed for fluid consistency.
- Refer to ACI 306 Guidelines when there is a need to place this grout in cold & hot temperatures.

EXTENSION WITH AGGREGATES

- For deeper applications, SikaGrout®-428 FS may be extended with 3/8" (9.5 mm) pea gravel (plastic and flowable consistencies only).
- The aggregate must be non-reactive (reference ASTM C-1260, C-227 and C-289), clean, well graded, Saturated Surface Dry (SSD), have low absorption and high density, and comply with ASTM C-33 size number 8 per Table 2.
- Variances in aggregate may result in different strengths.
- The addition rate is 30 lb (13.7 kg) of aggregate per bag. It is approximately 2.4 gal (9.1 L) by loose volume of aggregate.

APPLICATION

- Within no more than 10 minutes after mixing, place grout into forms in normal manner to avoid air entrapment.
- Mixed grout in mass will result in faster than expected setting times.
- Plan jobs accordingly so that the grout can be placed right after mixing.
- Vibrate, ram grout as necessary to achieve flow or compaction.
- SikaGrout®-428 FS must be confined leaving minimum exposed surface.
- After grout has achieved final set, remove forms, trim or shape exposed grout shoulders to designed profile.
- Wet cure for a minimum of 3 days or apply a water based curing compound which complies with ASTM C-309 on exposed surfaces.

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

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Product Data Sheet
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