

PRODUCT DATA SHEET

SikaGrout®-212 UG

Non-shrink cementitious mining grout

PRODUCT DESCRIPTION

SikaGrout®-212 UG is a non-shrink, cementitious mining grout with a unique two-stage shrinkage compensating mechanism, compensating for shrinkage in both the plastic and the hardened states specifically designed for mining applications. SikaGrout®-212 UG is non-metallic, contains no chlorides and may be placed at various consistencies ranging from dry-pack to fluid by simply adjusting the quantity of mixing water. This advanced grout offers high strength and durability, ideal for a wide range of underground and surface mining projects.

WHERE TO USE

- Underground and surface applications
- Structural grouting for void filling, base plates, anchor bolts, bearing plates, grout box filling, large crack injection for ground support or slope stabilization, annular void filling, bore hole sealing, reinforce timber cribs
- On grouting works where ability to adjust consistency and achieve accelerated strength development is required

CHARACTERISTICS / ADVANTAGES

- Pre-blended for easy application and maximum field control. Just add water, mix and place
- Versatile, can be applied in any consistency from dry pack to fluid by varying water content
- Reducing water content accelerates strength development and ultimate compressive strength values
- Non-corrosive, does not contain chlorides
- Formulated with inert, non-reactive aggregates to eliminate potential Alkali-Aggregate Reactivity (AAR)
- Excellent pumpability - does not segregate even at high flow; no build-up on equipment hopper
- Low heat development
- Superior freeze/thaw resistance
- Excellent resistance to erosion, and common mining chemical attack
- Retains structural integrity in humid and damp conditions
- Improved bond strength to typical mining substrates
- Maintains contact with surrounding rock and structures without shrinkage

APPROVALS / CERTIFICATES

- Meets ASTM C1107 requirements for Grade C type grouts
- Meets ASTM C136 requirements for aggregate grading: 100 % passing 2.5 mm (3/32 in)

PRODUCT INFORMATION

Packaging	25 kg (55 lb) bag
Appearance / Colour	Powder / Concrete grey
Shelf Life	12 months in original, unopened bag

Storage Conditions

Store dry, ensuring that product is not exposed to rain, condensation or high humidity. For best results, condition product at temperatures between 18 °C and 29 °C (65 °F and 84 °F) before using.

CSC MasterFormat®

03 62 13 | Non-Shrink Grouting: Non-Metallic, Non-Shrink Grouting

TECHNICAL INFORMATION**Compressive Strength**

CAN / CSA A23.2-1B*

	4.6 L (1.21 US gal) / 25 kg (55 lb) bag
1 day	26 MPa (3770 psi)
3 days	42 MPa (6095 psi)
7 days	48 MPa (6965 psi)
28 days	56 MPa (8125 psi)

SikaGrout®-212 UG tested with Sikacem® Accelerator

ASTM C109

Temperature	Dosage	24 hours	2 days	3 days	28 days
0 °C (32 °F)	1 bottle (150 mL)	2 MPa (290 psi)	13 MPa (1932 psi)	24 MPa (3550 psi)	41 MPa (5946 psi)
10 °C (50 °F)	1 bottle (150 mL)	18 MPa (2624 psi)	33 MPa (4855 psi)	40 MPa (5756 psi)	48 MPa (6960 psi)
23 °C (73 °F)	1 bottle (150 mL)	37 MPa (5366 psi)	42 MPa (6070 psi)	45 MPa (6461 psi)	56 MPa (8125 psi)

* Fluid consistency compressive strengths are given as minimum guidelines. Pourable and dry pack consistencies will easily exceed these values. All moulds, mixing tools and powder components were pre-conditioned to the test temperatures. Prepared test specimens were cast and then cured at the indicated test temperatures until the time of testing. Lid should be clamped on mold at all time. Liquid/solids ratio (water + Sikacem® Accelerator/SikaGrout®-212 UG) = 4.6 L (1.21 US gal) of liquid per 25 kg (55 lb) bag of SikaGrout®-212 UG.

Pull-Out Resistance**Anchor Bolt Grouting Applications**

Pull out results [38 mm
(1.5 in) diameter hole]

Hole depth	Load failure	Comments
125 mm (5 in)	78.6 kN (17 670 lbf)	Concrete block split in half
190 mm (7.5 in)	108.2 kN (24 324 lbf)	Concrete block split in half
250 mm (10 in)	126.4 kN (28 416 lbf)	Concrete block split in half

Data based on results obtained from pull tests on 15 M, epoxy coated rebars grouted into 30 MPa (4350 psi), 80 ± 10 mm slump, 6 ± 1 % air entrained concrete block.

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

Expansion

Hardened Expansion
>0 - ≤ + 0.3 %

ASTM C1090 (28 days)

Freeze thaw resistance**Freeze / Thaw Durability**

ASTM C666, procedure A

Relative dynamic modulus	101.9 %
Durability factor	101

No significant change to specimen

APPLICATION INFORMATION**Product Data Sheet**

SikaGrout®-212 UG

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Mixing Ratio	▪ 4.6 L (1.21 US gal) water per 25 kg (55 lb) bag, max.	
	Anchor Bolt Grouting Applications: ▪ 4.15 L (1.1 US gal) water per 25 kg (55 lb) bag	
	Note: Water/Solid ratio: 0.1666	
Yield	Approx. 13 L (0.46 ft ³) of fluid grout per bag	
Application Time	1 hour max.	
Flowability	Flow Cone	CAN/CSA A23.2-1B
	< 30 s	
Setting Time	ASTM C403	
	Initial	4 to 5 h 30 min
	Final	5 to 7 hours

BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

LIMITATIONS

- **Important:** Protect stored material from exposure to rain, condensation and high humidity as moisture may penetrate packaging, causing lumps.
- For best results, condition product to temperatures ranging from 18 °C to 29 °C (65 °F to 84 °F) prior to mixing and installation. Lower temperatures may result in slower strength development and longer cure times.
- Maintain wet grout, ambient and substrate temperatures between 5 °C and 32 °C (41 °F and 89 °F) for a period of 72 hours after placing, unless using Sikacem® Accelerator in mix (refer to Technical Data section).
- SikaGrout®-212 UG must be protected from freezing during setting.
- Minimum application thickness (neat without additional aggregate): 25 mm (1 in)
- Maximum application thickness (neat without additional aggregate): 150 mm (6 in). Thicker applications are possible with the addition of suitable aggregate or MS-S6 SCC UG. Contact Sika Canada for additional information.
- For anchor bolt/dowel grouting, hole diameter should be 25 mm (1 in) greater than bar diameter.
- Anchor bolt/bar holes should be pre-dampened for a period of one (1) hour prior to grouting. Holes must be in saturated surface dry (SSD) condition at time of grouting.
- Do not use as a patching or overlay mortar or in unconfined areas.
- Use only potable water.
- Extending with aggregates will reduce compressive and flexural strengths. Dimensions and grading of

aggregates will influence effect on physical properties; pre-testing is recommended.

ENVIRONMENT, HEALTH & SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

All grease, oil laitance, loose or delaminated rock, ice or snow and any foreign deposits shall be removed from all surfaces with which the grout will come in contact. For concrete surfaces, the concrete shall be roughened to the extent that it does not present a smooth surface, which would impede the bond of the grout to the foundation. All dust and loose particles shall be removed by sandblasting, high pressure waterblasting or other suitable means.

Concrete surfaces less than 28 days old shall be kept wet for at least 12 hours, and older surface for a minimum of 24 hours before placing grout (SSD condition). All free-standing water shall be removed from concrete surfaces prior to grouting. All items to be grouted into place shall be properly positioned and anchored prior to grouting except for anchor bolts and dowels, which may be placed into the fresh grout if job conditions permit and at the discretion of the engineer in charge. For grouting of base plates the formwork used to contain the grout shall be properly constructed and caulked to prevent leakage of grout. Provisions shall be made at the high points for air to be vented as it is displaced by grout.

MIXING

Mix SikaGrout®-212 UG at low-speed (300 - 450 rpm) using a heavy-duty drill fitted with mixing paddle (*Jiffy*

or *Exomixer*®) or in a grout mixer. The size of the mixer should be appropriate to the volume of grout required. Use a minimum amount of water consistent with placeability requirements. After all dry product has been added to the water, continue mixing for three (3) minutes. For application greater than 150 mm (6 in) in thickness, add up to 12 kg (26.5 lb) of 10 mm (3/8 in) coarse aggregate. The aggregate must be non-reactive (reference ASTM C1260, C227, and C289), clean, well-graded, saturated surface dry, have low absorption, high density and comply with ASTM C33, size number 8 per table 2.

APPLICATION

The prepared grout may be pumped or transported to the forms in buckets or wheelbarrows and deposited without delay. External vibration and agitation of the grout in the forms is permitted. Grout having been prepared but not placed within one (1) hour after preparation shall be discarded. Prepared grout shall be agitated until use. Several hours after placement of grout (depending on ambient temperatures) forms may be removed and exposed grout shoulders may be trimmed or shaped to desired finish.

Dry-pack application: Refer to the Sika Cementitious Grouting Method Statement.

CURING TREATMENT

As per ACI 308 recommendations for cement concrete, curing is required. To achieve performance consistent with Technical Data, curing must be provided by recognized curing methods, such as wet burlap covered with white polyethylene film, misting with water, or approved water-based curing compound, such as Sika® Florseal WB-18 & -25. Usage of Sika® Ultracure DOT™ or NCF™ wet curing blankets is also strongly recommended. Curing must commence immediately after placing and finishing. Protect freshly applied grout from direct sunlight, wind rain and frost.

CLEAN UP

Clean all tools and equipment immediately after use with water. Once hardened, material can only be removed manually or mechanically.

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

LEGAL NOTES

The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request or may be downloaded from our website at: www.sika.ca

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Product Data Sheet

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