

PRODUCT DATA SHEET

SikaCem®-900 Geo W

High-strength geopolymer shotcrete material for wet-mix process applications

PRODUCT DESCRIPTION

SikaCem®-900 Geo W is a one-component, pre-packaged, ultrafine, fibre-reinforced, high-strength, chemical-resistant, and shrinkage-compensated geopolymer shotcrete material for wet-mix process applications and suitable for a wide range of uses.

WHERE TO USE

SikaCem®-900 Geo W can be used in the following applications, but not limited to:

- Structural material for relining and rehabilitation of civil infrastructures such as sewers, pipes, culverts, inverts, manholes, sediment basins, and wet wells.
- Repair and rehabilitation of general concrete structures, including those in water and wastewater treatment plants and industrial facilities.
- Lining applications for tunneling works.
- Wet-mix process applied through multiples techniques such as high-velocity shotcrete, low-velocity spraying, and centrifugal spin casting, for vertical, horizontal, and overhead installation.
- On grade, above grade, and below grade.

CHARACTERISTICS / ADVANTAGES

SikaCem®-900 Geo W provides the following characteristics and benefits:

- Ready-for-use, one-component material; just add water
- Increased resistance to acids and other highly caustic environments
- Superior workability and shooting pumpability
- Superior abrasion resistance over conventional Portland cement mortar
- High bond strength ensures superior adhesion
- Compatible with coefficient of thermal expansion of concrete
- Good freeze-thaw resistance
- High early strengths
- Very low shrinkage
- Fibre-reinforced
- Suitable for hand patch applications

APPROVALS / CERTIFICATES

- UL listed for drinking water applications

PRODUCT INFORMATION

Packaging	▪ 29.5 kg (65 lb) bag ▪ 454 kg (1000 lb) FIBC ▪ 907 kg (2000 lb) FIBC
Shelf Life	12 months in original, unopened packaging
Storage Conditions	Store in a dry, covered area, protected from the elements. For optimum performance it is recommended to store the material at temperatures between 5 °C and 35 °C (41 °F and 95 °F). Protect from moisture. If damp, discard material.

TECHNICAL INFORMATION

Abrasion Resistance	28 days	0.039 kg (0.086 lb) - 0.26 % mass loss 20.0 cm³ (1.22 in³) - 0.28 % volume loss	(ASTM C1138)
Compressive Strength	1 day	17 MPa (2500 psi)	(ASTM C1604)
	7 days	38 MPa (5500 psi)	
	28 days	55 MPa (8000 psi)	
Modulus of Elasticity in Compression	7 days	31.0 GPa (4.5 x 10 ⁶ psi)	(ASTM C469)
	28 days	36.5 GPa (5.3 x 10 ⁶ psi)	
Tensile Strength in Flexure	7 days	6.2 MPa (900 psi)	(ASTM C78)
	28 days	8.3 MPa (1200 psi)	
Shear Strength	Bond Strength		(ASTM C882)
	24 hours	7.8 MPa (1130 psi)	
	28 days	20.5 MPa (3000 psi)	
Shrinkage	28 days	+ 0.02 %	(ASTM C1090)
Chemical Resistance	Sulfuric Acid (pH 1.0)	Zero mass loss Zero volume loss	(ASTM C267)
	Sulfuric Acid (pH 4.0)	Passed (Class XWW3)	(DIN 19573)
	Sulfuric Acid (pH 0.0)	Passed (Class XWW4)	
Sulfate Resistance	12 months	< 0.05 %	(ASTM C1012)
Freeze thaw resistance	300 Cycles	Zero mass loss	(ASTM C666)
	No cracking or severe deterioration with light surface scaling		
Splitting Tensile Strength	7 days	4.0 MPa (600 psi)	(ASTM C496)
	28 days	5.5 MPa (800 psi)	
Chloride Ion Diffusion Resistance	28 days	< 600 Coulombs	(ASTM C1202)

APPLICATION INFORMATION

Mixing Ratio	3.8 - 4.0 L (1.0 - 1.1 US gal) per 29.5 kg (65 lb) bag 58.3 L - 61.7 L (15.4 - 16.3 US gal) per 454 kg (1000 lb) FIBC 116.6 - 123.8 L (30.8 - 32.7 US gal) per 907 kg (2000 lb) FIBC		
Yield	0.015 m³ (0.53 ft³) per 29.5 kg (65 lb) bag 0.23 m³ (8.10 ft³) per 454 kg (1000 lb) FIBC 0.46 m³ (16.20 ft³) per 907 kg (2000 lb) FIBC Note: Yield figures do not include allowance for surface profile and porosity, or material waste.		
Ambient Air Temperature	5 °C - 35 °C (41 °F - 95 °F)		
Substrate Temperature	5 °C - 35 °C (41 °F - 95 °F)		
Setting Time	Initial	75 - 110 min	(ASTM C266)
	Final	< 180 min	
Note: Time begins when last packaging of product is added to mixer.			

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

- Do not exceeding maximum recommended volume of water during mixing.
- SikaCem®-900 Geo W should not be applied when ambient, substrate, and material temperatures are below 5 °C (41 °F) or above 35 °C (95 °F).
- For application of the product in adverse temperature conditions, follow ACI recommendations for Cold/Hot Weather Concreting.

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

Apply SikaCem®-900 Geo W in accordance with the ACI PRC-506 "Shotcrete - Guide" publication.

It is important to note that performance of in-place shotcrete relies heavily upon application techniques. Moreover, the shotcrete material, equipment and key personnel should be pre-qualified prior to project start-up to ensure optimum quality of in-place shotcrete.

For other applications, contact your local Sika Canada technical representative for more information.

SUBSTRATE QUALITY

Substrate must be clean and structurally sound.

SURFACE PREPARATION

- Remove all deteriorated concrete, dirt, dust, oil, grease, contaminants and other bond-inhibiting materials from the area to be repaired.
- Saw cut the perimeter edges of the repair area.
- Remove any and all protruding material such as brick, concrete, mortar, etc.
- Ensure that any and all leaks are stopped prior to SikaCem®-900 Geo W application.

To ensure optimum repair results, the quality of decontamination and substrate preparation can be assessed by a pull-off test, as per ASTM C1583 requirements.

MIXING

- Place 75 % of required water into mixer and slowly introduce entire bag of SikaCem®-900 Geo W while the mixer is running.
- Allow SikaCem®-900 Geo W to mix for a minimum of three (3) minutes.
- Slowly add the balance of required water until the desired slump has been obtained, not exceeding maximum recommended volume of water.
- Maximum recommended volume of water is 4.0 L (1.1 US gal) per 29.5 kg (65 lb) bag, 61.7L (16.3 US gal) per 454 kg (1000 lb) FIBC and 123.8 L (32.7 US gal) per 907 kg (2000 lb) FIBC.
- Continue mixing and stop only after material has reached a consistent, homogeneous mix.

APPLICATION

- At the time of application, surfaces should be saturated surface-dry (SSD) without standing water.
- Apply SikaCem®-900 Geo W by wet-mix process shotcrete (or troweling) for repairing vertical and overhead surfaces.
- After application, allow it to stiffen for about 10 minutes before removing bumpy areas with a trowel.
- If applying multiple layers, allow the material to reach initial set. This will take anywhere from 75 minutes to several hours, depending on mix consistency, mix and ambient temperature, wind conditions and humidity.
- Begin and finish a given patch on the same day.

CURING TREATMENT

- As per ACI recommendations for Portland cement concrete, curing is required. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, high winds and low humidity.
- Moist cure with wet burlap and polyethylene, a fine mist of water or other ASTM C309 or C1315 compliant curing compound.
- Curing compounds can adversely affect the adhesion of following lifts of mortar, leveling mortar or protective coatings.
- Moist curing should commence immediately after finishing.
- Protect freshly applied SikaCem®-900 Geo W from direct sunlight, wind, rain and frost.

CLEAN UP

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

Sika Canada Inc.

Head Office
601, avenue Delmar
Pointe-Claire, Quebec
H9R 4A9
1-800-933-SIKA
www.sika.ca

Other locations

Boisbriand (Quebec)
Brantford; Cambridge;
Sudbury; Toronto (Ontario)
Edmonton (Alberta)
Surrey (British Columbia)

Product Data Sheet

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