

Sika® Microcrete-2000

Dual shrinkage-compensated, flowing, cementitious repair material for formwork repairs

Product Description

Sika® Microcrete-2000 is a dual shrinkage-compensated pre-bagged flowing micro concrete. It has very good flow properties and has been specifically developed to reduce heat generation. As such, large volume repairs may be performed without addition of aggregates. With its high silica fume content and combination of blended cement, a highly dense, impervious and hence durable repair mortar is obtained.

Sika® Microcrete-2000 contains blended cement, silica fume, fibres, graded aggregates and additives which give rise to controlled expansion in both the plastic and hardened states.

Uses

Sika® Microcrete-2000 is suitable for structural repairs to marine structures, bridges, columns, etc. It is also conducive for use in the following repair works where single placing is in excess of 25 mm thickness:

- Bridge columns and beams
- Jetty piles
- Concrete piling
- Spillways
- Dams
- Grouting applications

Sika® Microcrete-2000 can be applied by gravity pour or mechanical pumping.

Characteristics / Advantages

- Pre-bagged at the factory / consistent quality
 - Easy to mix and apply
 - Good flow characteristics
 - Suitable for large repairs
 - High ultimate strengths
 - Very dense and durable
 - Non-toxic and non-corrosive
 - Chloride and iron-free
 - Impact and vibration resistant
 - Gaseous expansion system to compensate plastic shrinkage
 - Controlled crystalline expansion system to compensate shrinkage in the hardened state
-



Tests

- Approval / Standards**
- Setsco (Reference K1715/YCL): Flow Trough Test, Expansion and Bleeding at 3 hours, Compressive Strength, Initial Surface Absorption (ISAT), Water Absorption and Rapid Chloride Permeability
 - Setsco (Reference K1793/YCL): Bond Shear Strength
 - Setsco (Reference K1769/YCL) Rapid Chloride Permeability
 - UM: Compressive Strength, Water Absorption and Sorptivity
 - Setsco (Reference K1813/YCL): Flexural Strength and Shrinkage
-

Product Data

Form

Appearance / Colour Pre-bagged concrete grey powder

Packaging 25 kg bags

Storage

Storage Conditions / Shelf Life 6 months from the date of production if stored properly in original, unopened and undamaged sealed packaging in dry conditions. Keep away from direct sunlight.

Technical Data

Density ~ 2.25 kg/ltr (freshly mixed mortar)

Aggregate Size 6 mm max.

Mechanical / Physical Properties

Fire Resistance (EN 13501-1)

Fire rating, Classified A1 - Sika® Microcrete-2000 will not contribute in any state of the fire including the fully developed fire.

Typical Results

Tests carried out at +25°C

Description	Results
Flow trough test in accordance with UK Department of Transport Standard BD27/86 clause 4.6 (b) , mm	1,000
Spread time (when measured during the flow trough test / BD 27/86) to reach 750 mm, seconds	< 10
Bleeding at 3 hours, %	0
Expansion at 3 hours, %	> 0.5
Expansion / Shrinkage, %	at 28 days > 0.20
Compressive Strength, N/mm ²	at 7 days > 45 at 28 days > 65
Flexural Strength, N/mm ²	at 28 days > 7
Bond Shear Strength, N/mm ²	at 28 days > 15
Rapid Chloride Permeability, coulombs	at 28 days < 1,000
ISAT, ml/m ² /sec	at 28 days < 0.02
Water Absorption, %	at 28 days < 2

The above tests were conducted under laboratory conditions in accordance to the following standards:

- Flow Trough Department of Transport Highway & Traffic BD 27-86
- Bleeding ASTM C940
- Expansion ASTM C940
- Expansion / Shrinkage ASTM C1090
- Compressive Strength MS 522: Part 2: 1989 (but with 70.7 mm cubes and kept under restraint for 24 hours)
- Flexural Strength ASTM C348
- Bond Shear Strength Adopted from ASTM C1042
- Rapid Chloride Permeability ASTM C1202
- ISAT BS 1881: Part 5: 1970
- Water Absorption BS 1881: Part 122: 1983

System Information

Application Details

Typical Yield

Based on 0.128 : 1 (water : powder ratio)

Sika [®] Microcrete-2000	2.04 kg	25.0 kg	82 x 25 kg bags
Water	0.26 ltr	3.2 ltr	262 ltr
Volume of mortar	1.00 ltr	12.26 ltr	1 m ³

Substrate Preparation

Concrete surfaces should be clean, free from oil, grease, laitance and loosely adhering particles. A few hours prior to grouting / repair work, the substrate must be properly saturated by filling the formwork with clean water. Drain away the water prior to starting work.

Metal surface (iron and steel) should be free from scale, rust, oil and grease. For marine structures, it is recommended that the steel bars be protected with SikaTop[®] Armatec[®]-110 EpoCem[®] (refer to Product Data Sheet for details).

Saw cut the extremities for the repair to at least 10 mm depth to prevent feather edging. Exposed re-bars should have clearance of at least 25 mm.

Formwork Preparation

The formwork must be constructed to be leak proof, as Sika[®] Microcrete-2000 is a free flowing material. However, it should include outlets to drain out water used for pre-soaking the substrate. Adequate air release shall be installed. If repair is carried out at the soffits, provision for air venting through the substrate must be provided.

Application Conditions / Limitations

Application Temperature At temperatures of +20°C and below, setting time and strength development will be slower.

Application Instructions

Mix Ratio Flowable consistency: 3.2 - 3.4 ltr of water/25 kg bag

Mixing Sika[®] Microcrete-2000 should be mechanically mixed in a clean container using a heavy-duty drill and paddle or a forced-action mixer. According to the mixing ratio (3.2 – 3.4 ltr/25 kg bag) place first the water into the clean mixing container and add Sika[®] Microcrete-2000 slowly while mixing. Ensure a minimum mixing time of 3 minutes.

During mixing, the mortar will initially have a visibly stiff appearance, but upon continuous stirring, it will become free-flowing. *Hence, do not add more water than the recommended maximum mixing ratio.*

The speed of the mixer should not exceed 500 rpm to minimise air entrainment.

Application Method / Tools	<p>After mixing, stir lightly with a spatula for a few seconds to release any entrapped air. Pour the free flowing mortar immediately into the prepared formwork. To obtain maximum benefit of the expansion, place the mortar within 20 minutes after mixing. Pour or pump the mixed material through a flexible tube (minimum 50 mm \varnothing) to the lowest point in the formwork. Care shall be taken not to entrap any air during the repair operation as this may affect the bonding properties of the repair.</p> <p>When placing Sika[®] Microcrete-2000 over a large area, it is important to maintain continuous flow throughout. Work sequence must be properly organised to ensure uninterrupted flow. In such large areas, Sika[®] Microcrete-2000 may be pumped using a heavy-duty piston or screw feed pump.</p>
Pot Life	40 minutes min. (at +30°C)
Cleaning of Tools	Clean all tools and application equipment with water immediately after use. Hardened and/or cured material can only be mechanically removed.
Curing Details	
Curing	<p>Exposed surfaces should be kept to a minimum and cured with appropriate curing methods as soon as the mortar has hardened.</p> <p>The formwork can be stripped after at least 3 days.</p> <p>Upon removal of the formwork, cure the repaired areas immediately with Antisol[®]-E curing compound if no further treatment is required or Antisol[®]-A curing compound if a protective coating is to be applied (consult our Technical Service Department) – refer to the respective Product Data Sheet for application rate and method.</p>
Value Base	All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.
Health and Safety Information	For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet (available upon request) containing physical, ecological, toxicological and other safety-related data.
Legal Note	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 written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. 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.



Sika Singapore Pte Ltd
200 Pandan Loop, 06-02 Pantech 21
Singapore 128388
SINGAPORE

Phone: +65 6777 2811
Fax: +65 6779 6200
e-mail: info@sg.sika.com
www.sika.com.sg



Sika Kimia Sdn Bhd
Lot 689 Nilai Industrial Estate
71800 Nilai, Negeri Sembilan DK
MALAYSIA

Phone: +606-7991762
Fax: +606-7991980
e-mail: info@my.sika.com
www.sika.com.my

