

PRODUCT DATA SHEET

SikaRep® Microcrete-4

High performance non-shrink cementitious micro-concrete for concrete repair

DESCRIPTION

SikaRep® Microcrete-4 is factory designed pourable, shrinkage compensated, high performance micro-concrete with selected cement, aggregate and other chemicals. Recommended water and coarse aggregate to be added at site as per requirement.

USES

SikaRep® Microcrete-4 is suitable for producing high performance micro-concrete for deep repairs to all concrete structures such as:

- Highway bridges and culverts
- Wharves and jetties
- Tunnels and mines
- Dams and reservoirs
- Car parks and basements
- Power stations
- Sewerage and water treatment structures
- Anywhere where localized deep repair is required
- Anywhere additional thickness is required (column and beam jacketing, etc.)
- Structural strengthening of structure by section enlargement

PRODUCT INFORMATION

| | |
|------------------------------|---|
| Composition | Portland cement, selected fillers and aggregates, special additives |
| Packaging | 30 kg bag |
| Shelf life | 6 months from date of production |
| Storage conditions | The product must be stored properly in undamaged and unopened, original sealed packaging, in dry conditions at temperatures between +5 °C and +35 °C. Protect from moisture, direct sunlight and frost. |
| Appearance and colour | Powder / Grey |

CHARACTERISTICS / ADVANTAGES

- No vibration needed
- Easily pumpable
- Easy to mix and apply
- Excellent flow characteristics
- Rapid strength development
- High ultimate strengths
- Impact resistant
- Non-corrosive
- Non-toxic
- Iron and chloride free
- Dense and non-shrink concrete created by dual stage expansion
- Good bonding with existing concrete
- Adjustable consistency by controlling the water within the recommended limit

APPROVALS / CERTIFICATES

- Test Certificate No. C1/0000227197, Shriram Institute for Industrial Research, dated 07-09-2020
- Test Report, IIT Bombay, dated March 10, 2015
- Consultancy Report, IIT Delhi, 2014

TECHNICAL INFORMATION

| | | | |
|--|--|-----------------------------|--------------|
| Compressive strength | Curing time | Compressive strength | (ASTM C109) |
| | 1 day | ≥ 25 N/mm ² | |
| | 3 days | ≥ 35 N/mm ² | |
| | 7 days | ≥ 45 N/mm ² | |
| | 28 days | ≥ 65 N/mm ² | |
| Values measured at water : powder = 0.15, cube size 70.6 mm, curing temperature +30 °C | | | |
| Tensile strength in flexure | Curing time | Flexural strength | (ASTM C293) |
| | 7 days | ≥ 8 N/mm ² | |
| | 28 days | ≥ 9 N/mm ² | |
| Values measured at water : powder = 0.15, curing temperature +30 °C | | | |
| Splitting tensile strength | ≥ 3.5 N/mm ² (water : powder = 0.15, 28 days, +30 °C) | | (ASTM C496) |
| Shrinkage | No shrinkage after initial setting | | |
| Expansion | Up to 4 % | | (ASTM C1090) |

APPLICATION INFORMATION

| | | | |
|---|--|-----------------|-----------------|
| Mixing ratio | Water : Powder = 0.14 to 0.16 (by weight) 4.2 L to 4.8 L water per 30 kg bag, dependent on the desired flow | | |
| Fresh mortar density | 2.15 ± 0.15 kg/L (water : powder = 0.15) | | (EN ISO 2811-1) |
| Consumption | ~1900 kg of powder per m ³ of concrete (water : powder = 0.15) | | |
| Layer thickness | Minimum | 25 mm per pour | |
| | Maximum | 100 mm per pour | |
| Higher layer thickness can be done with addition of aggregates. Contact Sika Technical Services for additional information. | | | |
| Ambient air temperature | +5 °C min. / +40 °C max. | | |
| Substrate temperature | +5 °C min. / +40 °C max. | | |
| Pot Life | ~20 minutes (water : powder = 0.15, +30 °C) | | |

BASIS OF PRODUCT DATA

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.

FURTHER INFORMATION

Sika Method Statement : Concrete repair using SikaRep® Microcrete-4

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

EQUIPMENT

SikaRep® Microcrete-4 can be mixed both in paddle type and slow speed (max. 500 rpm) grouting mixer or drum type concrete mixer.

SUBSTRATE QUALITY / PRE-TREATMENT

- The substrate should be prepared by suitable mechanical preparation techniques such as high pressure water, breakers, grit blasting, scabblers, etc.
- Concrete surfaces must be sound, clean, free from frost, oils, grease, all loosely adhering particles and other surface contaminants. All absorbent surfaces must be well saturated with clean water, but be free of any surface water or puddles immediately prior to the application of produced micro-concrete.
- Metal surfaces (iron and steel) should be clean, free from scale, rust, oil and grease.

Bonding agent and steel protection

Embedded steel reinforcing should be free from scale, rust, oil and grease, and treated with a suitable anti-corrosion coating such as Friazinc® R, SikaTop® Armatec®-108 Plus or SikaTop® Armatec®-110 EpoCem®. The application of a suitable bonding agent, such as Sikadur®-32 LP IN or SikaTop® Armatec®-110 EpoCem®, will improve adhesion on large areas or where particularly dense concrete substrates are involved.

MIXING

1. Place about 80–90 % of the premeasured clean water into a clean mixer and gradually add the whole bag of SikaRep® Microcrete-4 into it while continuously mixing.
2. Add the remaining water and additional clean 5–10 mm aggregates (if needed as per design) until the desired consistency is obtained.
3. Mixing time should be minimum 3 minutes.

IMPORTANT

- Concrete can also be produced with addition of 10 mm down properly graded silt-free aggregate in proportion of 2 : 1 (SikaRep® Microcrete-4 : coarse aggregate) by weight.
- Do not mix more material, which cannot be used within pot life.
- Do not add extra water.
- Mix only full bags for best results.

APPLICATION

Strictly follow installation procedures as defined in method statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

Formwork

Ensure formwork is secure and watertight to prevent movement and leaking during placing and curing.

Working in thick sections

Do not pour more than 100 mm of layer thickness without addition of aggregates.

Small localized repairs

Small volume mixing may be carried out with a suitable low-speed (500 rpm) drill and mixing paddle. After mixing, stir lightly with a spatula for a few seconds to release any entrapped air. The micro-concrete is then poured immediately into the prepared formwork.

Large repairs

When carrying out large scale repairs or column / beam jacketing, ensure sufficient pressure head is maintained for uninterrupted concrete flow. Form-

work must be firmly placed and kept watertight. When placing micro-concrete over large area, it is important to maintain a continuous flow throughout the process. Work sequence and equipment must be properly organized to ensure an uninterrupted flow of micro-concrete. Ensure proper air displacement when pouring. In large areas, micro-concrete may be mixed and pumped using heavy duty screw feed and piston pumps. Equipment suitability should be tested and checked prior to actual grouting works.

Cold weather working

Consider storing bags in a warm environment and using warm water to assist with achieving strength gain and maintaining physical properties.

Hot weather working

Consider storing bags in a cool environment and using cold water to assist with controlling the exothermic reaction to reduce cracking and maintaining physical properties.

CURING TREATMENT

Formwork must remain in place for at least 3 days. Upon removal of the formwork, cure the exposed surfaces immediately with Sika Antisol® curing compound or use other approved curing methods.

CLEANING OF EQUIPMENT

Clean all tools and application equipment with water immediately after use. Hardened or cured material can only be removed mechanically.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the declared data for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data.

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 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 BANGLADESH LIMITED

Skylark MAK 84, 8th floor
House No. 84, Block D, Road No. 11
Banani, Dhaka-1213, Bangladesh
Phone 1: +88 01313095060
Phone 2: +88 01313095061
ind.sika.com

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