BUILDING TRUST

PROVISIONAL PRODUCT DATA SHEET 2021-09-24

Sikacrete®-752 3D

1-PART MICRO-CONCRETE FOR 3D PRINTING

PRODUCT DESCRIPTION

Sikacrete®-752 3D is a 1-part micro-concrete for use with 3D robot or gantry printers.
Suitable for use in hot and tropical climatic conditions.

USES

For concrete printing of 3D objects and components for:
- Buildings
- Civil engineering structures
- Molds and forms
- Art, craft, and visual displays
- Interior and exterior use

CHARACTERISTICS / ADVANTAGES

Fast absorbing
- Suitable for continuous and static mixers

1-part
- Mix with water
- Adjustable consistency

Low viscosity
- For easy pumping

Thixotropic consistency
- Maintains shape after extrusion
- Good buildability

Fast setting
- For building up layers
- Print line stability and accuracy
- Printing at angles
- Moving objects sooner

Low shrinkage
- Good crack resistance

Optimised grading
- For smooth appearance
- Reduced equipment wear
- Good durability

Reduced Permeability / Low water penetration

PRODUCT INFORMATION

Chemical Base	Modified cement based micro concrete, selected aggregates and additives
Packaging	55 lb bag, 2000 lb super sack
Appearance / Color	White powder
Shelf Life	9 months minimum from date of production
Storage Conditions	The product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +41 °F and +86 °F. Always refer to packaging.

Maximum Grain Size	~0.08 in (2 mm)

TECHNICAL INFORMATION

Compressive Strength	Tested at +77 °F with W/P = 0.17 (1.10 gallon water per 55 lb bag) (ASTM C109) **1 day** ~2,900 psi (20 MPa) **7 day** ~5,800 psi (40 MPa) **28 day** ~7,250 psi (50 MPa)
Flexural Strength	Tested at +77 °F with W/P = 0.17 (1.10 gallon water per 55 lb bag) (ASTM C348) ~1,000 psi (7 MPa) (28 d / 77 °F)
Water Penetration under Pressure	Tested at +77 °F with W/P = 0.17 (1.10 gallon water per 55 lb bag) ~0.8 in (20 mm)
Service Temperature	+212 °F max.

APPLICATION INFORMATION

Mixing Ratio	15 – 17% water (1.10 gallon per 55 lb bag)
Fresh mortar density	~137 lb/ft³ (2.20 kg/l)
Coverage	~3.20 gallon per 55 lb This figure is theoretical and does not allow for any additional material due to surface porosity, surface profile, variations in level or wastage etc.
Layer Thickness	Subject to trials ~0.4 –2.0 in (10 – 50 mm)
Ambient Air Temperature	+41 °F min. / +113 °F max.

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.

LIMITATIONS

- 3D concrete printing is a manufacturing process using mixing, pumping and robotic placement to apply the printed concrete. All these factors play a significant role in achieving optimal results of the finished concrete component and therefore pre-trials and tests must be carried out before final manufacturing of the finished components.
- In the event of blockages, rinse equipment and pump lines immediately with clean water.
- Sika is not responsible for deviated performances due to external circumstances beyond our control.
- Continuously monitor the pot life of the mixed material.
- Do not allow mixed material to stand in warm temperatures.
- Keep pump lines wetted and cool.
- Use warm water at low temperatures and cold water at high temperatures to maintain application performance.
- Condensation due to certain curing methods and curing agents may cause some discoloration to the surface appearance.

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.

APPLICATION INSTRUCTIONS

MIXING

Static Mixers (Small volume quantities)
Mix with an electric single or double paddle mixer (<500 rpm) or using a forced action mixer capable of mixing 2 to 3 bags at a time.
Add the recommended amount of clean water in a suitable mixing container. Stir slowly, add the powder to the water and mix thoroughly for a minimum of 3 minutes. Add more water during the mixing time if necessary to the maximum specified amount to achieve a smooth consistent mix. Stir gently if required.
Continuous Mixer (High volume quantities)
The mixing ratio shall be determined using a pan test heating method or microwave technique (according to Austrian Standard) to determine the equivalent flowrate/m^3 on the equipment. Contact Sika Technical Services for additional information.

APPLICATION

Pumping and printing is usually a continuous process. The application specifics of the extrusion and printing speed must be optimised between the mixer, pump, pump line length and printer head.

CLEANING OF TOOLS

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

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 product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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