

PRODUCT DATA SHEET

Sikafloor® MetalTop-300 IN

Heavy duty cementitious, metallic aggregates filled floor topping

DESCRIPTION

Sikafloor® MetalTop-300 IN is premixed industrial floor topping based on hydraulic binder and specially treated metallic aggregates.

USES

- Key areas subject to heavy abrasive traffic, impact and continuous wear, such as loading docks, aisles, waste transfer facilities, truck or tractor repair areas, and mill scale sluiceways.
- Areas where safety authorities have deemed other floor surfaces hazardous because of excessive wear dangerously buckled steel plates, etc.
- Bunkers and tunnels (used for iron, ore and coal).
- Areas subjected to attrition by tracked vehicles.
- Floors with scraper blades in constant contact.
- Steel mills

CHARACTERISTICS / ADVANTAGES

- Extended working time, allowing ample time to place, float, and finish
- High-slump, screedable consistency ideal for horizontal applications
- High compressive strengths, sustains heavy loads
- Uniquely processed malleable metallic aggregate for highest level of impact tolerance and abrasion resistance
- Rapid strength gain so floors can be returned to service quickly
- Eight times more wear resistant than concrete for longer serviceable life than high-strength concrete and natural-aggregate toppings
- High-density - resists oil, grease, and many industrial chemicals
- Protects against joint deterioration minimizing damage to goods and increasing the life of material-handling equipment
- Reduces dusting and absorption, making floors easier to clean and maintain
- Lower modulus of elasticity than concrete and toppings of equal strength - less brittle and more resistant to dynamic loads

PRODUCT INFORMATION

Packaging	25kg moisture-resistant bags.
Appearance / Colour	Grey powder
Shelf life	Sikafloor® MetalTop-300 IN can be stored for 6 months in the tightly closed, original packages. Do not use the product if bag is damaged.
Storage conditions	The product must be stored in original, unopened and undamaged packaging in dry conditions at temperatures between +5 °C and +30 °C. Always refer to packaging
Density	Fresh wet density: 3,400 kg/m ³

TECHNICAL INFORMATION

Abrasion resistance	< 0.13 gm (H22 wheel, 1000 cycle) < 4 g/cm ³	(ASTM C501) (Böhme)
Compressive strength	25 MPa at 24 Hours 50 MPa at 72 Hours 80 MPa at 28 Days	(BS 6319, Part 2)
Modulus of elasticity in compression	27 GPa at 28 Days	
Flexural strength	8.8 MPa at 28 Days	(BS6319, Part 3)
Tensile adhesion strength	> 1.5 MPa (concrete failure)	(ASTM D 4541)

APPLICATION INFORMATION

Mixing ratio	W/P Ratio, by weight: 0.085
Consumption	25kg Sikafloor® MetalTop-300 IN mixed with 2.0 to 2.25 litres of water shall produce 8 litres of mortar and shall cover 0.5m ² at 16 mm thickness.
Curing treatment	Sikafloor® MetalTop-300 IN should be wet cured for a minimum of 7 days, followed by the application of an ASTM C309 or suitable curing compound or do complete water ponding. Note: The area should be barricaded after the curing compound is applied. As soon as the curing compound has dried, adequately cover the floor surface to prevent staining, discoloration or physical damage which may be difficult to correct. Alert other trades to the need for special protection against rolling or sliding heavy loads across the surface, oil drippings from pipe threaders, spillage of paint, plaster and mortar, acid washing of interior masonry walls, etc. Ensure that the covering is not damaged during the progress of the job.

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.

USES

- Do not use in areas where a steel plate has worn through in less than 1 year.
- Do not use in areas where the floor surface is exposed to acids, their salts, or other materials that seriously and rapidly attack cement or iron.
- Use only potable water when mixing Sikafloor® MetalTop-300 IN topping.
- If any blistering occurs during raised troweling, flatten trowel blades immediately. Reopen blistered areas with a hand float. Wait until raised troweling does not produce blisters.
- Contact your local Sika representative for additional information on application procedures, suggested armoring thicknesses, and service.
- Do not use in areas subject to rapid thermal cycling.
- Do not subject Sikafloor® MetalTop-300 IN to prolonged exposure from contaminants.
- Do not add cement, aggregate, or admixtures to Sikafloor® MetalTop-300 IN.
- Arrange to have a pre-job conference with your local Sika representative to discuss all aspects of the Sikafloor® MetalTop-300 IN application.
- Under no circumstances should less than a 1/2" thickness be used.

- For solid waste tipping floors, 1.5 inches is the recommended minimum application.
- Proper application is the responsibility of the user. Field visits by Sika personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the job-site

IMPORTANT CONSIDERATIONS

- For heavy-duty traffic areas, concrete designed for at least 30 N/mm² should be used. Thickness of the slab and the type and amount of reinforcement in it are important design considerations.
- At temperatures > 30°C, at low humidity or when placing concrete without protection from wind or sun, erect sunshades or windbreaks and consider use of a suitable curing compound.
- Do not use salt water or salt contaminated aggregate in concrete over which Sikafloor® MetalTop-300 IN will be applied.

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

SUBSTRATE PREPARATION

Sikafloor® MetalTop-300 IN can be applied to fully cured or recently placed (less than 4 days old) concrete.

SURFACE PREPARATION METHOD 1 Use this method on existing fully cured concrete.

1. To achieve a proper bond with Sikafloor® MetalTop-300 IN, the surface of the concrete should have a 1/4" (6 mm) amplitude profile (ICRI CSP #9). Remove all laitance and contaminated areas, creating a coarse profile and exposing aggregates. Multiple passes with a shotblast machine using heavy shot have proven effective. If a bush hammer or scarifier is used, follow with abrasive blasting. The surface must be completely clean and free of oil, grease, dirt, and dust.
2. Test the concrete surface for tensile-bond pulloff strengths according to ASTM C 1583. The minimum tensile-bond pulloff strength must be at least 1.5 N/mm² and substantial coarse aggregate fracture must be revealed. Perform the test in several locations on each slab section scheduled for placement of Sikafloor® MetalTop-300 IN.
3. The base slab (substrate) surface must comply with Section 4.2 of ACI 503.5R. This section is specific to the surface, accessibility, and temperature conditions during the application of the epoxy bonding agent.
4. Joints and terminations should be pre-treated in one of two methods:
 - Mechanical fasteners such as Hilti short nails or Tapcons should be installed in two, offset rows on 12"-18" centers, 4"-6" away from the joint. Note that pneumatically applied fasteners could introduce damage in the substrate.
 - An "armored" joint can be introduced on each side of the joint by chipping 4" back from the joint to a depth of 1".
5. Before placing Sikafloor® MetalTop-300 IN, test the concrete in accordance with ASTM D 4263, Indicating Moisture in Concrete by the Plastic Sheet Method. Excessive moisture must be force-dried to produce a condition suitable for the bonding material to achieve proper bond strength. Internally moist concrete may cause vapor pressure upon curing and delaminate the topping.
6. Fill all pre-existing cracks in the concrete with a suitable epoxy crack-repair material. Consult your Sika representative for recommendations.
7. Use liquid epoxy bonding agent such as Sikadur® to bond the topping to the existing concrete. Mix according to directions and brush, spray or roll the agent onto the concrete surface. Place the topping while the epoxy is still tacky, like fly paper. If already set, brush more over the hardened surface. Do not attempt to retemper with solvents.
8. Make sure to cover the surface with the topping before the epoxy loses its tack.

SURFACE PREPARATION METHOD 2 Use this slurry-bond-coat method on recently placed (less than 4 days) concrete.

1. The concrete must be designed to have a minimum

of 25-30 N/mm², in accordance with ACI 302 recommendations.

2. After placing, screeding, and floating the base concrete, spray on a liquid surface retarder at 100 – 120 ft²/gallon. Cover with polyethylene, burlen, or other impervious sheet covering to keep the surface from drying out. Remove the covering within 4 days. Use a pressure washer with sufficient power to expose the aggregate and ensure a 1/4" amplitude. Rinse until water runs clean.
3. The concrete surface must be saturated before the placement of Sikafloor® MetalTop-300 IN. Remove standing water immediately before the application of the bond coat.
4. Use properly mixed Sikafloor® MetalTop-300 IN as a scrub coat. Scrub into the damp surface with a clean, stiff-bristle broom just before the application of Sikafloor® MetalTop-300 IN. Do not apply at an excessive thickness. Do not leave any puddles. Limit scrub application to an area that will assure the Sikafloor® MetalTop-300 IN topping can be placed before the scrub coat dries. DO NOT RETEMPER the bond coat with water.

MIXING

- Use an appropriate forced action mortar mixer for the job. Add 3/4 of the mixing water, followed by Sikafloor® MetalTop-300 IN in a slow, steady stream. Mix for approximately 2 – 3 minutes. Add the remaining water and continue mixing for a total of 5 minutes. Mix thoroughly for a homogeneous mix at the recommended slump.
- Using ice water will reduce water requirements for a given consistency and will result in increased working time and strength of the topping. Do not use water in an amount that will cause bleeding or segregation.
- Discharge the topping from the mixer for immediate placing and screeding. If lumps are present, remove them. Note: 2.0 to 2.25 litres of water shall produce 8 litres of mortar and shall cover 0.5m² at 16 mm thickness.

APPLICATION

- Place and screed the Sikafloor® MetalTop-300 IN in sections to maintain the finished elevation. Periodically measure the topping thickness, especially in the center of the slab. Because of the relatively high slump of Sikafloor® MetalTop-300 IN, a roller or pipe screed works best for obtaining a uniformly flat, dense surface without excessive segregation from vibration.
- As soon as Sikafloor® MetalTop-300 IN will support an operator and machine without leaving impressions on the slab or creating excessive fines at the surface, float with a mechanical troweling machine equipped with float shoes. For small areas, floating with hand tools is acceptable.
- Following 1 machine floating, proceed with 1 or 2 normal troweling operations to obtain a hard steel-trowel or burnished-trowel finish. Time the troweling operations and adjust the blade angles to avoid blistering.
- Sikafloor® MetalTop-300 IN can be applied in a monolithic two-course application over fresh con-

crete. This type of application requires extreme skill. Please contact your Sika representative before attempting this kind of application. Under rapid drying or hot, ambient conditions, Sika evaporation reducer should be sprayed from a garden sprayer, according to label instructions, to prevent rapid moisture loss from the Sikafloor® MetalTop-300 IN

JOINTS

Joints and proper joint spacing are necessary to limit the cracking tendencies in the topping from shrinkage (contraction joints), to limit movement between the floor and other structural members (isolation joints), and to conclude pours from one day to the next (construction joints).

Procedures for determining the base-slab joint locations, spacing, depth, etc., should be conducted in accordance with ACI 302.1 R-6 section 2.3.

The maximum joint spacing should not exceed 20 feet. Base-slab joints must be matched in the Sikafloor® MetalTop-300 IN topping by forming or other suitable means.

Note: Intermediary joints must use anchors when Sikafloor® MetalTop-300 IN is placed on hardened slabs (Method 1) where the joint spacing exceeds 20 feet. See your local Sika sales representative for further recommendations.

CURING TREATMENT

- Sikafloor® MetalTop-300 IN must be moist cured to attain its proper design strength, surface impermeability, and wear resistance. After finishing has been completed and the surface will not be marred by foot traffic, mist spray the surface of the topping with water, keep wet and cover it with weighted polyethylene sheeting for a minimum of 7 days. When mist spraying is not possible, use soaker hoses with burlap or 2 layers of saturated burlap (or similar moisture-retaining sheet material) and cover the surface with polyethylene for a minimum of 7 days.
- After 7 days of wet curing and while the Sikafloor® MetalTop-300 IN is still moist, remove excess water with a squeegee. Immediately apply an appropriate curing compound (consult your Sika representative for recommendations). Using a roller will ensure complete coverage with the curing compound. Do not spray apply a membrane curing compound unless it will be backrolled. Do not allow the Sikafloor® MetalTop-300 IN to dry out before the application of the curing compound. If the floor must be returned to service in less than 7 days, contact Sika technical support prior to installing Sikafloor® MetalTop-300 IN.

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.

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Product Data Sheet

Sikafloor® MetalTop-300 IN
October 2025, Version 01.01
020815010010245271

SikafloorMetalTop-300IN-en-IN-(10-2025)-1-1.pdf