



PRODUCT DATA SHEET

Edition 08.2019/v1
CSC Master Format™ 03 01 00
MAINTENANCE OF CONCRETE

SikaSet®-45

VERY RAPID-SETTING CHEMICAL REPAIR MORTAR, FIBER-REINFORCED OPEN TO FOOT TRAFFIC IN 45 MINUTES

Description	SikaSet®-45 is a one-component, very rapid-setting, fiber-reinforced, early-strength gaining, magnesium phosphate-based patching and repair mortar for concrete.
Where to Use	<ul style="list-style-type: none"> ▪ Bridge deck and highway overlays and repairs. ▪ Concrete joint repairs. ▪ Structural repair to concrete parking structures, dams. ▪ Full depth patching repairs. ▪ Horizontal repairs of concrete and mortar. ▪ Formed wall and marine structure repairs.
Advantages	<ul style="list-style-type: none"> ▪ Very rapid hardening as defined by ASTM C928. ▪ Fiber-reinforced. ▪ Freeze/thaw resistant. ▪ Easy to use; economical patching and labour saving material. ▪ Contains no added chlorides. ▪ Not gypsum-based. ▪ High early-strength. ▪ Very fast-setting. ▪ Open to foot traffic in 45 minutes, to vehicle traffic in 1 hour at 23 °C (73 °F). ▪ Easily applied to clean, sound substrates. ▪ Not a vapour barrier. ▪ Evaluation in progress by the Ministère des Transports du Québec (MTQ). ▪ Evaluation in progress by the Ontario Ministry of Transportation and is qualified by The Road Authority (TRA). ▪ Meets Alberta Transportation (AT B391) specification for patching materials (both LTH and HEH approved).

Technical Data		
Packaging	22.7 kg (50 lb) bag	
Colour	Concrete Grey	
Yield	Approx. 11 L (0.39 ft³) Approx. 16.4 L (0.58 ft³)* when extended with up to 13.6 kg (30 lb) of 10 mm (3/8 in) dry pea gravel <i>*Warning : Do not use limestone aggregate.</i>	
Shelf Life	12 months in original, unopened bag. Store dry, ensuring that product is not exposed to rain, condensation or high humidity. For best results, condition product between 18 and 29 °C (65 and 84 °F) before using.	
Mix Ratio	1.9 L (0.5 US gal.) of water per bag	
Properties at 23 °C (73 °F) and 50 % R.H.		
Working Time	Approx. 15 minutes after adding powder to the water	
Setting Time ASTM C266 (modified)		
Initial set	10 - 20 minutes	
Final set	15 - 25 minutes	
Compressive Strength, MPa (psi)		
Mortar ASTM C109	3 °C (37.4 °F)*	23 °C (73 °F)
1 hour	-	39 (5656)
3 hours	-	40 (5801)
1 day	33 (4786)	42 (6091)
3 days	44 (6381)	45 (6526)
7 days	50 (7250)	51 (7397)
28 days	61 (8887)	65 (9427)
Flexural Strength ASTM C78 [modified 75 x 100 x 406 mm (3 x 4 x 16 in)]		
1 day	6 MPa (870 psi)	
Tensile Bond Strength ASTM C1583	1.02 MPa	
24 hours	(All test failures located within the concrete/overlay interface)	
Water Absorption - Alberta Transportation specification B391	6.8 % @ 14 days	
Drying Shrinkage		
ASTM C1581	60 days	No cracking
ASTM C157	90 days	- 0.017 %
Salt Scaling ASTM C672		
50 cycles	Rating	Mass loss
	1	0.046 kg/m² (9,5 x10 ⁻⁶ lb/ft²)
Chloride Resistance ASTM C1543		
Chloride Content	@13 mm depth = 0.04 % @25 mm depth = 0.02 %	
Freeze Thaw Durability ASTM C666 Procedure A > 300 cycles	> 97.6 %	

Chloride Content ASTM C1152

0.011 %

by mass of mortar

* Duration and speed of mixing will affect the cure development and strength gain.

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.

HOW TO USE

Surface

Preparation

Remove all deteriorated concrete, dirt, oil, grease and other bond-inhibiting materials from surface. Be sure repair area is not less than 13 mm (1/2 in) in depth. Preparation work should be done by appropriate mechanical means. Obtain an exposed aggregate surface with a minimum surface profile of ± 3 mm (1/8 in) (ICRI / CSP 6 - 10) on clean sound concrete. Check concrete surface for evidence of carbonation using a pH indicator. If surface is carbonated, remove concrete to depth that is not carbonated and proceed with repairs. To ensure optimum repair results, the effectiveness of cleaning and preparation should be assessed by a pull-off test. Saw-cutting the edges is recommended. Flush the surface to be repaired with clean water. Substrate should be saturated surface dry (SSD) with no standing water prior to application.

Priming

Prime the prepared substrate with a scrub coat of SikaSet®-45 prior to placement of the mortar. The repair mortar has to be applied onto the wet scrub coat before it dries.

Mixing

Water content is critical, use a maximum of 1.9 L (0.5 US gal.) of water per 22.7 kg (50 lb) bag of SikaSet®-45. Mechanically mix in an appropriately sized mortar mixer. Wet down tools and mixer to be used. Pour clean (potable) water into the mixer. Add aggregate, if extending the unit for deep patches. If aggregate is damp, lower the water proportion accordingly. Add the SikaSet®-45 powder to the mixer and mix for 1.5 to 2 minutes. Following this sequence will ensure consistent and uniform batches. **SikaSet®-45 should be mixed, placed and finished within 10 minutes [20 °C (68 °F)] from the time that the powder is added to the water.**

Use neat material for patches from 13 to 38 mm (1/2 to 1 1/2 in) deep. For application greater than 38 mm (1 1/2 in) in depth, add up to 15 kg (33 lb) of 10 mm (3/8 in) coarse aggregate. The aggregate must be non-reactive (as per ASTM C1260, C227, and C289), clean, well graded, oven-dried, have low absorption, high density and comply with ASTM C33, size number 8 per table 2.

Note: The addition rate of 13.6 kg (30 lb) of coarse aggregate increases the unit yield to approx. 16.4 L (0.58 ft³).

Application

The prepared mortar should be scrubbed into substrate. Be sure to fill all pores and voids. Force material against edge of repair working toward centre. After filling repair screed off excess. Allow concrete to set to desired stiffness, then finish. To control setting times, cold water should be used in hot weather and hot water in cold weather.

Curing

SikaSet®-45 should air cure for proper curing, but should be protected from rapid moisture loss during first 3 hours. To do so, a liquid curing compound or polyethylene can be used, as well for protecting fresh SikaSet®-45 from rain. **Never wet cure SikaSet®-45.**

Clean Up

Clean all tools and equipment immediately after use with water. Once hardened, material can only be removed manually or mechanically. Wash soiled hands and skin thoroughly in hot soapy water or use Sika® Hand Cleaner towels.

Limitations

- Important: protect stored material from exposure to rain, condensation and high humidity as moisture may penetrate packaging, causing lumps.
- For best results, condition product to 18 to 29 °C (65 to 84 °F) prior to mixing and installation. Lower temperatures may result in slower strength development and longer cure times.
- Product will not freeze at ambient and surface temperatures down to -30 °C (-22 °F) if appropriate precautions are taken. Maximum application temperature : 35 °C (95 °F). consult Sika Canada for more informations.
- Minimum application thickness: 13 mm (1/2 in) as a mortar and 38 mm (1 1/2 in) when extended with aggregate.
- Not compatible with normal-setting bonding agents, e.g. SikaTop® Armatec-110 EpoCem® and Sikadur®-32 Hi-Mod.
- Do not add sand, fine aggregate or cement to SikaSet®-45.
- Do not featheredge.
- Use only potable water.
- Extending with aggregates will reduce compressive and flexural strengths. Dimensions and grading of aggregates will influence effect on physical properties; pre-testing is recommended.
- Do not use as a precision grout.
- Membranes and coatings are not compatible with SikaSet®-45; the mortar should be left as finished and not receive a surface treatment as adhesion cannot be assured.
- When used in contact with aluminum or galvanized steel, consult Sika Canada.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent SAFETY DATA SHEET containing physical, ecological, toxicological and other safety-related data.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

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, within their shelflife. 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

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