BUILDING TRUST

PRODUCT DATA SHEET

Sikadur® ADH 4000

(formerly MBrace ADH 4000)

2-part epoxy structural adhesive for structural bonding of the Sika® CarboDur® LAM plates

DESCRIPTION

Sikadur® ADH 4000 is a 2-part epoxy based thixotropic structural adhesive which bonds to most construction materials. It has high mechanical strength and is used for bonding structural reinforcement and structural strengthening using steel or Sika® CarboDur® LAM plates.

USES

Adhesive for bonding structural reinforcement, particularly in structural strengthening works. Especially for the following uses:

- Sika® CarboDur® LAM Plates to concrete, brickwork and timber (for details see the Sika® CarboDur® LAM Product Data Sheet, the “Method Statement for Sika® CarboDur® LAM System ref. 850 41 19).
- Bonding of concrete, metal, wood, stone and many other building materials in combination with each other;
- Bonding of precast reinforced concrete blocks;
- Honeycomb filing.

FEATURES

- Easy to mix and apply.
- High creep resistance under permanent load.
- Very good adhesion to concrete, masonry, stonework, steel, cast iron, aluminium, timber and Sika® CarboDur® LAM plates.
- Hardening is not affected by high humidity.
- High strength adhesive.
- Thixotropic: non-sag in vertical and overhead applications.
- Hardens without shrinkage.
- Solvent free
- Impermeable to liquids and water vapour.

PRODUCT INFORMATION

Composition	Epoxy resin and selected fillers	
Packaging	A+B: 5 kg	Part A: 3.25 Kg Part B: 1.75 Kg
Colour	Grey	
Shelf life	18 months from date of production	
Storage conditions	Store the product in a covered, cool and dry place (10 – 35 °C) away from direct contact with the sun, fire or open flames. If the temperature drops below 10 °C, the resin may show an increase in viscosity and the formation of lumps. In these cases, before using it, heat the packages by immersion of the sealed can in hot water until the lumps disappear.	

Density	Mixed resin 1.70 ± 0.05 kg/l	ASTM D1505-85

TECHNICAL INFORMATION

Compressive strength	>73 MPa (60)	(EN 12190)
Modulus of elasticity in compression	8700 MPa (3653)	(EN 13412)
Modulus of elasticity in flexure	4260 MPa (2519)	(EN ISO 178)
Tensile strength	15.7 MPa	(EN 12188)

Tensile adhesion strength

Curing time	Substrate	Adhesion strength	Standard
7 days	Resin-Concrete	> 3.5 MPa	(EN 1542)
7 days	Concrete-Resin-Concrete	> 12 MPa	(EN 12615)
7 days	Concrete-Steel-Resin	> 5.4 MPa	(EN 12615)
7 days	Steel-Resin-Steel	> 16 MPa	(EN 12615)

Thermal compatibility

Durability	Pass	(EN 13733)
Suitability for injection with and withour cycles	> 3.00 MPa	(EN 12618-2)

Coefficient of thermal expansion	4.4×10^{-5} ($\pm 0.2 \times 10^{-5}$) 1/K	(EN 1770)

Shear adhesion strength

50°	≥ 59 MPa	(EN 12188)
60°	≥ 68 MPa	
70°	≥ 77 MPa	

Glass transition temperature	52 °C	(EN 12614)
Mixing ratio	Part A : Part B = 3.75 (65%) : 1.25 (35%) by weight	
Consumption		

Material temperature

Maximum	+30 °C
Minimum	+5 °C

Ambient air temperature

Maximum	+30 °C
Minimum	+5 °C

Relative air humidity	< 85%
Dew point	Beware of condensation. The substrate and uncured applied resin must be at least +3 °C above dew point to reduce the risk of condensation or blooming on the resin surface.

Substrate temperature

Maximum	+30 °C
Minimum	+5 °C

Substrate moisture content	Max 6% pbw When applied to mat damp concrete, brush the adhesive well into the substrate.

Pot Life (ISO 9514)

Temperature	Pot Life
+21 °C	45 min
+30 °C	30 min

Open Time (EN 12189)

Temperature	Open Time
+23 °C	90 min
+30 °C	75 min

(EN 12189)

Temperature	Open Time
+23 °C	90 min
+30 °C	75 min

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.

IMPORTANT CONSIDERATIONS

Sikadur® resins are formulated to have low creep under permanent loading. However, due to the creep behavior of all polymer materials under load, the long term structural design load must account for creep. Generally the long term structural design load must be lower than 20–25 % of the failure load.
A structural engineer must be consulted for load calculations for the specific application.

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 QUALITY

CONCRETE, MASONRY, MORTAR OR STONE
Concrete and mortar must be fully cured.
Substrates must be sound, clean, dry and free of all contaminants such as dirt, ice, oil, grease, coatings, laitance, efflorescence, surface treatments, loose friable material and with no standing water. Any damaged areas, spalled areas, delaminated areas, or areas with corrosion damage must be repaired prior to applying the product.
STEEL
Surfaces must be sound, clean, dry and free of all contaminants such as dirt, oil, grease, coatings and loose friable material.
WOOD
Surfaces must be sound, clean, dry and free of all contaminants such as dirt, oil, grease, coatings and loose friable material.

SUBSTRATE PREPARATION

See the “Method Statement for Sika® CarboDur® LAM System” Ref: 850 41 19.

MIXING

IMPORTANT
Maintaining workability and handling time.
When using multiple units during application, do not mix the following unit until the previous one has been used.
PRE-BATCHED UNITS

1. IMPORTANT Mix full units only. Prior to mixing all parts, mix part A (resin) briefly using a mixing spindle attached to a slow speed electric mixer (max. 300 rpm).
2. Add part B (hardener) to part A (resin) and mix parts A+B continuously for at least 3 minutes until a uniformly coloured smooth consistency mix has been achieved.
3. IMPORTANT Do not over mix. To ensure thorough mixing pour materials into a clean container and mix again for approximately 1 minute. Mixing time for A+B = 4 minutes.

APPLICATION METHOD / TOOLS

See the “Method Statement for Sika® CarboDur® LAM System” Ref: 850 41 19.

CLEANING OF EQUIPMENT

Clean all tools and application equipment with Sika® Colma Cleaner immediately after use. Hardened / cured material can only be removed mechanically.

LOCAL RESTRICTIONS

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

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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

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