

Kiwa GmbH Polymer Institut Quellenstraße 3 65439 Flörsheim-Wicker Phone: +49 (0)61 45 - 5 97 10 www.kiwa.de

General test certificate

issued according to the regulations of the building supervisory authority

P 11779 / 19-567 Test certificate No. Silikal® Harz RU 320 and Subject: Silikal® Harz RU 320 Thix Intended use: Building product for generating a sealing in conjunction with tile and slab coverings pursuant to Verwaltungsvorschrift Technische Baubestimmungen (VwV TB - Administrative Technical Regulations for the building sector), running number C 3.27 Applicant: Silikal GmbH Ostring 23 63533 Mainhausen Date of issue: **September 10, 2019** Period of validity: until September 9, 2024

Due to this general test certificate which has been issued according to the regulations of the building supervisory authority, the above building product can be used in accordance with the building codes of the individual federal states.

This general test certificate comprises

11 pages, including 1 annex with 4 pages.



1 SUBJECT OF THE TEST AND FIELD OF APPLICATION

1.1 Subject of the test

This general test certificate applies to the building product

SILIKAL® HARZ RU 320(floor)SILIKAL® HARZ RU 320 Thix(wall)

pursuant to the *Verwaltungsvorschrift Technische Baubestimmungen*, running number C 3.27 in the currently valid version.

1.2 Fields of application

The building products **Silikal® Harz RU 320** and **SILIKAL® HARZ RU 320 Thix** must be used for the waterproofing of buildings in conjunction with tile and slab coverings exclusively with the adhesives

- PCI Durapox Premium
- Sopro's NO:1 S1 tile adhesive
- MFK Multiflex S1 adhesive

with

floor and wall

being the admissible fields of application. These fields of application also refer to

exposure classifications A1 / A2:

Directly exposed indoor wall (A1) and floor (A2) areas as well as outdoor wall and floor areas connected with buildings that are frequently, or for a longer time, exposed to process and cleaning water, such as walkways around swimming pools and showers (public or private). This conforms to the water exposure classes W2-I and W3-I pursuant to DIN 18534-1 without exposure to chemicals.

exposure classification B:

Wall and floor areas of indoor or outdoor vessels, such as swimming pools and drinking water tanks, that are directly exposed to fill-up water with drinking water properties, if they are directly connected with buildings, or border on buildings, up to a maximum filling level of a 6 m water column. This conforms to the water exposure classes W1-B & W2-B pursuant to DIN 18535-1.

exposure classification C:

Directly and indirectly exposed wall and floor areas in rooms that are frequently, or for a longer time, exposed to process and cleaning water, with the exposure to chemicals being limited. These places include, *inter alia*, commercial kitchens and laundries, if the exposure to chemicals there is expected to be limited. This conforms to water exposure class W3-I pursuant to DIN 18534-1 with exposure to chemicals.

An exception are rooms which must be assigned to facilities for handling water-endangering substances in accordance with Article 62 of the [German] Water Management Act (WHG).



2 REQUIREMENTS CONCERNING THE BUILDING PRODUCT

2.1 Composition, properties and parameters

2.1.1 Composition

The building products *Silikal*® *Harz RU 320* and *Silikal*® *Harz RU 320 Thix* can be allocated to the following group of waterproofing materials:

Reactive resins, enriched mixtures of synthetic resins and organic additives with or without mineral fillers. The curing process is a chemical reaction.

This also applies to the primer.

Overview: System components

System components	Description ¹⁾	
Silikal® Harz RU 380	reactive, medium-viscous primer for absorbent and non-absorbent substrates on PMMA basis	
Silikal® Harz RU 320 (floor) Silikal® Harz RU 320 Thix (wall)	waterproofing flexible reactive resin for waterproofing on PMMA basis	
Silikal® TEX fabric lining	polyester-reinforced fabric (110 g/m ²)	

Overview: Tile adhesive

Tile adhesive	Description ¹⁾	
PCI Durapox Premium	epoxy resin mortar	
Sopro's NO:1 S1 Tile adhesive	cement-like, highly deformable S1 flexible adhesive	
MFK Multiflex S1 adhesive	cement-containing, highly flexible combina- tion adhesive for laying tiles	

¹⁾ This information is based on the details furnished by the product manufacturer.

The minimum dry waterproofing layer has a thickness of 1.2 mm.



2.1.2 Properties

The waterproofing for buildings performed with *Silikal® Harz RU 320* and *Silikal® Harz RU 320 Thix* has the following properties and is sufficient for the fields of application specified in sub-section 1.2 above:

- high adhesive strength
- temperature and ageing resistant
- frost-resistant
- resistant to caustic potash
- impermeable to water
- crack bridging

The product has a normal inflammability and belongs to building material class B 2 pursuant to DIN 4102-1 and in accordance with test report P3286-1 of the Polymer Institut. In addition to that, the building material class $B_{ROOF}(t1)$ has been certified in classification report No. 230009551-2 and in test report No. 230009551 of the Material Testing Institute (MPA) of North Rhine-Westphalia.

The product's usability has been proved on the basis of the test principles for waterproofing materials that have to be processed in the liquid state for tile and slab coverings by the Polymer Institut in its test reports P3286-1 and P 11779 of September 10, 2019.

2.1.3 Parameters

The parameters of the source materials and those of the mixed materials can be taken from the test report P 11779 of the Polymer Institut dated September 10, 2019.

2.2 Production, packaging, transport, storage

2.2.1 Production

The building products *Silikal*® *Harz RU 320* and *Silikal*® *Harz RU 320 Thix* must only be produced in the Mainhausen Works.

2.2.2 Packaging, transport, storage

The information provided on the cans about the requirements concerning other areas of law (e.g. hazardous substances or transport law) shall be observed.

Moreover, the relevant information from the manufacturer, such as instructions concerning the frost-free storage, the shelf life of unopened cans etc., shall be provided or referred to accordingly.



2.3 Application planning

When applied on the floor:

Layer/coating	System component
Primer	Silikal® Harz RU 380
Waterproofing	Silikal® Harz RU 320 with Silikal® TEX fabric lining
Wear layer	Silikal® Harz RU 320 blinded with an excess of quartz sand (approx. 4 000 g/m ²)
Tile adhesive	PCI Durapox Premium
	Sopro's NO:1 S1 tile adhesive
	MFK Multiflex S1 adhesive

When applied on the wall:

Layer/coating	System component
Primer	Silikal® Harz RU 380
Waterproofing	Silikal® Harz RU 320 Thix with Silikal® TEX fabric lin- ing
Wear layer	Silikal® Harz RU 320 Thix blinded with an excess of quartz sand (approx. 4 000 g/m ²)
Tile adhesive	PCI Durapox Premium
	Sopro's NO:1 S1 tile adhesive
	MFK Multiflex S1 adhesive

To be used additionally for floor-wall connections, corners and gullies:

- Tapes: Silikal® TEX
- Packings/collars: Silikal® TEX
- Silikal® TEX internal corner
- Silikal® TEX external corner

Cracks in the substrate must not expand by more than 0.2 mm after being coated.

2.4 Execution

The waterproofing components **Silikal® Harz RU 320** or **Silikal® Harz RU 320 Thix**, respectively, will be applied in 2 layers as "waterproofing layer" and "wear layer":

The dry waterproofing layer has a thickness of at least 1.2 mm, vertically or horizontally.

The dry wear layer has a minimum thickness of 1.9 mm.

When processing the waterproofing system, the manufacturer's processing instructions shall be observed (see Technical Documentation in the Annex).



3 CERTIFICATE OF CONFORMITY

3.1 General

According to the Hessian *Verwaltungsvorschrift Technische Baubestimmungen* (H-VV TB) of June 2018, running number C 3.27, the compliance of the building product with the requirements of this general test certificate that has been issued according to the regulations of the building supervisory authority shall be proved by a declaration of compliance issued by the manufacturer on the basis of an in-company production control (WPK) and after the examination of the building product by an agency recognized by the building supervisory authority before the compliance is confirmed (initial test).

3.2 Initial test (EP)

The initial test shall be carried out in accordance with the "Test principles for waterproofing materials to be processed in the liquid state in conjunction with tile and slab coverings" pursuant to Tables 1 & 2 of the test principles for "reactive resins".

The test values must only deviate from the parameters pursuant to sub-section 2.1.3 hereof up to the maximum tolerances stated in the said test principles.

3.3 In-company production control (WPK)

The in-company production control shall be organized and carried out in the production work specified in sub-section 2.2.1 hereof. The regulations for in-company production controls contained in Building Rules List A of the German Institute for Construction Technology (DIBt) shall be observed.

The in-company production control includes the tests for reactive resins listed in Table 3 of the test principles for waterproofing materials to be processed in the liquid state in conjunction with tile and slab coverings. The test values must only deviate from the parameters pursuant to subsection 2.1.3 hereof up to the maximum tolerances stated in the said test principles.

The tests shall be carried out at least once a week during the running production process, otherwise once for each charge/batch. If the test raster is oriented on particular production sequences or charge/batch sizes, it must be ensured that the regularity and uniformity of the product composition is subjected in the same way to controls. The results of the in-company production control shall be recorded, assessed and kept for at least five years.

5 LEGAL BASIS

This general test certificate that is issued according to the regulations of the building supervisory authority is awarded pursuant to Article 22 of the Hessian Building Code (HBO) of July 2018 in connection with the Hessian *Verwaltungsvorschrift Technische Baubestimmungen* (H-VV TB) of June 2018, running number C 3.27.



6 GENERAL PROVISIONS

- 6.1 This general test certificate does not replace permits, approvals and certificates required by law for building projects.
- 6.2 This general test certificate is issued irrespective of third-party rights, especially private industrial property rights.
- 6.3 The entrepreneur shall keep the general test certificate ready for inspection at the building site.
- 6.4 The general test certificate must only be duplicated in its entirety. The publication of extracts only requires the approval of the Polymer Institut. Texts and drawings in advertising publications must not contradict the content of this general test certificate. Translations of the general test certificate not made by the Polymer Institut itself must be endorsed with the note "Translation from the German original not verified by the Polymer Institut".

7 LEGEL REMEDIES

An objection or legal action against this general test certificate shall be admissible in accordance with the legal regulations in the country of the applicant's registered office. When exercising the right to object, the objection shall be filed in writing within one month after receipt of this general test certificate or recorded at Kiwa GmbH, Polymer Institut, Quellenstraße 3, 65439 Flörsheim-Wicker. The date of the objection being received by Kiwa GmbH, Polymer Institut, shall be decisive for the compliance with this deadline.

Flörsheim-Wicker, 10.09.2019

Dipl.-Ing. (FH) N. Machill Prüfstellenleiterin (Head of test center)





SILIKAL[®] RU 320 resin pigmented/thix

Highly flexible reactive resin for waterproofings



Product description

SILIKAL® RU 320 resin pigmented, is a polyurethane modified, self levelling methacrylate resin system that is suitable for creating watertight membranes on a wide variety of substrates. The formulation SILIKAL® RU 320 resin thix, can also be used for coating on rising or very steeply inclined surfaces.

Properties

- Highly flexible
- Good crack bridging
- _ Very easy to apply
- Application even at low temperatures
- Very good intercoat adhesion
- Quickly treatable _

Application

SILIKAL® RU 320 resin pigmented/thix, is a urethane modified medium viscosity or thixotropic membrane resin based on an acrylic resin. SILIKAL® RU 320 resin pigmented/thix, is supplied ready-filled and pigmented. The addition of the SILIKAL® hardening powder triggers curing.

Properly cured SILIKAL® RU 320 resin pigmented/thix, creates a highly flexible, crack-bridging membrane layer that retains its flexibility even at very low temperatures.

SILIKAL® RU 320 resin pigmented/thix, can be applied in the temperature range from 0 °C to +30 °C. Addition of the accelerator (SILIKAL® ZA additive) also enables application in the range from 0 °C to -10 °C.

Preparation of the substrate.

The surface to be coated must be solid, dry, free of dust, grease and oil, as well as firm. Cementitious surfaces may be prepared e.g. by shot-peening. Before applying the SILIKAL® RU 320 resin pigmented/thix, always prime the substrate appropriately, possibly including scattering loosely with silica sand of grain size 0.7 - 1.2 mm. Observe the relevant product data sheets on the processing of the primer.

Before application, stir the container in which the product is supplied thoroughly to distribute the paraffin evenly and ensure that the material hardens reliably. The amount of Silikal hardening powder to be added depends on the temperature. Please refer to the table "Hardener dosages" for the relevant values.

At temperatures below 0 °C, also incorporate SILIKAL® ZA additive. Observe the technical data sheet "SILIKAL® ZA additive".

Guideline recipe and standard batch

Item	Component	Guideline recipe (% by weight)	Comments	Batch	n size
1	SILIKAL [®] RU 320 resin pigmented/thix	100 %		10 kg	
	Total:	100 %	Average consumption: 1.3 kg/m² per mm thickness	10 kg	
2	SILIKAL [®] hardening powder	1 – 6 %, relative to item 1	See "Hardener dosages" table for quantities	100 – 600 g	

Characteristics of RU 320 pigmented/thix, as delivered

Property	Measuring meth- od	Approx. value
Viscosity at +20 °C (RU 320 pigmented)	DIN 53 015	2,000 – 3,000 mPa · s
Viscosity at +20 °C (RU 320 thix)		Pasty
Density D ₄ ²⁰ (RU 320 pigmented)	DIN 51 757	1.13 g/cm ³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % w/w hardening powder)	Approx. 15 min.	
Processing temperature (substrate temperature)	0 I	

Silikal product information			
Issue HLA 1.10.A			
August 2014			
Data sheet SILIKAL® RU 320 PT			
Page 1 of 2			

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Soluting 23, 63533 Mainhausen, Germany ↓ 449 6182 9235-0 ♀ +49 6182 9235-40 ⊕ www.silikal.de @ mail@silikal.de

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SILIKAL® RU 320 resin pigmented/thix

Highly flexible reactive resin for waterproofings



Characteristics of RU 320 pigmented/thix, in the hardened state

Property	Measuring meth- od	Approx. value
Adhesive pull strength	EN ISO 527	>2 N/mm ²
Tensile stress at break	EN ISO 527	3.3 N/mm ²
Crack bridging		1.55 mm
Elongation at break	EN ISO 527	157 %

Hardener dosages

Temperature	Hardening pow- der % w/w *	Pot life approx. min	Hardening time approx. min
0 °C	6.0	20	80
+10 °C	4.0	15	60
+20 °C	2.0	15	60
+30 °C	1.0	8	40

* The quantity of hardening powder is always relative to the quantity of resin.

Tor further information, please refer to the separate product information sheet SILIKAL® hardening powder".

Safety advice

Wear suitable protective clothing (gloves and goggles) when applying. Avoid contact with the eyes and skin. For further information, please refer to the safety data sheet.

Delivery form

• 10 kg bucket

• 20 kg bucket

Shelf life

6 months if stored in the unopened original container in a cool (< 25 °C), dry and frost-free location. The optimal storage temperature is +15 °C to +20 °C. Do not expose to direct sunlight!

Labelling

Giscode: RMA 10 Resin: Xi irritant

Disposal

Fully hardened material can be disposed of as domestic refuse.

Recycle completely empty containers.

Dispose of liquid material as waste paint that contains solvents or other dangerous substances (EWC 080111).

☑ Other applicable documents	Data sheet
SILIKAL [®] ZA additive	SILIKAL [®] ZA additive
SILIKAL [®] hardening powder	SILIKAL [®] hardening powder
General advice on application	AVH
The substrate	DUG
Fillers and pigments	FUP
Chemical resistance	CBK
Information on safety and protection	SUS
Storage and transport	LUT
General cleaning advice	ARH

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Silikal product information Issue HLA 1.10.A August 2014 Data sheet SILIKAL® RU 320 PT Page 2 of 2



SILIKAL[®] RU 320 resin

High flexible resin for water proofings on concrete



SILIKAL® RU 320 resin is a modified methacrylate resin of high flexibility which is suitable for water proofings on interior and exterior concrete surfaces.

SILIKAL® RU 320 resin is permanent flexible and can follow thermic movements of the concrete. As a result of the high flexibility water proofings appear a little bit tacky on its own surface and might lead to a certain absorbancy of air dust-polution like any other materials. This fact can be ignored when the membrane layer anyway will be overlayed by another concrete screed or tiles. For better light stability always add a small amount of 2 - 5 % SILIKAL® Pigment Powder.

In order to work out an individual solution for your job please contact our Technical Department for detailed informations.

Application

Membranes or water proofings requiring an approval for overlays made of concrete screed or tiles i.e. for balconies, swimming pools, bath rooms or other concrete floor constructions.

After preparing the concrete surface according to the technical rules (ball blasting, grinding, cleaning etc) apply first the primer SILIKAL® R 51 resin as normally. After curing apply the coating mixture according to the formulation given in table 1. Depending on your skill and experience different tools to spread the coating material can be used, such like Mohair-rollers, comb trowel or smooth trowel. It is important to avoid blisters during the application. Two layers of 1 - 1,5 mm each will be necessary. Also consider to apply the material up the walls, columns or fixed machineries atleast 5 - 10 cm to avoid water leakage. In case of overlaying with tiles the last coating surface must be sprinkled fully with SILIKAL® Filler QS 0,7 - 1,2 mm to provide a good bond to the tile adhesive mortar. Self stable concrete screeds of more than 5 cm thickness can be layed on directly without sand sprinkling. The total thickness of the water proofing membrane will be appr. 2 - 2,5 mm.

For these application areas we can provide German Approvals for the following classes:		
Application Area A:	Water spillage on wet surfaces on floors (A2) and walls (A1) caused by cleaning water or water of natural use, such like swimming pool surroundings or in public bath or shower rooms.	
Application Area B:	Interior and exterior wall and floor surfaces of swimming pools filled with water of drinking category. For special salt waters used for medical purpose an individual approval will be necessary.	
Application Area C:	Walls- and floor surfaces in commercial establishments, also in connection with light chemicals (i.e. car wash, kitchens, canteens, food precessing) except for those chemicals which require special and additional approvals (regulations concerning the ground water protection act § 19 WHG).	

SILIKAL® RU 320 waterproofing also meets the technical requirements underneath of SILIKAL coating system B and C which is not included in the approval as the above mentioned approval does not cover this application.

Water proofings made of SILIKAL® RU 320 resin on concrete roofs without additional coverings made of concrete screeds or tiles will have to pass additional national testings and approvals depending on the country's regulations and requirements. SILIKAL can not provide approvals for this applications.

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® RU 320 resin	74 %		7.4 kg	7.4 litres
2	SILIKAL [®] Filler QM	20 %		2 kg	approx. 2.1 litres
3	SILIKAL® Pigment Powder	5 %		500 g	
4	SILIKAL [®] Anti-flow Additive TA2	1 %		100 g	
	Total:	100 %	Average consumption: 1.3 kg/m² per mm thickness	10 kg	approx. 7.7 litres
5	SILIKAL [®] Hardening Powder	1 – 6 % related to item 1	See "Hardener dosages" table for quantities	75 – 450 g	

Guideline recipe and batch quantities

The mixing device (dissolver) must be EX-proof. Stir moderately to avoid self heating during the process (max. +35 °C).

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⊠ Ostring 23 ♦ +49 (0) 61 82 / 92 35-0 ⊕ www.silikal.de (3533 Mainhausen, Germa ♦ +49 (0) 61 82 / 92 35-40 @ mail@silikal.de 63533 Mainhausen, Germany Silikal product information Issue MMA 4.01.A March 2017 Data sheet SILIKAL® RU 320 Page 1 of 2



SILIKAL® RU 320 resin

High flexible resin for water proofings on concrete



Characteristics of RU 320 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	300 – 500 mPa · s
Flow time at +20 °C, 6 mm cup	ISO 2431	80 – 110 sec.
Density D ₄ ²⁰	DIN 51 757	0.99 g/cm ³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	12 – 15 min.	
Application temperature	0 °C to +30 °C 180 % at +23 °C	
Ultimate elongation when hardened		

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	6.0	20	80
+5 °C	5.0	20	60
+10 °C	4.0	15	40
+15 °C	3.0	15	40
+20 °C	2.0	15	40
+25 °C	1.5	10	30
+30 °C	1.0	8	25

The quantity of hardening powder is always related to the quantity of resin. The further information, please refer to the separate product information sheet "SILIKAL® Hardening Powder".



CE-labelling

⁹ Last two digits of the year in which the ce marking was affixed.
³ NPD = No performance determined.
⁹ Refers to a smooth surface without broadcasting.

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Other applicable documents	Data sheet	Page
SILIKAL [®] Hardening Powder	SILIKAL® Hardening Powder	96 – 97
General processing information	AVH	98 – 101
The substrate	DUG	102 – 104
Fillers and pigments	FUP	105 – 108
Chemical resistance	CBK	109 – 110
Information on safety and protection	SUS	111 – 112
Storage and transport	LUT	113 – 115
General cleaning advice	ARH	116 – 117

Silikal product information

Issue MMA 4.01.A
March 2017
Data sheet SILIKAL® RU 320
Page 2 of 2

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⊠ Ostring 23 ♦ +49 (0) 61 82 / 92 35-0 ⊕ www.silikal.de 63533 Mainhausen, Germany € +49 (0) 61 82 / 92 35-40 @ mail@silikal.de