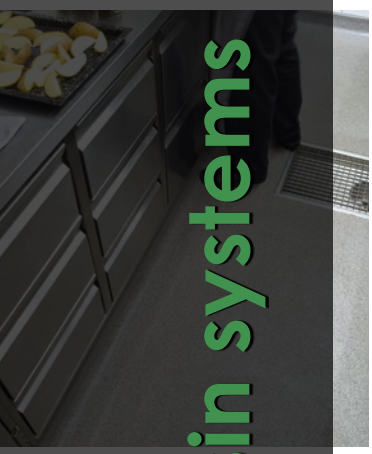
Reactive resins and polymer concrete for industrial flooring and civil engineering

Silikal®

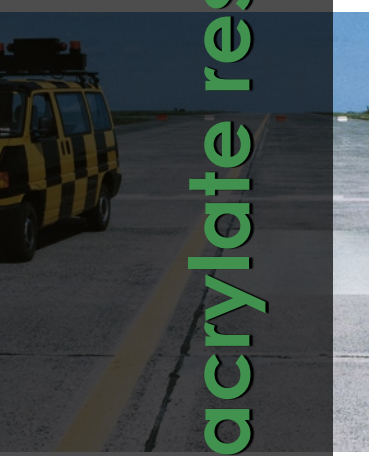
Protecting floors, buildings, infrastructures








methacrylate resin systems








Silikal

Expect more from your floor.


Expect more from your floor.

We’re here for you ...

Silikal, production and headquarters in Mainhausen/Frankfurt am Main

…since over 70 years

For decades we have been working for you on the basis: coming from the practice of screed construction, we decided on developing and manufacturing floor coatings based on synthetic resins back in the early 60‘s. Numerous research and development projects accompany this path until today. Silikal now operates worldwide and is represented in Germany and Europe as well as on all continents of the world.

…a wide variety of problems

Whether for new buildings, repairs or renovations: our methacrylate resins have proven their worth as heavy-duty floor coatings in industry, commerce and trade, on traffic areas, in public and medical facilities. Furthermore, Silikal’s repair mortar systems are used as reliable problem-solvers: to quickly repair breakouts, cracks or holes in concrete, precast concrete parts or screeds, to undergird bridge bearings, to prepare machine foundations or to fix heavy-duty profiles and structural elements. Today, our customers can choose from a variety of MMA, epoxy and PU products and specialities, such as those for waterproofing, filling cracks, road marking, mortar systems, PU concrete, adhesives, tactile guiding systems for the blind and design floors.

…with the right systems

We have the right answer to your floor problem. Fast curing without major interruption of operation, slip resistance levels as required, processing even at very low temperatures, a large selection of colour design options and much more… our product range makes it possible.

… and with a motivated, skilled team

You need advice? That’s our strength – challenge us! Every project has its own demands and requirements. Our team knows the problems on site and has worldwide experience in application engineering. Get in touch with us. We will be happy to help whether you’re implementing the toughest floor projects or interested in ways to use quick-curing mortar systems.

And if you’d really like to get into the details, the Silikal training centre in Mainhausen will be happy to provide you with extensive and hands-on information.

Rest assured – **we** are always on hand to help, around the clock, even on weekends and bank holidays.

Silikal® made in Germany since 1951

TÜV PROFI CERT 73 100/104 663
Certified quality and environmental management systems Reg. No. 73 100 / 104 663

AgBB GEPRÜFT
Certified to AgBB evaluation scheme for non-transit indoor spaces

HACCP INTERNATIONAL FOOD SAFETY PROGRAMME CERTIFICATION
Our systems comply with the international HACCP guidelines

Halal EHZ
Our systems comply with European Halal guidelines

kiwa zertifiziert KIWA GMBH POLYMER INSTITUT
CE certification of in-house production control to EN 1504-2 performed by Kiwa GmbH Polymer Institute

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Silikal methacrylate resin systems

Table of contents

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Silikal methacrylate resin systems

Reactive resins – definition and use

What are reactive resins?

Reactive resins have become part and parcel of the construction trade. They are predominantly used in the manufacture of industrial flooring, for sealing or for filling joints. They generally consist of 2 components, are mixed and applied in a liquid state on the construction site and cure in a very short space of time by chemical reaction.

If selected and composed accordingly, reactive resins can provide both high mechanical strengths and very high flexibility and expansion characteristics as well as resistance to chemicals and weathering.

The following are used:

– Epoxy resins (EP)

– Methacrylate resins (MMA)

– Polyurethane resins (PUR)

Silikal products based on EP/PUR resins are described in the corresponding documentation.

Depending on the requirement, they are manufactured in different layer thicknesses, usually 1 – 10 mm (maybe thicker for mortar and screed), in a variety of decorations such as uni-pigmented, with coloured flakes or sand, and in a wide range of slip resistance classes. This requires additional fillers, pigments or other additives.

What are Silikal MMA reactive resins?

Silikal reactive resins are based on acrylic and methacrylic esters. The main component is the methylmethacrylate (MMA). The hardening (polymerisation) of the Silikal reactive resins is achieved by the addition of a hardening powder (peroxide) as the second component; this ensures that the chemical reaction is triggered even at low temperatures below 0 °C and does not itself interfere with the properties of the end product.

The quantity of hardening powder for Silikal reactive resins must therefore be dosed according to a temperature table. Once the hardening process has commenced, it cannot be interrupted.

The prominent benefits at a glance:

- **Curing even at very low temperatures (special formulation down to -25 °C)**
- **Fully load-bearing just 2 hours after laying**
- **Treatable, excellent inter-layer adhesion even on old MMA toppings**
- **Slip resistance classes from smooth to coarse (R9 – R13)**
- **Excellent ageing and weather resistance, no chalking, no embrittlement**
- **Protection against high mechanical and chemical stresses**
- **Decorative surface design**
- **Hygienic and easy to keep clean**

Reactive resin coatings and mortars based on quick-hardening Silikal resins have proven to be ideal for improvements and renovations of concrete floors of all kinds. They are also increasingly being used as polymer concrete in civil engineering.

CE-Marking

Products subject to a harmonized European standard like EN 13813 or EN 1504-2 are labeld with a CE-Mark. Corresbonding certifications and DOPs are published on the Silkal web pages.

VOC – volatile organic compounds

Products for indoor spaces such as at nurseries, schools, care and medical institutions and retail showrooms have been tested and shown to have particularly low emissions under AgBB test criteria (AgBB = Committee for Health-related Evaluation of Building Products).

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Silikal methacrylate resin systems

Reactive resins – definition and use

Where are Silikal reactive resins used?

Depending on their formulation and binder, in industrial construction Silikal reactive resins can be applied on concrete, cement screed, ceramic files and asphalt (interiors). Particularly suitable in all industrial areas, e.g.:

– meat and fish processing
– large kitchens and the beverages industry
– supermarkets and retail areas
– electroplating and chemical plants
– electronics and precision mechanics
– pharmaceutics
– textile and paper industry
– print shops and mechanical engineering
– automotive construction and vehicle workshops
– agricultural concerns and animal husbandry
– sanitary rooms
– indoor spaces

and also as repair and topping mortar for

– bridge structures
– roadways
– airfields
– multi-storey car parks

and in civil engineering for

– bridge renovation and underlining of bridge bearings
– machinery foundations

What are the definitions for certain layer thicknesses?

The specifications for the use of reactive resins differ widely. They are determined first and foremost by the mechanical and chemical stress envisaged and by the evenness of the substrate.

In its BEB worksheets, the Bundesverband Estriche und Beläge e.V. (BEB), D-53842 Troisdorf, has defined the type of wearing layers by areas of application as follows:

Impregnation	= KH-1
Sealing 0.1 – 0.3 mm	= KH-2
Coating 0.3 – 2.0 mm	= KH-3
Topping 2.0 – 6.0 mm	= KH-4
Screed from 6.0 mm	= KH-5

You might like to know that our expertise in products and processes is based on intensive research and years of experience. We see it as a particular obligation to advise our customers in writing of all our results. We reserve the right to make technical changes in the course of development. We will help you solve problems at any time – that's what our applications engineers are there for. However, this does not release users from their duty to check whether our information and recommendations are suitable for their purposes. This also applies for the preservation of third-party property rights and for applications and processes that are not expressly indicated by us in writing. Our liability in the event of damage will be limited to substitute performance to the same extent. Our "General Terms of Sale and Supply" otherwise apply.

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Silikal methacrylate resin systems

Reactive resins – definition and use

Impregnations and sealants

Impregnation is the pore-filling saturation of absorbent substrates with low-viscosity, easily penetrative reactive resins or synthetic resin solutions. It is performed in order to strengthen surfaces of industrial floors, enhance their resistance and prevent the dust that is formed through abrasion (BEB worksheet KH-1). Sealants are transparent or coloured coats of synthetic resins that may or may not contain solvents. They are applied in order to improve the mechanical resilience of industrial floors and prevent the formation of dust through abrasion, facilitate their cleaning and maintenance, prevent the ingress of oils, greases and other contaminants into the substrate and enhance their appearance by providing colour (BEB worksheet KH-2). The resistance of impregnated or sealed substrates to mechanical stress is determined by the firmness of the substrate, the material properties and the thickness of the film of sealant that is applied. The low film thickness and the danger of mechanical damage must be taken into consideration when assessing resistance to chemical attack.

Coatings

Coatings are coverings of solvent-free reactive resins that are generally filled with fillers and coloured with pigments. Their layer thicknesses are 0.3 – 2 mm (BEB worksheet KH-3). They are applied in order to achieve greater mechanical resilience than is possible with sealants and to give industrial floors a non-porous, dust-free surface that looks good and can be cleaned and maintained with little effort. Decorative surfaces can also be produced with mixtures of coloured flakes and transparent binders.

Toppings

Toppings are coverings of solvent-free reactive resins that are generally mixed with fillers. They are either designed to be self-levelling or can be applied by knife or trowel. Self-levelling toppings are usually coloured with pigments. Toppings that can be applied by knife or trowel are generally manufactured from transparent reactive resins with natural or coloured quartz. Decorative toppings with little susceptibility to soiling can be produced by mixing coloured quartz accordingly. As the thickness of toppings is generally 2 – 6 mm, they are used primarily to protect the substrate against chemical attack and heavy mechanical stresses (BEB worksheet KH-4).

Toppings are laid without pores, making them easier to clean and meeting the high hygiene requirements that prevail in the food industry in particular.

Screeds

Screeds are coverings of solvent-free reactive resins that are in principle laid with fillers, quartz sands and pigments, where applicable. They are produced as mortar and applied either with a knife (trowel) or with the levelling board. Their minimum thickness is 6 mm; screed thicknesses are generally 8 – 15 mm (BEB worksheet KH-5). Screeds made of reactive resin achieve high resistances to mechanical stresses and good chemical resistance if they are produced with a liquid-tight structure. Their main areas of use are therefore industrial floors that are exposed to high to extremely high stresses or of which a particular chemical resistance under significant mechanical stresses is required.

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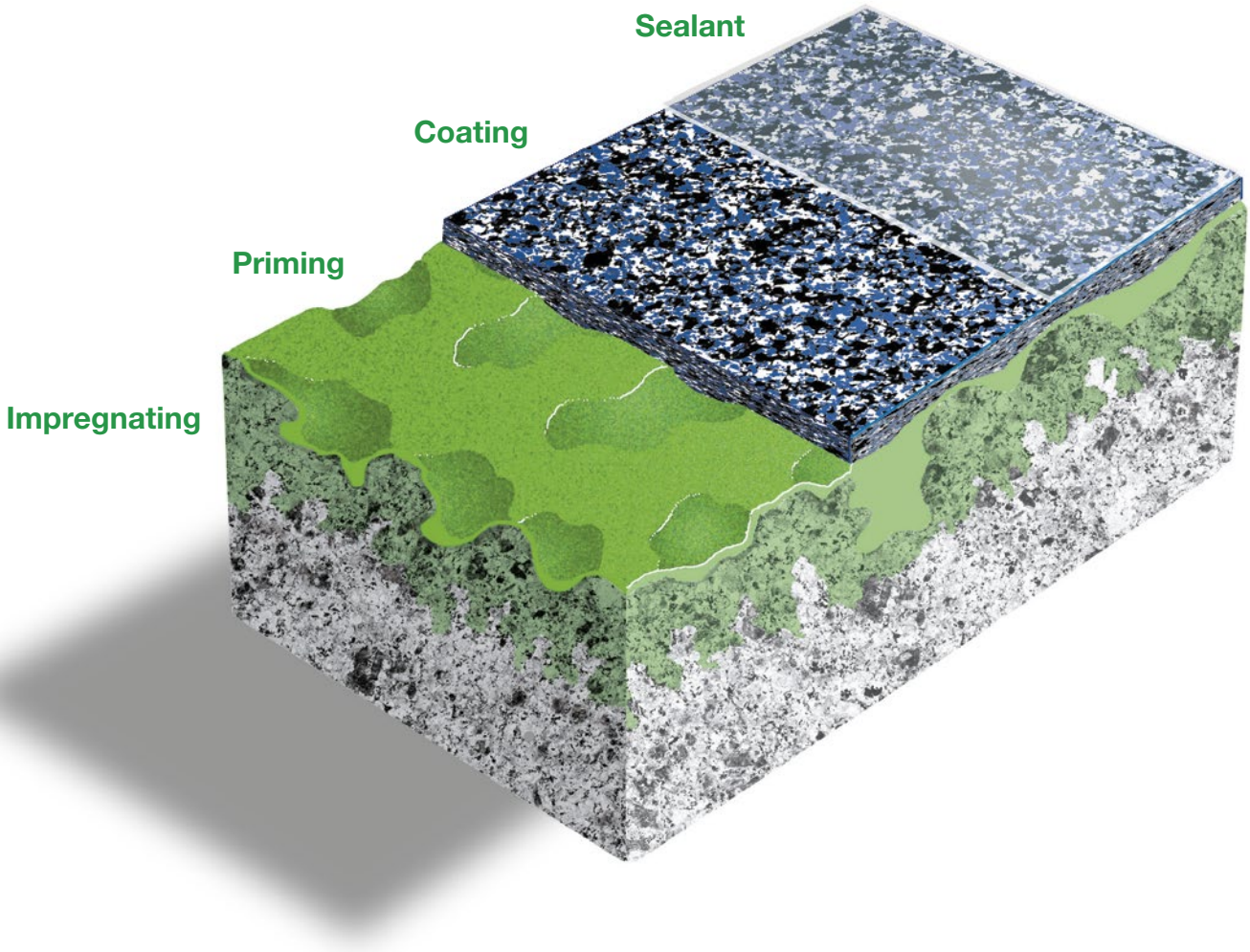
Silikal methacrylate resin systems

Priming – Coating – Sealing



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Silikal standard coating systems

Overview

SILIKAL® System B
Quartz SL

SILIKAL® System B: Quartz SL

Self-levelling MMA system with quartz broadcast

SILIKAL® Kitchen System

SILIKAL® Kitchen System

Self-levelling MMA system with quartz broadcast and waterproofing membrane

SILIKAL® System B
Quartz TA

SILIKAL® System B: Quartz TA

Trowel-applied MMA system with coloured quartz

SILIKAL® System C
Uni Colour

SILIKAL® System C: Uni Colour

Self-levelling MMA system

SILIKAL® System C
Flakes

SILIKAL® System C: Flakes

Self-levelling MMA system with flake broadcast

SILIKAL® System D
Cold Room

SILIKAL® System D: Cold Room

Flexible self-levelling MMA system with quartz broadcast

SILIKAL® System D
Outdoor

SILIKAL® System D: Outdoor

Flexible self-levelling MMA system with quartz broadcast

SILIKAL®
Concrete Look

SILIKAL® Concrete Look

Acrylic Design Floors

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SILIKAL® System B
Quartz SL

SILIKAL® System B: Quartz SL

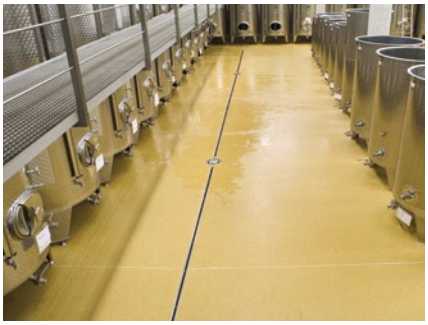
Self-levelling MMA system with quartz broadcast

SILIKAL® System B – Quartz SL is a fast curing, decorative, hard wearing, methyl methacrylate coating. Coloured quartz is enclosed in the system to achieve the required slip resistance for the specific industry.

SILIKAL® System B is ideal for renovations and new projects because it reduces downtime to the minimum.

Area of application

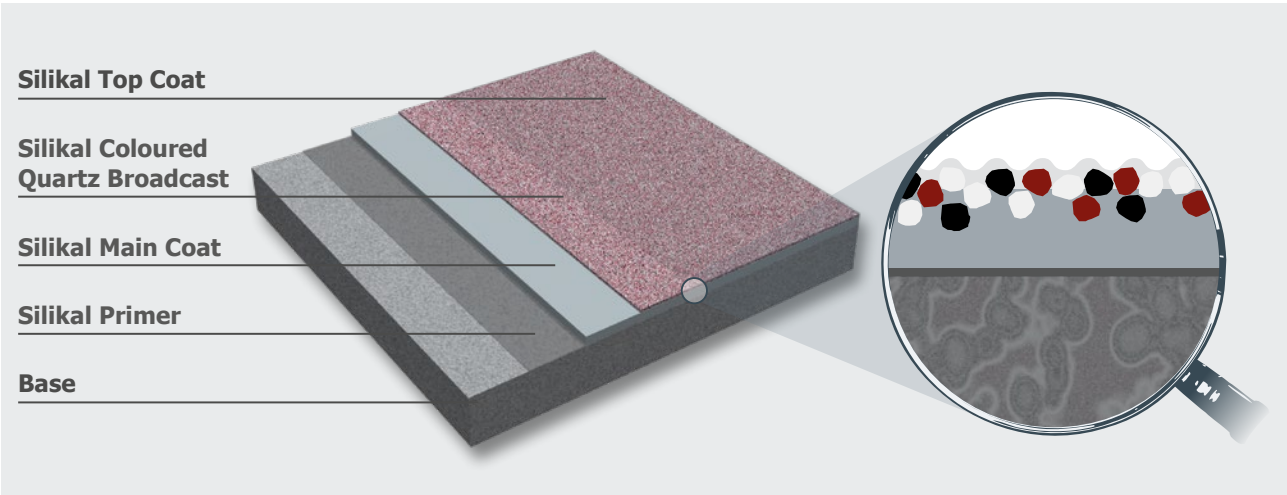
- Areas with moderate to high mechanical stresses
- Dry and wet production areas
- Industrial kitchens
- Areas with high chemical load



Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Variable slip resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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Silikal® Expect more from your floor.

SILIKAL® System B: Quartz SL

Self-levelling MMA system with quartz broadcast

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® R 61 or comparable
- Silikal Coloured Quartz like SILIKAL® Filler FS or FM
- Silikal Top Coat like SILIKAL® R 71 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Slip resistance:	R11 to R13 (DIN 51130) depending on the clients requirements
Compressive strength:	45 N/mm² (EN 196-1)
Flexural strength:	24 N/mm² (EN 196-1)
Tensile strength:	14 N/mm² (EN ISO 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	0 °C to +60 °C (+80 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Cfl-s1 (EN ISO 13501)
Thickness:	3 – 5 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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SILIKAL® Kitchen System

SILIKAL® Kitchen System

Self-levelling MMA system with quartz broadcast and waterproofing membrane

SILIKAL® Kitchen System is a fast curing, decorative, hard wearing, methyl methacrylate coating. Coloured quartz is enclosed in the system to achieve the required slip resistance for the specific industry. A waterproofing membrane is applied for improved concrete protection and better crack bridging properties.

SILIKAL® Kitchen System is ideal for renovations and new projects because it reduces downtime to the minimum.

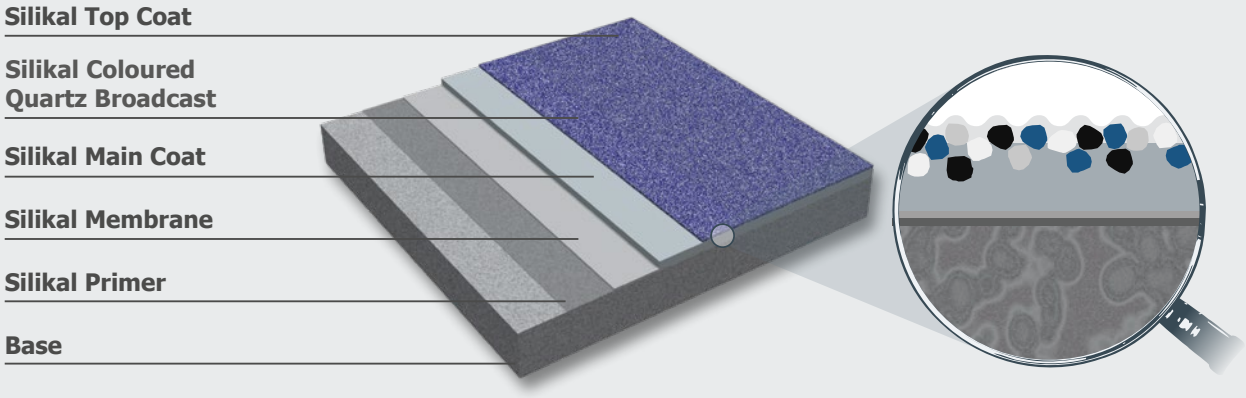
Area of application

- Areas with moderate to high mechanical stresses
- Industrial kitchen

Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Variable slip resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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Silikal® Expect more from your floor.

SILIKAL® Kitchen System

Self-levelling MMA system with quartz broadcast and waterproofing membrane

Products

- Silikal Standard Primer like SILIKAL® R 52 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Membrane like SILIKAL® RU 320 pigmented or comparable
- Silikal Main Coat resin like SILIKAL® R 61 or comparable
- Silikal Coloured Quartz like SILIKAL® Filler FS or FM
- Two times Silikal Top Coat like SILIKAL® R 71 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Slip resistance:	R11 to R13 (DIN 51130) depending on the clients requirements
Compressive strength:	45 N/mm² (EN 196-1)
Flexural strength:	24 N/mm² (EN 196-1)
Tensile strength:	14 N/mm² (EN ISO 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	0 °C to +60 °C (+80 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Cfl-s1 (EN ISO 13501)
Thickness:	4 – 6 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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SILIKAL® System B
Quartz TA

SILIKAL® System B: Quartz TA

Trowel-applied MMA system with coloured quartz

SILIKAL® System B – Quartz TA is a fast curing, decorative, hard wearing, methyl methacrylate coating. The mix of resin and Coloured Quartz is compressed and leveled by trowel. This mix creates an extra compact screed which can withstand highest mechanical and chemical loads.

SILIKAL® System B is ideal for renovations and new projects because it reduces downtime to the minimum.

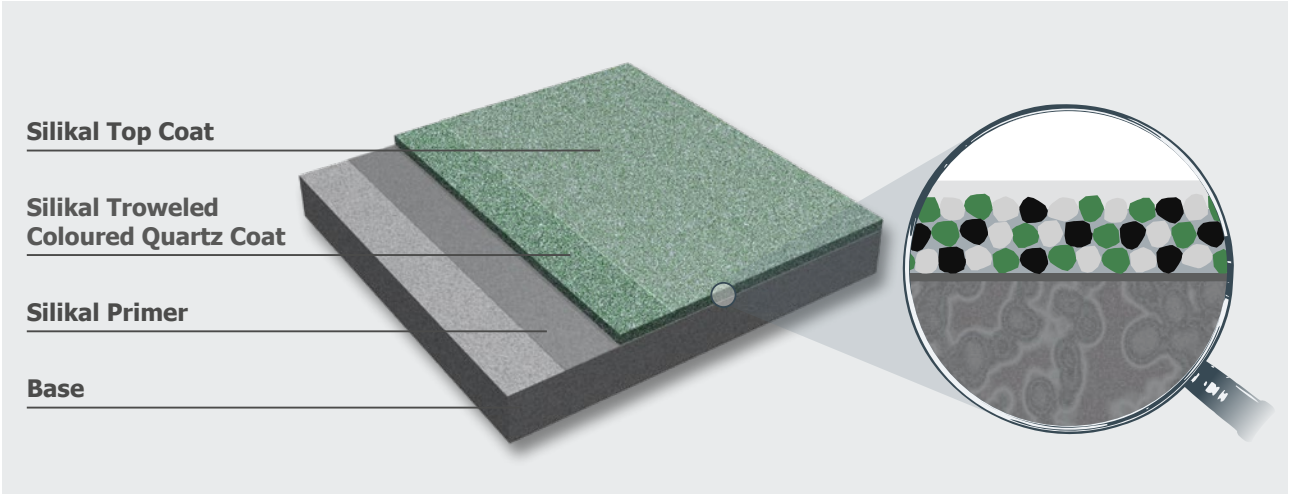
Area of application

- Areas with moderate to extreme high mechanical stresses
- Dry and wet production areas
- Industrial kitchen
- Areas with high chemical load

Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Variable slip resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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SILIKAL® System B: Quartz TA

Trowel-applied MMA system with coloured quartz

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® R 61 or comparable
- Silikal Coloured Quartz like SILIKAL® Filler FS or FM
- Silikal Top Coat like SILIKAL® R 71 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Slip resistance:	R11 to R13 (DIN 51130) depending on the clients requirements
Compressive strength:	45 N/mm² (EN 196-1)
Flexural strength:	24 N/mm² (EN 196-1)
Tensile strength:	13 N/mm² (EN ISO 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	0 °C to +60 °C (+80 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Efl (EN ISO 13501)
Thickness:	3 – 6 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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SILIKAL® System C
Uni Colour

SILIKAL® System C: Uni Colour

Pigmented self-levelling MMA system

SILIKAL® System C – Uni Colour is a fast curing, decorative, hard wearing, methylmethacrylate coating.

SILIKAL® System C is ideal for renovations and new projects because it reduces downtime to the minimum.

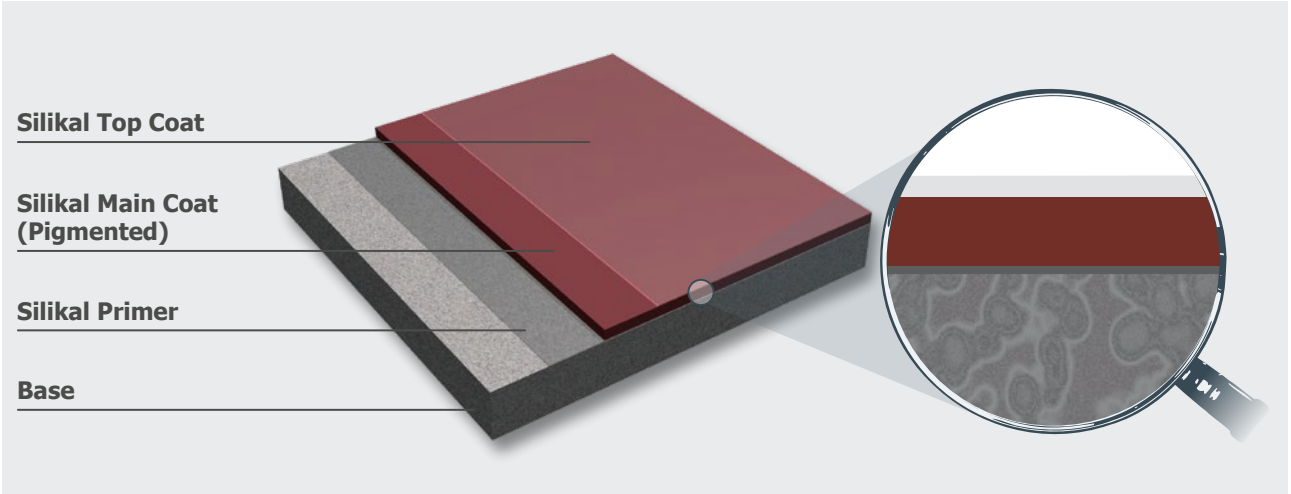
Area of application

- Mainly dry areas
- Dry production and manufacturing areas
- Warehouses
- Car workshops
- Hangars
- Pharma industry
- Corridors

Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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Silikal® Expect more from your floor.

SILIKAL® System C: Uni Colour

Pigmented self-levelling MMA system

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® R 62 or comparable with addition of pigment such as SILIKAL® Pigment or a comparable product
- Silikal Top Coat like SILIKAL® R 72 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Compressive strength:	45 N/mm² (EN 196-1)
Flexural strength:	25 N/mm² (EN 196-1)
Tensile strength:	10 N/mm² (EN ISO 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	0 °C to +60 °C (+80 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Efl (EN ISO 13501)
Thickness:	2 – 4 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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SILIKAL® System C
Flakes

SILIKAL® System C: Flakes

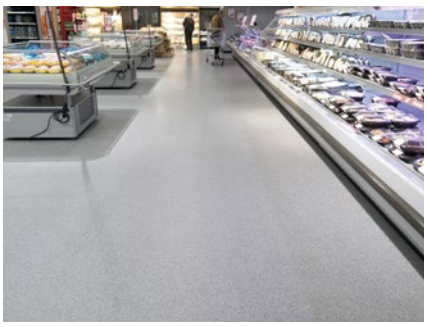
Self-levelling MMA system with flake broadcast

SILIKAL® System C – Flakes is a fast curing, decorative, hard wearing, methyl methacrylate coating. Coloured Flakes are broadcasted in the system to achieve a decorative, modern contemporary finish. Choose from various colours and design a floor with your favourite colour combination.

SILIKAL® System C is ideal for renovations and new projects because it reduces downtime to the minimum.

Area of application

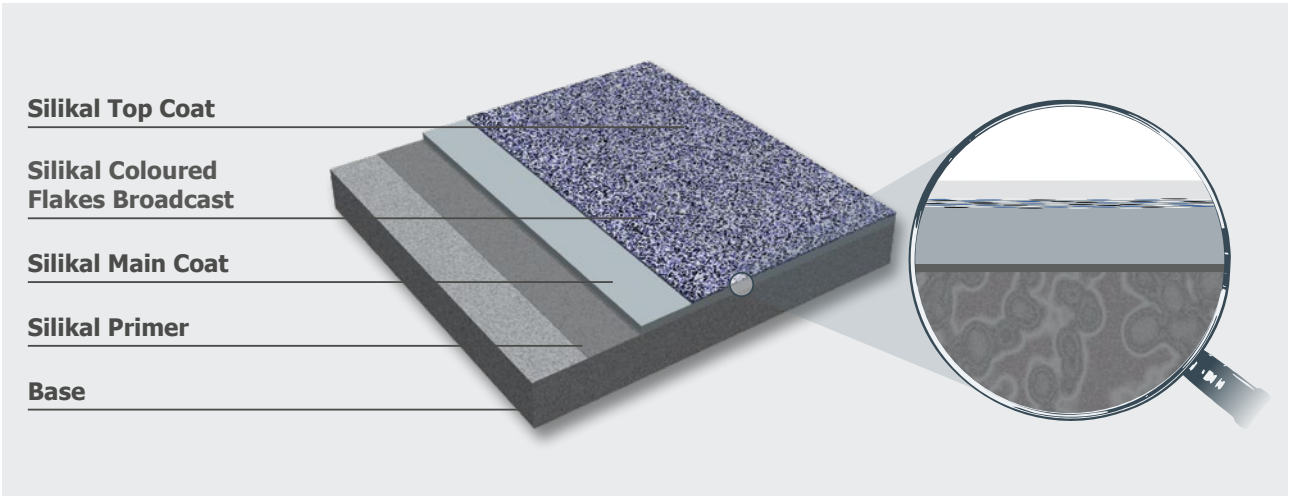
- Mainly dry areas
- Supermarkets, shops
- Restaurants, cafes, bars, hotels, cinemas, casinos
- Schools, universities, hospitals, kindergartens
- Museums



Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Variable slip resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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Expect more from your floor.

SILIKAL® System C
Flakes

SILIKAL® System C: Flakes

Self-levelling MMA system with flake broadcast

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® R 62 or comparable
- Silikal Coloured Flakes
- Silikal Top Coat like SILIKAL® R 72 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Slip resistance:	R10 (DIN 51130)
Compressive strength:	45 N/mm² (EN 196-1)
Flexural strength:	25 N/mm² (EN 196-1)
Tensile strength:	10 N/mm² (EN ISO 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	0 °C to +60 °C (+80 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Cfl-S1 (EN ISO 13501-1)
Thickness:	2 – 4 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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Expect more from your floor.

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SILIKAL® System D
Cold Room

SILIKAL® System D: Cold Room

Flexible self-levelling MMA system with quartz broadcast

SILIKAL® System D – Cold Room is a fast curing, decorative, flexible, methyl methacrylate coating with excellent crack bridging properties. Quartz is enclosed in the system to achieve the required slip resistance for the specific industry.

SILIKAL® System D Cold Room is ideal for renovations and new projects because it reduces downtime to the minimum.

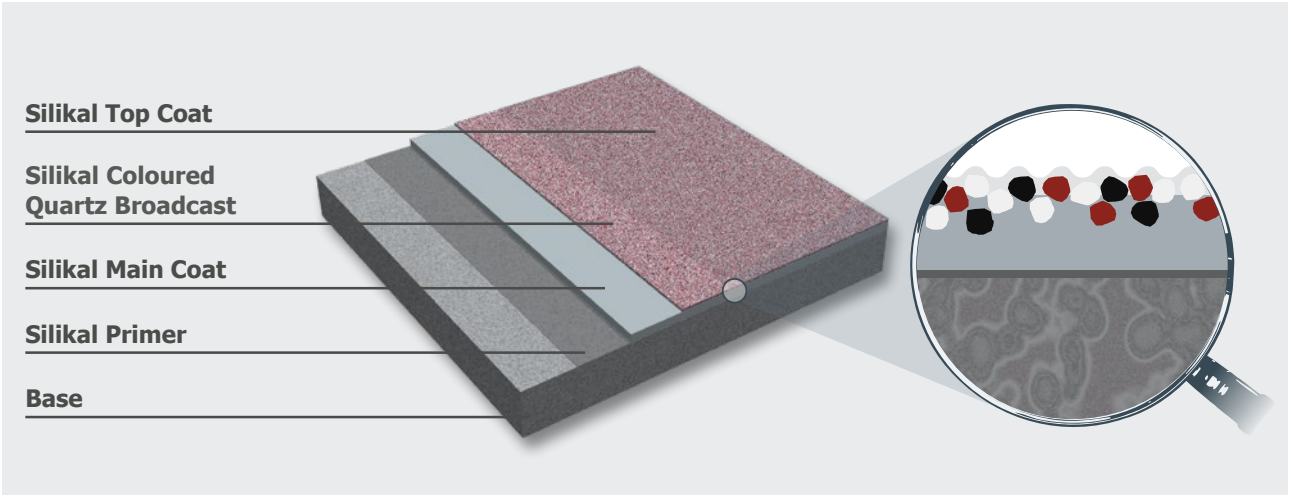
Area of application

- Cold rooms, refrigerators
- Freezers

Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Variable slip resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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Silikal® Expect more from your floor.

SILIKAL® System D: Cold Room

Flexible self-levelling MMA system with quartz broadcast

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® RV 368 or comparable
- Silikal Coloured Quartz like SILIKAL® Filler FS or FM
- Silikal Top Coat like SILIKAL® R 62 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Slip resistance:	R11 to R13 (DIN 51130) depending on the clients requirements
Compressive strength:	25 N/mm² (EN 196-1)
Flexural strength:	10 N/mm² (EN 196-1)
Tensile strength:	15 N/mm² (DIN 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	-25 °C to +45 °C (+60 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Efl (EN ISO 13501-1)
Thickness:	4 – 5 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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SILIKAL® System D
Outdoor

SILIKAL® System D: Outdoor

Flexible self-levelling MMA system with quartz broadcast

SILIKAL® System D – Outdoor is a fast curing, decorative, flexible, methyl methacrylate coating with excellent crack bridging properties. Quartz is enclosed in the system to achieve the required slip resistance for the specific industry.

SILIKAL® System D Outdoor is ideal for renovations and new projects because it reduces downtime to the minimum.

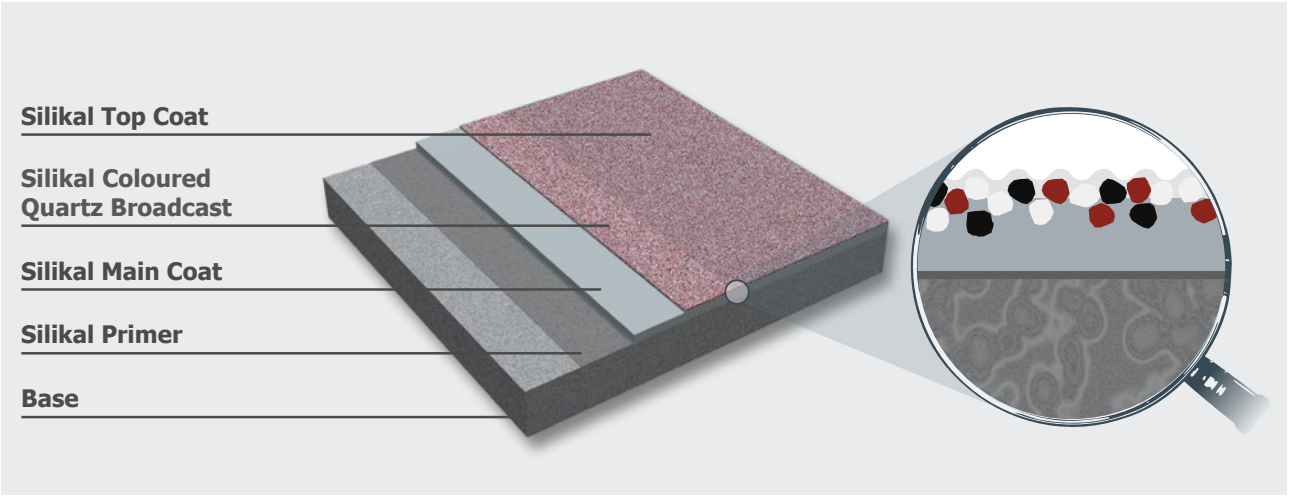
Area of application

- Outdoor areas
- Areas where substrate movement is expected

Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Variable slip resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various colours

System configuration



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SILIKAL® System D: Outdoor

Flexible self-levelling MMA system with quartz broadcast

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® RV 368 or comparable
- Silikal Coloured Quartz like SILIKAL® Filler FS or FM
- Silikal Top Coat like SILIKAL® R 82 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Slip resistance:	R11 to R13 (DIN 51130) depending on the clients requirements
Compressive strength:	25 N/mm² (EN 196-1)
Flexural strength:	10 N/mm² (EN 196-1)
Tensile strength:	15 N/mm² (DIN 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	-25 °C to +45 °C (+60 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Efl (EN ISO 13501-1)
Thickness:	4 – 5 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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SILIKAL® Concrete Look

Acrylic Design Floors

SILIKAL® Concrete Look is a fast curing, decorative, hard wearing, methyl methacrylate coating. Unique decorative coverings; creative, attractive one-of-a-kind finishes; dynamic, ultra-modern design.

SILIKAL® Concrete Look is ideal for renovations and new projects because it reduces downtime to a minimum.

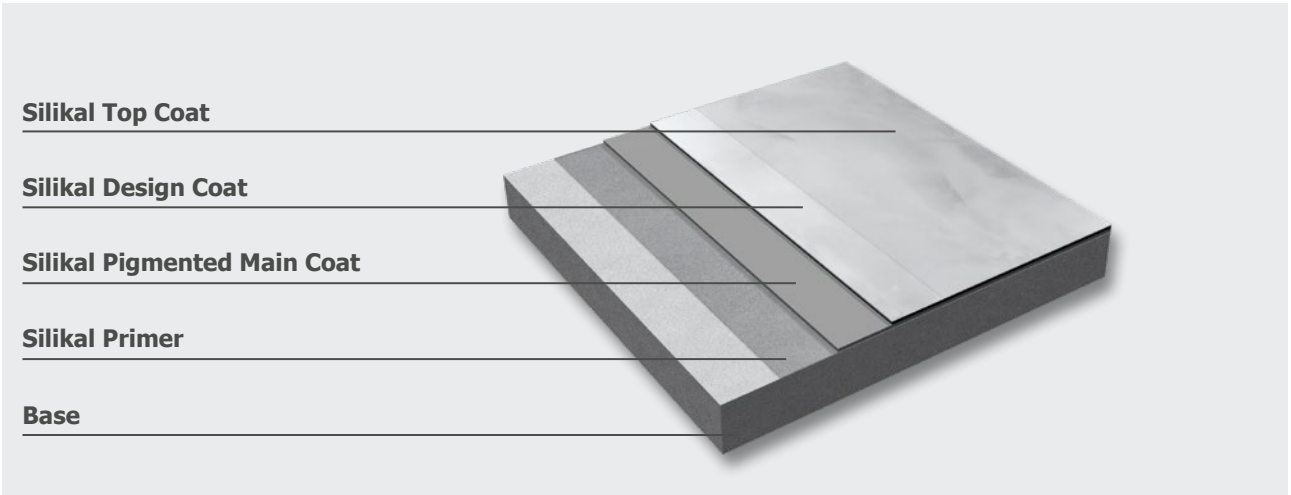
Area of application

- Restaurants
- Boutiques
- Furniture shops
- Bars
- Public buildings

Advantages

- Extremely short curing time. One hour after application of the last layer full mechanical and chemical resistant
- Excellent chemical resistance
- High mechanical resistance
- Seamless and hygienic finish
- Easy to clean and maintain
- Certified by HACCP International
- Outstanding resistance to ageing and weathering
- Application is possible on various substrates
- Good UV resistance
- Various grey shades

System configuration



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SILIKAL® Concrete Look

Acrylic Design Floors

Products

- Silikal Standard Primer like SILIKAL® R 51 (Primer depends on the substrate. Please refer to the Silikal Primer Table or contact our technical department)
- Silikal Main Coat resin like SILIKAL® R 62 or comparable with addition of pigment such as SILIKAL® Pigment, approx. RAL 7016, 7030 or 7031
- Silikal Design Coat SILIKAL® R 69 C
- Silikal Top Coat like SILIKAL® R 71 or comparable

For complete technical details, material consumption, hardener quantities, guideline recipes please refer to the latest Silikal Technical Documentation and Product Data Sheets of the relevant products or consult our technical department.

Technical data

Curing time:	1 hour
Compressive strength:	45 N/mm² (EN 196-1)
Tensile strength:	25 N/mm² (DIN 527-2)
Abrasion resistance:	Class AR 1 – heavy-duty
Temperature resistance:	0 °C to +60 °C (+80 °C for short periods e.g. for cleaning purposes)
Chemical resistance:	Refer to Silikal chemical resistance table
Water vapour permeability:	Class II (EN ISO 7783-2)
Fire behaviour:	Dfl-S1 (EN ISO 13501-1)
Thickness:	3 – 5 mm
Colour range:	Please refer to Silikal Colour Concept

⚠ **Guideline recipes, material consumption, hardener quantities etc. are given in the data sheets of the corresponding Silikal resins.**

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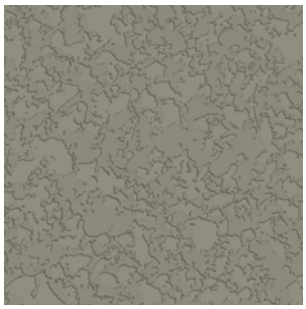
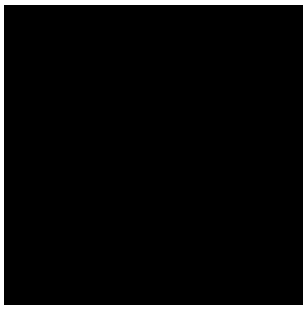
SILIKAL® Coloured Flakes

One colour

SILIKAL® KF 1

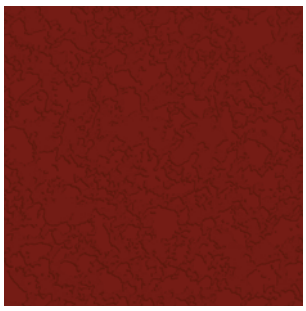

SILIKAL® KF 2


SILIKAL® KF 3


SILIKAL® KF 4

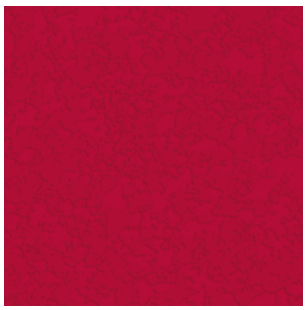

SILIKAL® KF 5


SILIKAL® KF 6


SILIKAL® KF 11


SILIKAL® KF 12


SILIKAL® KF 13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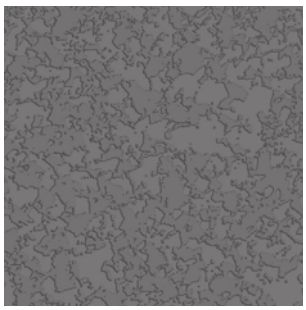
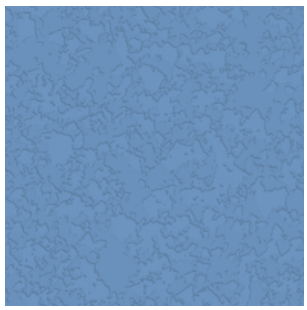

SILIKAL® KF 16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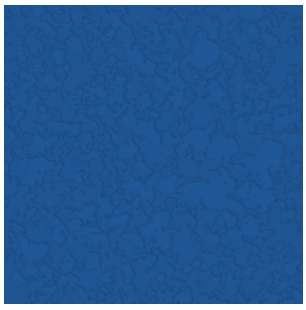
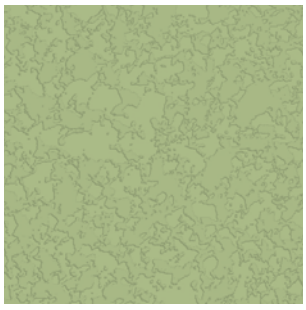
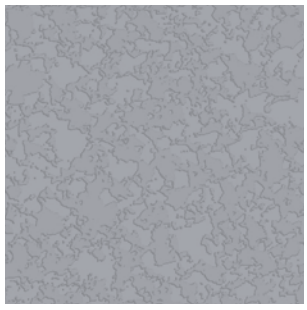

SILIKAL® KF 19


SILIKAL® KF 20


SILIKAL® KF 23


SILIKAL® KF 24


SILIKAL® KF 25


SILIKAL® KF 26

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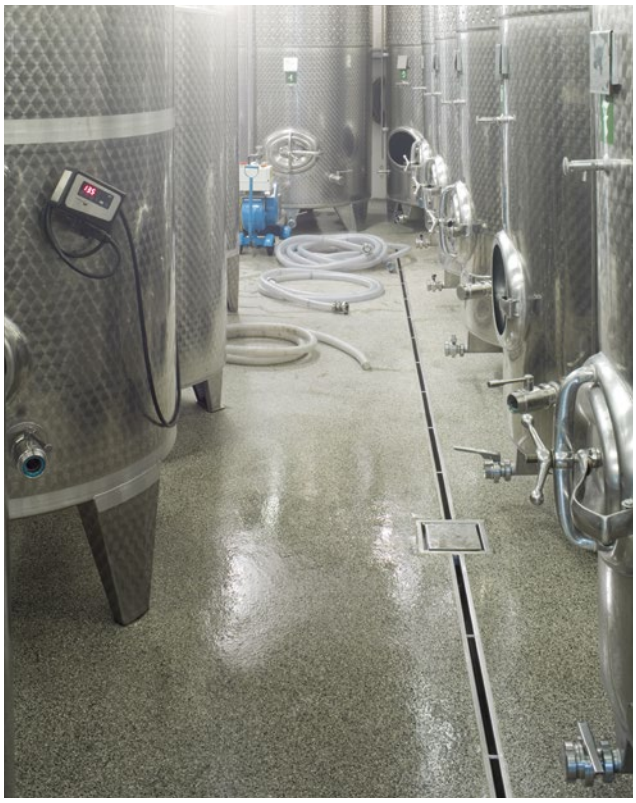
SILIKAL® Coloured Flakes

Examples of use

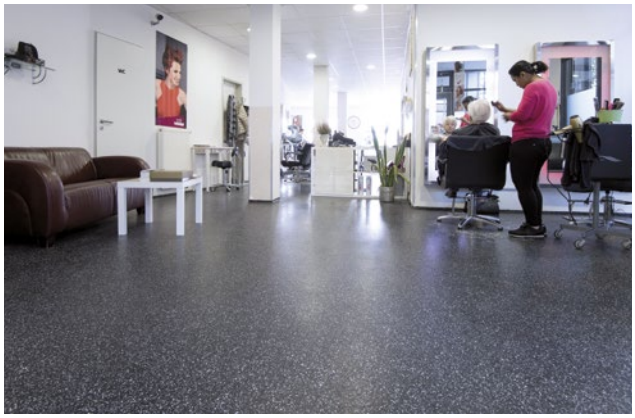
Grocery store, Godinne, Belgium



Winery, Joching, Austria

Hotel, Seligenstadt, Germany

Public utilities, Lohr, Germany



Hair studio, Lohr, Germany

Tuning workshop in Neuwied, Germany

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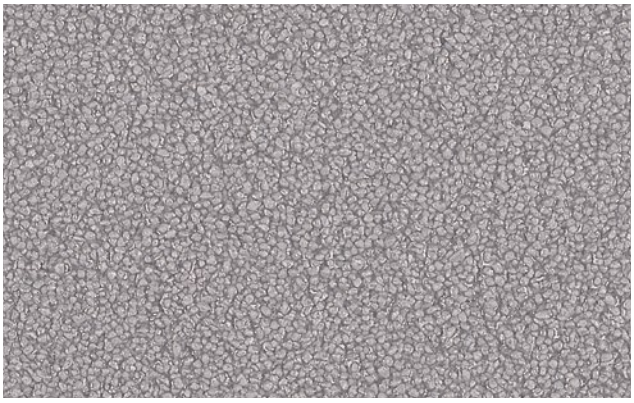
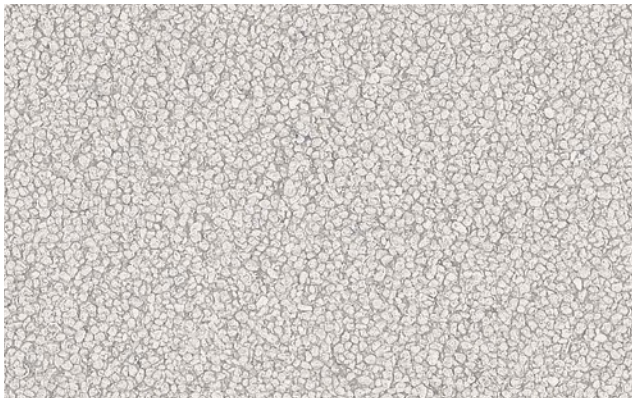
SILIKAL® Filler FS

One colour, for dry penetration toppings
Grain size 0.4 – 0.8 mm and 0.7 – 1.2 mm

SILIKAL® Filler FS, black

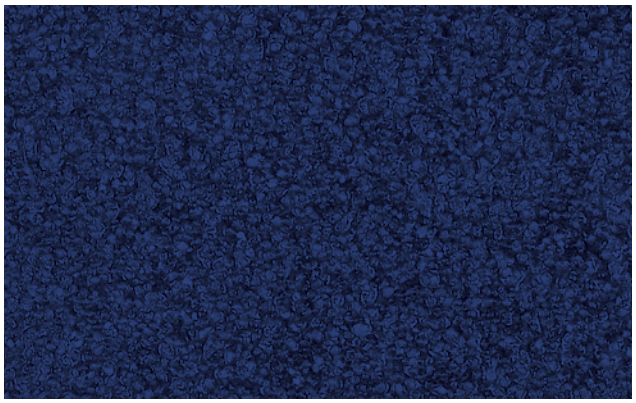


SILIKAL® Filler FS, silver grey

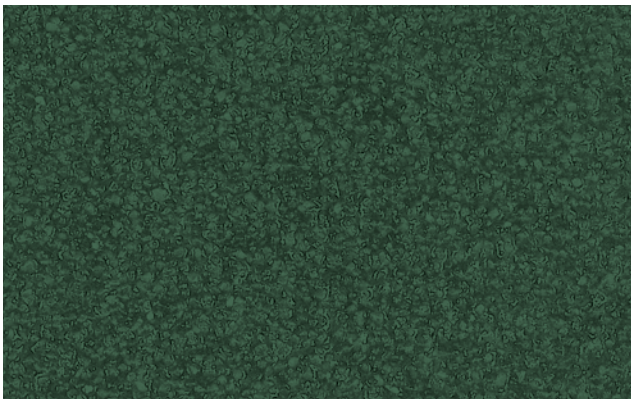


SILIKAL® Filler FS, light grey

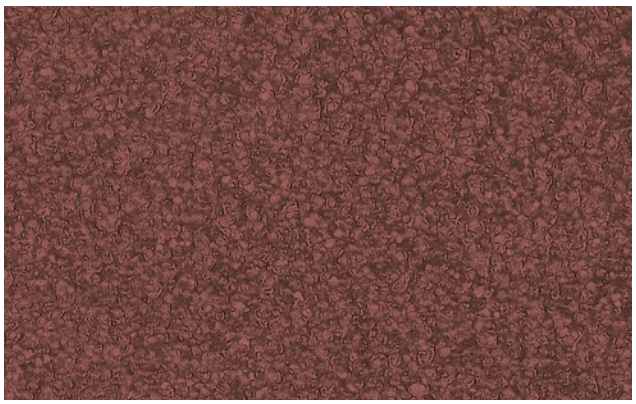
SILIKAL® Filler FS, ochre yellow



SILIKAL® Filler FS, ultramarine blue



SILIKAL® Filler FS, dark green



SILIKAL® Filler, oxide red

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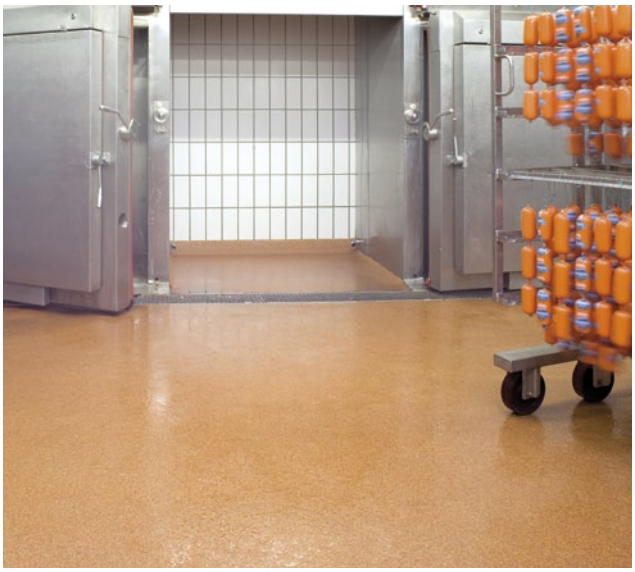
SILIKAL® Filler FS

Examples of use

Fish processing facility, Glyvrar, Faroe Islands



Butcher shop, Wiggensbach, Germany

Car wash, Woerden/Netherlands

Factory kitchen, Wilrijk/Belgium

Distributor of shrimps in Greetsiel, Germany

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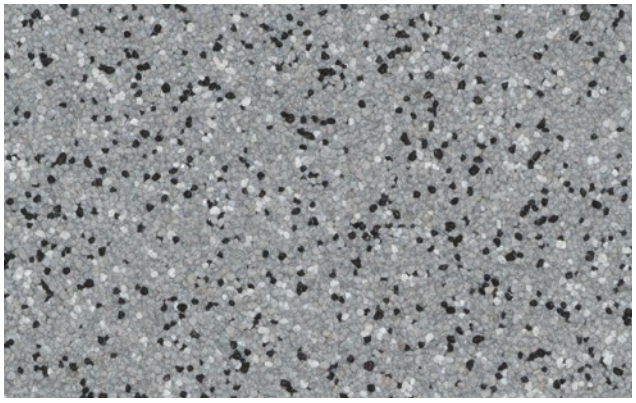
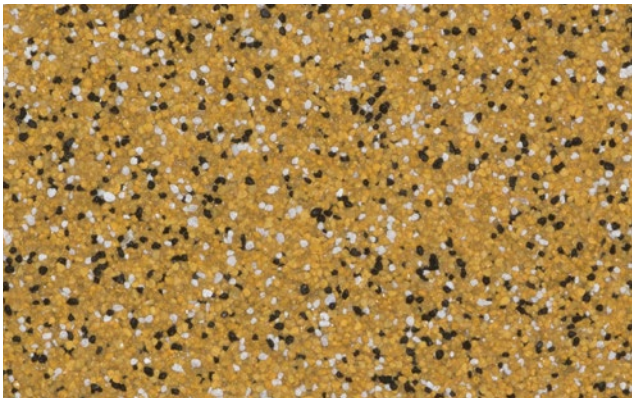
SILIKAL® Filler FM

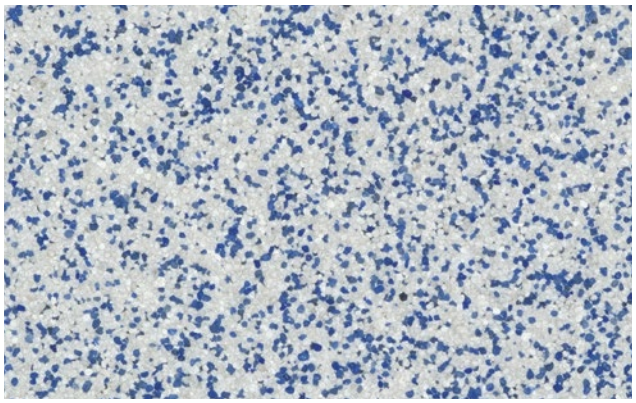
Multicolour mixtures for sprinkled floorings and smoothable floorings
Grain size 0.7 – 1.2 mm



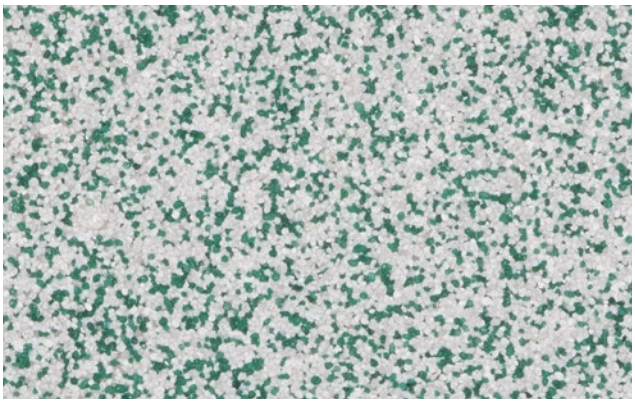
SILIKAL® Filler FM No. 1



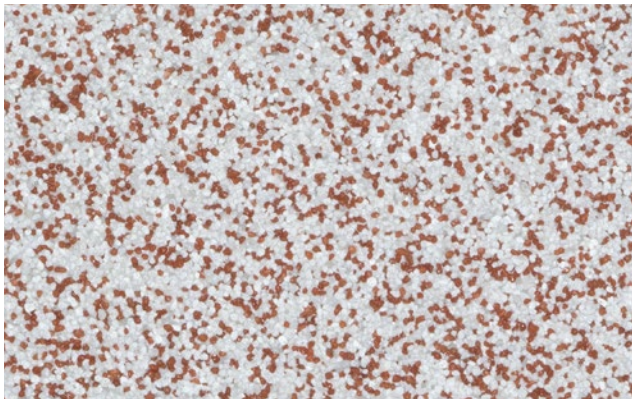
SILIKAL® Filler FM No. 2



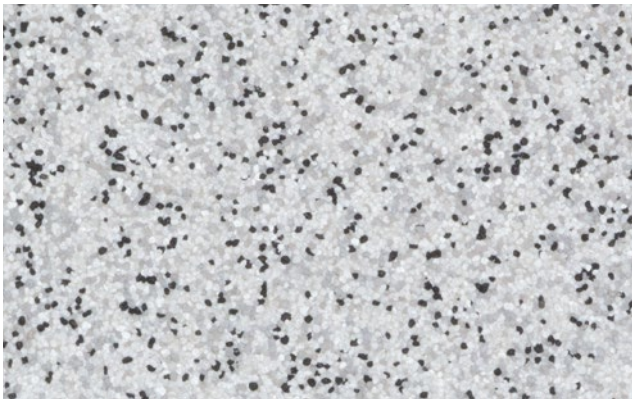
SILIKAL® Filler FM No. 3



SILIKAL® Filler FM No. 4



SILIKAL® Filler FM No. 5



SILIKAL® Filler FM No. 6

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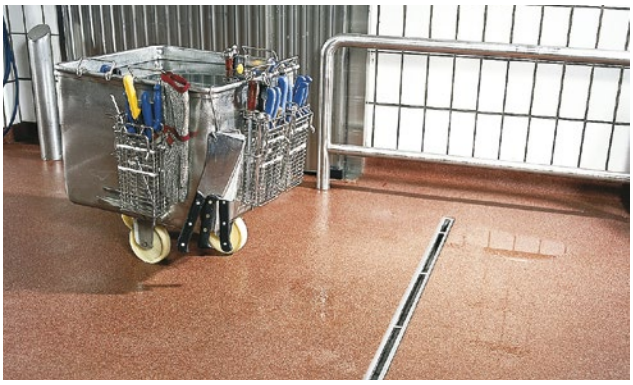
SILIKAL® Filler FM

Examples of use

Electrical engineering, Twistringen, Germany



Slaughterhouse in Imst, Tyrol, Austria

Hotel kitchen in Merano, South Tyrol, Italy

Valve production company, Gelsenkirchen, Germany

School kitchen, Bad Kreuznach, Germany

Salmon smokery, Dresden, Germany

Meat products factory, Schwabach, Germany

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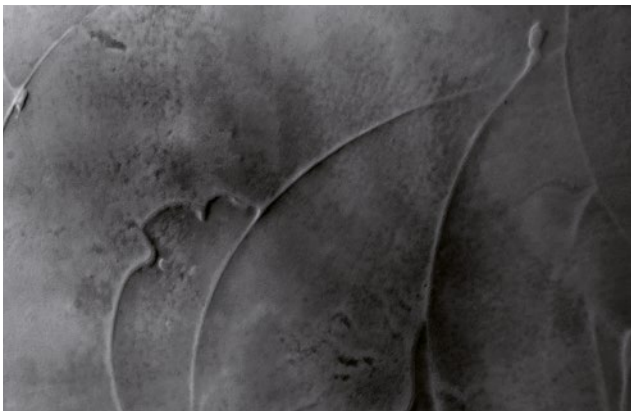
SILIKAL® Concrete Look

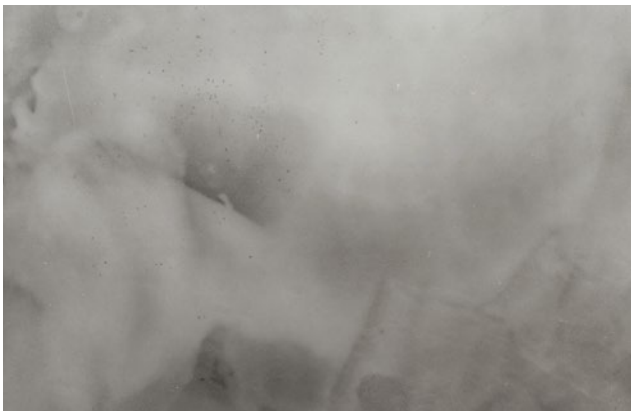
Acrylic design floors

SILIKAL® Concrete Look approx. RAL 7001

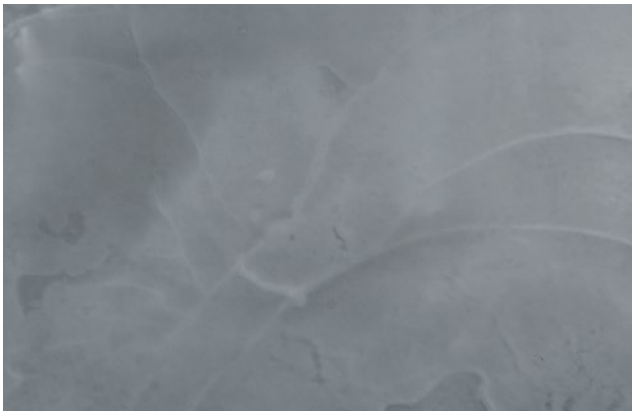


SILIKAL® Concrete Look approx. RAL 7016

SILIKAL® Concrete Look approx. RAL 7023



SILIKAL® Concrete Look approx. RAL 7030



SILIKAL® Concrete Look approx. RAL 7031

The introduced images are just for your guidance.
Beside the selection of the colour for the base coat also the individual workmanship of the floor layer will influence the achieved appearance.
Each floor is a unique version and won‘t be repeatable for the next job.

The shades shown here are guidelines only. For printing reasons they may not be exactly the same as the original colours. We reserve the right to make changes.

Silikal
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SILIKAL® Concrete Look

Examples of use

Bakery, Gemünden/Main, Germany

Supermarket, Düsseldorf, Germany

Restaurant/Gastronomy

Dental laboratory, Worms, Germany

Sales office, Molsberg, Germany

Car repair shop

Silikal GmbH

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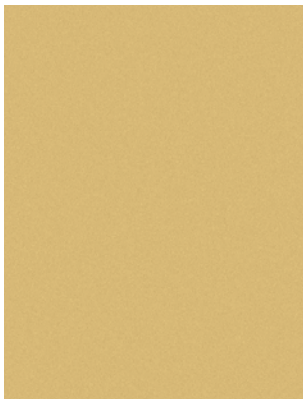
SILIKAL® Pigment Powder

Standard colours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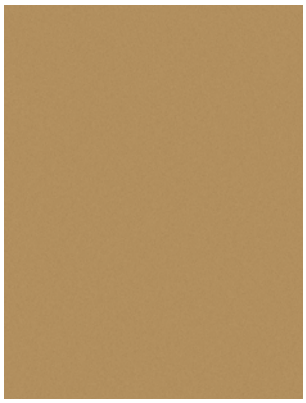
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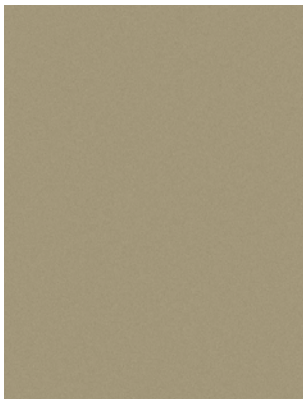
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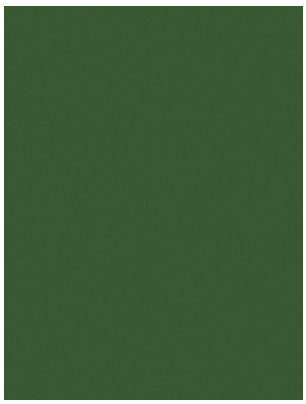
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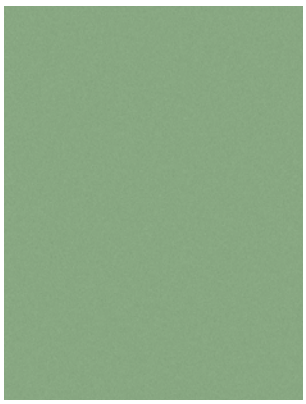
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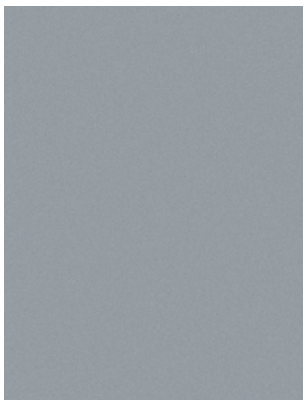
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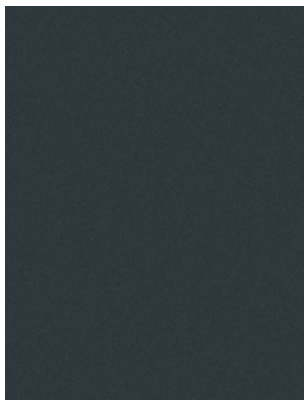
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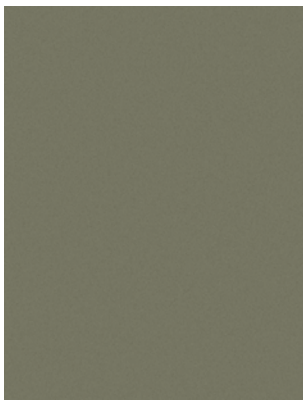
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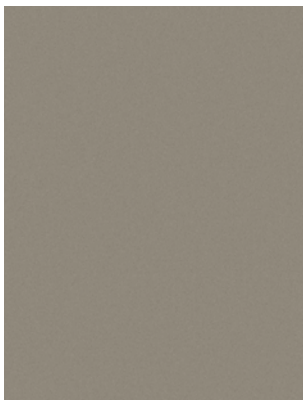
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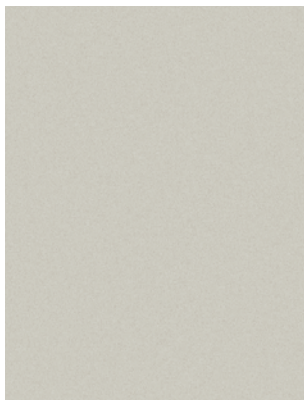
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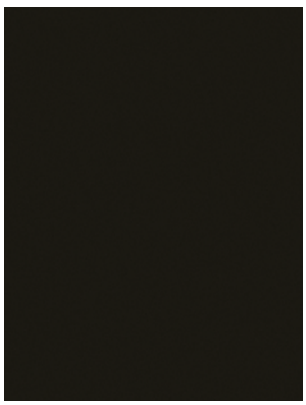
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approx. RAL 9010

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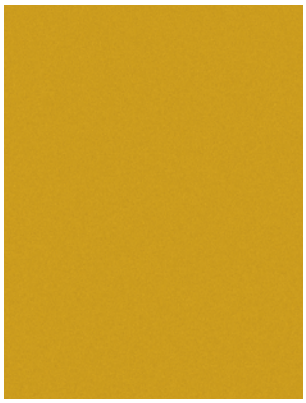
SILIKAL® Pigment Powder

Special colours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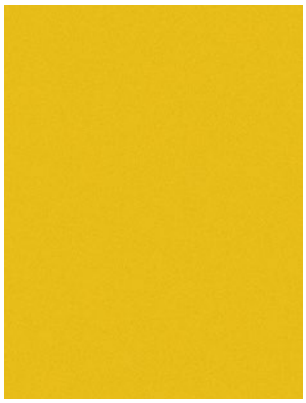
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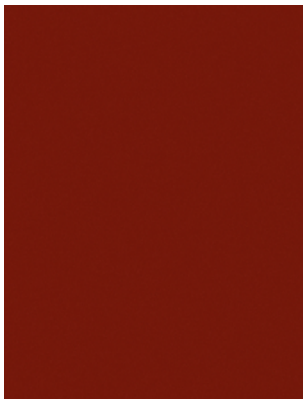
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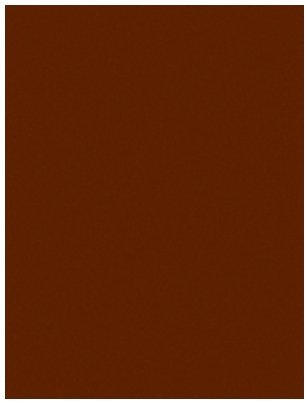
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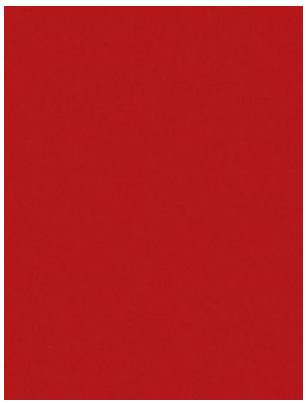
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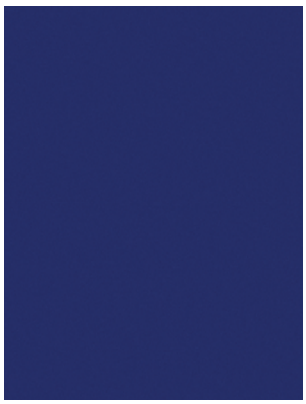
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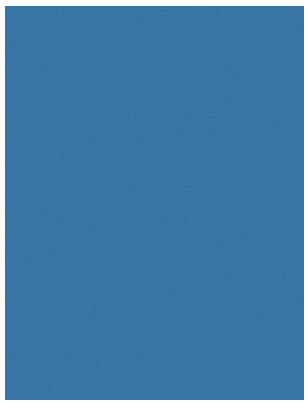
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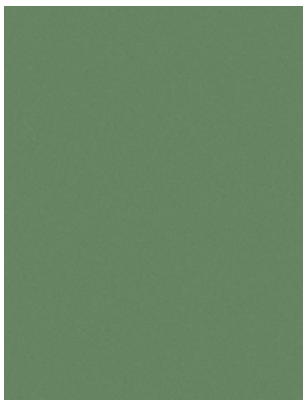
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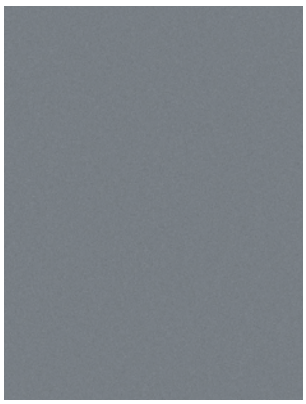
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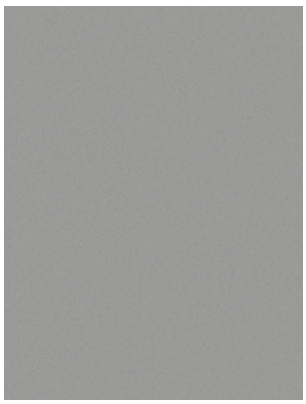
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SILIKAL® Pigment Powder

Examples of use

Metalworks, Fellbach, Germany

Handicraft business, Lohr/Main, Germany

Butcher shop, Jossgrund-Oberndorf, Germany

Print shop, Ötztal-Bahnhof/Austria

Metalworks, Hamburg, Germany

Public utilities, Lohr, Germany

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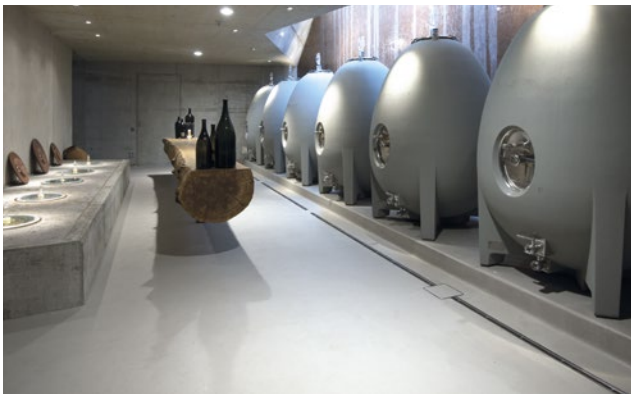
SILIKAL® Pigment Powder

Examples of use

Furniture store, Zellingen, Germany

Fast food restaurant, Jakarta/Indonesia



Winery, Würzburg, Germany

Dairy farm, Neustadt/Austria

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SILIKAL® polymer concrete

for repairs and civil engineering

Repairs

Reactive resin mortars have proven their worth for repairs to concrete surfaces in both structural and civil engineering. Silikal reactive resin mortars consist of a premixed powder component, which already contains fine fillers, pigments, quartz sands and hardener components, and a low-viscosity reactive resin. These two components are mixed on site to form an easy-flowing mortar. Dry gravel aggregates from a grain size of 2 mm can be added on site as well to serve as an additional filler for corresponding installation depths.

The striking features of reactive resin mortars are:

- permanent bond with the existing concrete
- excellent frost resistance
- easy to mix and process
- rapid curing even at temperatures below freezing

The main areas of application for reactive resin mortars for repairs and renovation are:

- industrial flooring of all kinds
- prefabricated concrete parts
- bridge bearing underlinings
- roads and motorways
- airports, including runways and landing strips
- pavement renovation

The main products used are:
SILIKAL® R 7 mortar and SILIKAL® R 17 mortar, and as a primer SILIKAL® R 51 resin.

Civil engineering

Reactive resin mortars and concretes have been proving their worth as a repair mortar for damaged concrete for more than two decades. Since the physical properties of reactive resin mortars and concretes have been demonstrated not only in recent tests but now also in long-term trials (> 25 years), their use in civil engineering has been growing as confidence in them has risen. This includes the use of reactive resin mortars in tunnelling and bridge construction, for instance, where mortars are exposed to high permanent stresses under bearing loads. The pictures on the following pages illustrate some of the most common uses of reactive resin mortars in civil engineering at the moment and offer ideas for further applications.

You might like to know that our expertise in products and processes is based on intensive research and years of experience. We see it as a particular obligation to advise our customers in writing of all our results. We reserve the right to make technical changes in the course of development. We will help you solve problems at any time – that's what our applications engineers are there for. However, this does not release users from their duty to check whether our information and recommendations are suitable for their purposes. This also applies for the preservation of third-party property rights and for applications and processes that are not expressly indicated by us in writing. Our liability in the event of damage will be limited to substitute performance to the same extent. Our "General Terms of Sale and Supply" otherwise apply.

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SILIKAL® mortar systems

Overview

System	Name
SILIKAL® R 15	Flexibilised reactive resin mortar for repairs and screed outdoors
SILIKAL® R 17	Reactive resin mortar for concrete repairs and screeds
SILIKAL® R 7	Hard reactive resin mortar for floorings
SILIKAL® R 16	Reactive resin mortar for rapid concrete repairs

Special formulations

SILIKAL® R 17 (–25 °C)

For repair work in cold areas (cold stores, winter season), you can use this more accelerated SILIKAL® R 17 mortar. However, this must only be applied at temperatures from –10 °C to –25 °C and must be cooled down to at least 0 °C before being applied. The special formulation relates to hardeners and powders.

SILIKAL® R 17-thix

If laying on inclines or when modelling edge excavations and coving, we recommend that you use SILIKAL® R 17-thix hardener, but at the same mixing ratio, due to the thixotropic formulation.

Special shades

The standard shade is roughly RAL 7030 medium grey. If sealed batches and minimum quantities are purchased, special shades are available on request.

CE conformity

SILIKAL® R 17 mortar has a CE mark certifying compliance with screed standard DIN EN 13813. We would be happy to provide various test reports on request.

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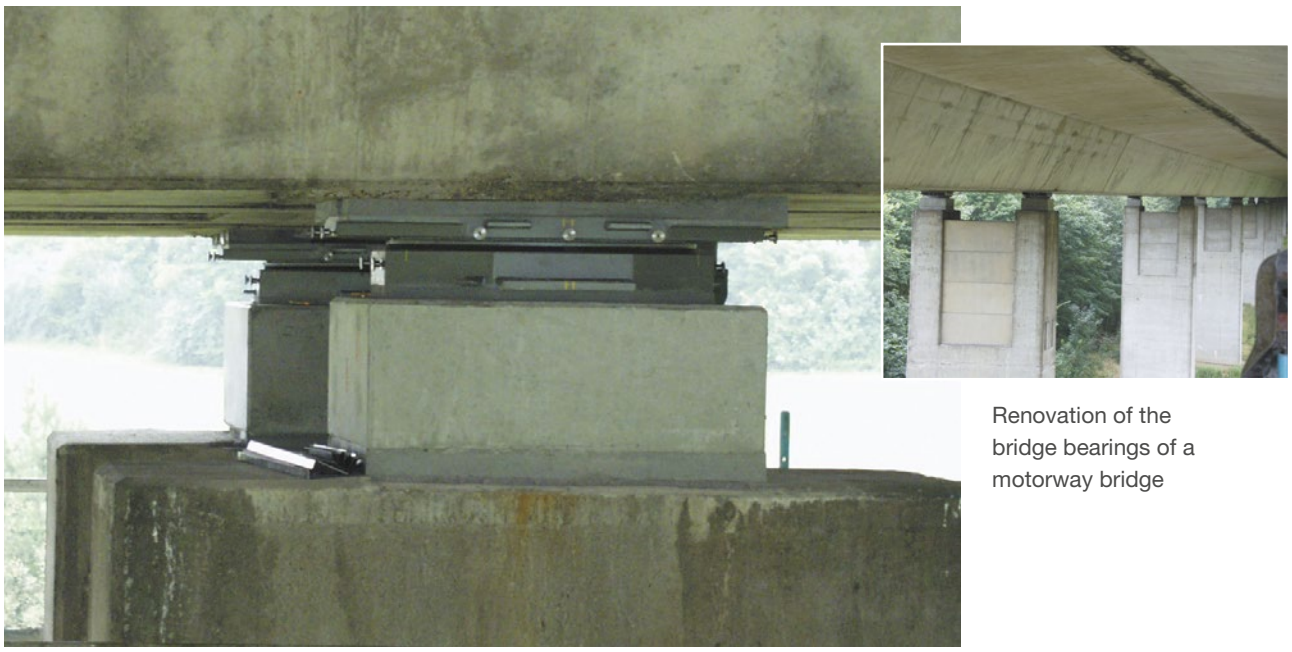
SILIKAL® mortar systems

Examples of use



Renovation of the bridge bearings of a motorway bridge

Renovation of ramps in a car park

Installation of the lateral drainage channels in a motorway

Grouting of supporting ribs in a highway

Renovation of the bridge abutment of an urban railway bridge

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SILIKAL® mortar systems

Examples of use

Road renovation of a roundabout with SILIKAL® R 17

Edge renovation of the concrete roadway of a highway

Bridge coating incl. handrail attachment

Underlayment of steel construction at an interstate road

Concrete renovation on the landing strip and taxiway of a civil airport

Improvement of the flooring in a cold store in continuous operation with SILIKAL® R 17 (–25 °C) mortar

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The substrate

General notes

To effectively apply coatings and toppings, it is vital to achieve a good connection with the substrate. It is therefore essential to check the substrate for suitability and to prepare it for the subsequent coating. The substrate must be suitable for the particular coating, it must be sufficiently firm, free from dust and loose parts and free from any contamination such as oil. Furthermore, the substrate must not have undergone any treatment or received any additions or additives which would negatively affect the bonding or the curing process of the reactive resin to be applied. According to German construction contract procedures, the contractor's services include testing the substrate for its suitability for application of the prescribed topping. The contractor must inform the client of any reservations regarding the planned type of design in written form without delay if it does not correspond to the characteristics of the substrate.

Testing the substrate

Moisture

Cement screeds and concrete surfaces are only ready for coating after installation when they have reached an equilibrium moisture level of roughly 4 %. This is generally not the case until 28 days after installation. Restrictions in terms of potentially achievable equilibrium moisture levels may be necessary under certain climate conditions. The substrate must also be adequately sealed against groundwater and rising damp (capillary moisture), for example by means of a gravel filter layer or horizontal barrier (film). Waterproof concrete and waterproof screed do not provide protection against moisture penetration, as they are vapour-permeable. Moisture measurements can be performed with kiln-drying samples, CM devices and suitable electronic measurement equipment. The CM device provides the most reliable values, however. Rising damp can be checked by affixing a leak-proof polyethylene film over an area of roughly 1 m^2. If the covered area becomes dark in colour within 24 hours as the result of condensation, rising damp can be assumed. Measuring the moisture of the substrate before coating work is commenced is absolutely necessary and essential.

Firmness

The substrate must be sufficiently firm as coatings and toppings cannot perform any load-distribution function despite their high intrinsic strength because of their low coating thickness. The pressure resistance of concrete and compound screeds can be determined appropriately with a bounce hammer. The pressure resistance should be at least 25 N/mm^2 for industrial floors.

Adhesion test

A sufficient number of adhesion tests must be performed at various points on the cleaned surface of the substrate before coating/topping work is commenced. Tensile bond testing devices with test plates have proven useful in this context. As adhesive for the tensile bond punches, we recommend SILIKAL® RI/21. As pre-test, a rapid test can be performed. This test is carried out with the Silikal primer resin which will be used later on (SILIKAL® BPO added in accordance with applicable curing agent table). Half of the primer resin is used as a film-forming primer. The rest of the resin is used to create an even more viscous mortar with sand (0.7 – 1.2 mm) and applied to roughly half of the primed surface with a thickness of roughly 3 mm. Once it has hardened with no remaining tackiness, the manual sample is chiselled off with a hammer and chisel. The top of the substrate must adhere to the primer resin layer across its entire surface and must have a grain fracture in the upper zone of the substrate. The primed surface must be cured with no remaining tackiness and must not detach when scratched with a knife or screwdriver. We expressly point out that this rapid test does not substitute the tensile bond test with appropriate equipment.

Pretreating the substrate

Evenness

Reactive resin coatings cannot level out irregularities in the substrate. Irregularities can be levelled out with slurry (see **"General processing notes"**, section **"Scratch slurry"**). For very deep and large irregularities, a mortar levelling layer may be needed.

Contamination

Reactive resins have little or no adherence to soiled substrates. For this reason, any type of contamination, i.e., dry or wet, must be removed so that all pores are fully open. Oily and greasy substrates can be cleaned with special cleaning agents, with the use of scrubbing machines, high-pressure jets and flameblasting. For substrates contaminated with chemicals and for substrates which have been treated with evaporation-inhibiting sprays, we recommend flameblasting as a cleaning method. Substrates soiled with paint, bitumen or tar can be cleaned by milling or sandblasting. We strongly recommend having this cleaning performed by specialist companies.

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The substrate

Soft and detachable components

Cement slurries, cement bowls, mortar residue and all surface components which are not firmly and inseparably attached to the substrate must be chiselled, milled, sandblasted or ground off before the first application of reactive resin.

Absorbency

To allow reactive resins to firmly anchor to the surface of concrete or mortar, their primer needs to penetrate into the capillary/pore structure of the substrate, so the substrate needs to be sufficiently absorbent. Particularly high substrate absorbency is a sign of low firmness. It is then vital to prime the substrate until saturation such that it forms a film. For non-absorbent substrates, it is essential to use a primer with an adhesive effect.

Cracks

In the case of cement-bound substrates, spider-web-like surface cracking has no negative effects on the reactive resin; it is likely, however, that more primer resin will be needed. Cracks which are constantly progressing cannot be sealed in a force-locking manner, as new cracks are likely to occur. If the cracks are sealed flexibly, it must be checked that a coating/topping can be applied, and how the coating/topping would need to be structured.

Cracks which are no longer changing can be sealed in a force-locking manner with a suitable Silikal resin.

Joints

Joints need to be incorporated, even those with little tendency to move. They should form a straight line, have a uniform width and firm joint edges. Damage to the joint edges should be improved with Silikal reactive resin mortar. Rigid joints can be filled and covered with a coating after priming in most cases. Structural expansion joints always need to be incorporated and must not be filled or covered with a coating.

Cavities

Surfaces laid on a hollow framework, particularly those with cracks, must be removed and be filled with Silikal mortar after priming with Silikal primer resin.

Special note regarding common building substrates

Concrete

Cement concrete generally has a fine mortar layer on its surface (cement slurries), which needs to be removed before any coating is applied because of its low firmness and low adhesion to the substrate. Suitable methods for this are, depending on the nature of the substrate: milling, sandblasting, shotblasting and flameblasting.

Cement screeds

Cement screeds, particularly hard aggregate screeds, can have surfaces which are so dense that reactive resin primer can hardly penetrate at all. The pores of these surfaces must be opened, for example by sandblasting. In the case of cement screeds, the cement slurries must be removed by milling or sandblasting. Hard aggregate screeds can be roughened by shotblasting

Anhydrite and magnesite screeds

Anhydrite and magnesite screeds are not moisture resistant. In the case of reaction coatings/toppings which are impermeable to water vapour, the risk of moisture penetration from the rear and adjacent structural elements must be reliably eliminated. There is a major risk not only of the coating detaching in the case of inadequate sealing but also of these screeds themselves being destroyed. For these reasons, we advise against coating with Silikal MMA systems.

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The substrate

Mastic asphalt screeds

Mastic asphalt screeds should only be coated in indoor areas as they react substantially to temperature fluctuations. Coatings should only be applied with flexible reactive resins, as mastic asphalt can deform or lose its firmness under load and under fluctuating temperatures. A test of the hardness class according to DIN EN 13813 is essential (only hardness classes IC 10 and IC 15 can be coated). The surface of mastic asphalt screeds, particularly if they have been relaid, must be free from bitumen films (we expressly draw your attention to the section **“Testing the substrate”**, subsection **“Adhesion test”**).

Ceramic toppings

Ceramic toppings must be firmly bonded with the substrate. To achieve sufficient adhesion on ceramic toppings with reactive resins, their surface may need to be pre-treated by means of mechanical roughening (e.g. sandblasting) (perform adhesion test!). Ceramic substrates must be primed with an adhesive Silikal primer. If the adhesion tests reveal that adhesion is inadequate, the adhesion may be improved by adding SILIKAL® Additive M.

Metals

According to the Swedish standard SIS 05 5900, SA 2.5 (Near White Blast Cleaning), prepared metal substrates are non-absorbent and need to be treated with a special adhesive primer. SILIKAL® R 59 is used for this. Metal substrates should only be coated with flexible reactive resins. We recommend consulting with Silikal.

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TüV certificate DIN EN ISO 9001

Quality Management System

TÜV PROFI CERT

TÜV HESSEN

CERTIFICATE

for a management system as per

DIN EN ISO 9001:2015

Evidence of conformity has been furnished.

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Silikal GmbH
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63533 Mainhausen / Germany

scope:

Development and sales of reactive resins and
polymer concrete for industrial floors and engineering as well
as waterproofing and roadmarking.

Certificate registration No. **73 100 663**	Certificate valid from 2021-07-20 to **2024-07-19**
Audit report No. 4384 7325	First certification 2001-02-27

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

DAkkS Deutsche Akkreditierungsstelle D-ZM-14137-01-00

Darmstadt, 2021-06-28
Certification body of TÜV Hessen
– Head of Certification body –

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The current validity is verifiable at www.proficert.com. Original certificates contain a glued hologram.
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TüV certificate DIN EN ISO 14001

Environmental Management System

TÜV PROFI CERT

TÜV HESSEN

CERTIFICATE

for a management system as per

DIN EN ISO 14001:2015

Evidence of conformity has been furnished.

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Darmstadt, 2021-06-25
Certification body of TÜV Hessen
– Head of Certification body –

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Get in touch. We will gladly provide information – free of charge and without obligation.

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