Silikal®

Expect more from your floor.

Reactive resins and polymer concrete for industrial flooring and civil engineering

Technical documentation

Silikal system information
Silikal product information
Silikal general information

Issue 2.02.A
September 2011

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Silikal flooring systems
Wiesbaden Fachhochschule,
Institute of Drinks Technology

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Silikal's production and administrative headquarters in Mainhausen/Germany, near Frankfurt am Main

… as we have been for more than 55 years

We've been doing the basics for you for decades: with a background in screed construction, we decided more than 55 years ago to concentrate on the development and manufacture of floor coatings based on synthetic resins. Our history since then has seen countless research and development projects. Silikal is now active across the world and is represented in Germany and Europe as well as Asia and Australia.

… whatever your problems

Whether it's a new construction, repairs or renovation: our methacrylate resins are tried and tested heavy-duty floor coatings for industry, commerce and crafts, on transport surfaces, in public institutions and in medical facilities. Silikal's repair mortar systems are also used as reliable problem-solvers: to ensure the rapid improvement of holes, cracks or ruptures in concrete, prefabricated concrete or screeding, underline bridge bearings, establish machine foundations or fix heavy-duty sections and components in position.

… with the right systems

We have the right answer for your flooring problem. Super-fast curing with no disruption to operations, the exact degree of slip resistance required, processing even at very low temperatures, a large selection of colour design options and much, much more – all thanks to Silikal's product range.

… and with professional staff

Need advice? Delighted – put us to the test! Every project has its own demands and requirements. Our staff come from the industry. They are familiar with the problems on site and boast worldwide experience as applications engineers. That's why you should talk to us. We'll be happy to help when it comes to realising even the most difficult flooring projects or the possible uses of rapid-curing mortar systems.

And if you'd really like to get into the details, Silikal's training centre in Mainhausen can provide you with a comprehensive range of practically-oriented information.

One thing you can be sure of: we're always here for you!

TÜV CERT DIN EN ISO 9001

Certified Quality Management System
Cert. Reg. No. 73 100 663

TÜV CERT DIN EN ISO 14001

Certified Ecology Management System
Cert. Reg. No. 73 104 856

AgBB GEPRÜFT

Certified according to AgBB evaluation scheme

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Silikal®
Expect more from your floor.

Silikal flooring systems
Abel fish smoke-house,
Habbrügge near Bremen,
Germany

Silikal reactive resins are used in the manufacture of both heavy-duty and decorative flooring systems in just about every sphere of industry. Silikal has specialised in the technology of methacrylate reactive resins, millions of square metres of which have proven their worth over the last 55 years and more.

Flooring systems made from reactive resins ...

… not only offer outstanding protection to the floor, but are also suitable for many different functional requirements in a wide variety of uses. Examples include

- **hygiene and physiological non-objectionability** thanks to the jointless execution and pore-free sealing;
- **slip resistance** through the corresponding configuration of the surface;
- **abrasion resistance** thanks to the hard top coat;
- **resistance** against the majority of aggressive media.

Methacrylate reactive resins from Silikal ...

... offer significant advantages over other commercial reactive resins such as epoxy resin or polyurethane resin, including

- **rapid curing** and the immediate full availability of the floor – representing an enormous time-saving when it comes to using the surface, particularly in renovation work;
- curing even at **low temperatures** (down to -10 ºC in some cases), enabling easier processing in winter or in refrigerated halls;
- **easy to rework**, since methacrylic reactive resins adhere optimally again to an older methacrylic topping;
- **not harmful to health**, making it ideal for use in the food industry.

This technical documentation ...

… describes the **standard systems** offered by Silikal for floor toppings for the most important areas of application. It also contains the technical specifications of all Silikal reactive resins and additives as well as general advice on application and instructions. Silikal reserves the right to make technical modifications.

Silikal **guarantees** all the figures listed in the technical data sheets, but tolerances may of course occur for processing and application reasons and such deviations are permitted. The processing of Silikal materials always properly be left to trained and experienced experts. Silikal attaches considerable importance to the training and technical support of its specialist floor layers and on providing comprehensive advice on use, including on site.

The standard recipes recommended in the systems offer the greatest possible guarantee for optimal work, but this does not release the applicator in each particular case from their duty to examine and assess the individual circumstances carefully. In case of doubt, tests should be carried out before execution or Silikal consulted for advice.

Because of their many years of experience, Silikal's specialist floor layers boast sufficient knowledge and expertise, including beyond the application limits described here. You must always remember that there are risks in such cases.

Silikal does not offer any application-specific guarantee whatsoever that is not expressly agreed in writing in the individual case. This relates e. g. to circumstances extending above and beyond the usual normal and general use or information in brochures and other literature which is of a purely descriptive nature. It also goes without saying that the establishment of a proper surface meeting statutory requirements (e. g. with regard to slip resistance) does not mean that accidents can necessarily be prevented in this room or that any corresponding guarantee is offered in that regard. In principle, liquids, cleaners and the like must always be handled with care on the finished floor topping. Consult Silikal for advice if in doubt. The same applies for the use of materials which were not approved by Silikal.

It must be remembered that a flooring system (in addition to its other properties) serves first and foremost to protect the substrate and as a wearing layer. Wear, particularly in the case of slip-resistant surfaces, is subjective and depends on the intensity of use, so that it is often not possible to give an absolute prediction of service life. Assuming the proper treatment and due care, floor toppings made from reactive resins in many cases represent the best and most cost-effective solution for years.

Silikal wishes to point out that all currently applicable standards and regulations have to be observed in principle as well, e. g. safety and environmental regulations, DIN, ISO and EU standards and the notice sheets and guidelines issued by the BEB (German Association for Screeds and Flooring Systems), reserved rights and the generally recognised rules of the art.

Updates

This technical documentation can also be found on Silikal's web site under **www.silikal.de** and is subject to continuous updating. You can also find a "History" page there showing the most important amendments.

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Manthey Racing GmbH,
Technology Centre
Nürburgring, Meuspath/Eifel,
Germany

Standard coating systems
Overview

Expect more from your floor.

System	Name	Substrate	Decoration	Description
	**Thin coating** **Base: SILIKAL® RU 727 resin** Universal, rollable thin coating, 1 – 2 mm, smooth or slip-resistant, indoor use	Concrete Cement screed Asphalt Metal	Pigmented Coloured flakes Coloured quartz	Data sheet SSA Page 10 -11
	**Wet areas** **Base: SILIKAL® R 61 resin** Slip-resistant, self-levelling coating, 4 – 6 mm, for surfaces used wet, indoor use	Concrete Cement screed Ceramic tiles	Pigmented Coloured flakes Coloured quartz	Data sheet SSB Page 12 -13
	**Dry areas** **Base: SILIKAL® R 62 resin** Smooth or slightly slip-resistant coating, 2 – 4 mm, self-levelling, for surfaces used dry, indoor use	Concrete Cement screed Ceramic tiles Asphalt	Pigmented Coloured flakes	Data sheet SSC Page 14 -15
	**Heavy-duty, refrigeration and outdoor areas** **Base: SILIKAL® RV 368 resin** Smooth or slip-resistant, impact resistant self-levelling coating, 4 – 7 mm, for cold stores and for high mechanical stresses, indoors and outdoors	Concrete Cement screed Ceramic tiles Asphalt (indoor) Metal	Pigmented Coloured flakes Coloured quartz	Data sheet SSD Page 16 -17
	**Warm areas** **Base: SILIKAL® RU 747 resin** Slightly slip-resistant to slip-resistant, self-levelling coating, 4 – 6 mm, for warm areas, indoor use	Concrete Cement screed Ceramic tiles	Pigmented Coloured flakes Coloured quartz	Data sheet SSE Page 18 -19

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A thin coating presupposes that the substrate is very even and highly stable. Because of the low thickness of the layer, a thin coating is suitable for light to moderate stresses. If the anticipated stresses are greater, e. g. fork-lift truck traffic, thick top coats are preferred.

Substrate / priming

Possible substrates include concrete, cement, asphalt (only indoors) and steel structures. After the substrate has been suitably prepared, it is primed with **SILIKAL® RU 727 resin**. Before hardening, **SILIKAL® Filler QS,** particle size 0.2 – 0.6 mm, can be sprinkled loosely into the fresh coat. On steel a maximum 0.3 % pbw. of **SILIKAL® Additive M** must also be applied to the primer resin.

Consumption: Primer approx. 300 – 400 g/m²

Main coat

The coat must be overlayed within 24 hours by means of **SILIKAL® RU 727 resin**. The resin is mixed with about 5 – 10 % pbw. of **SILIKAL® Pigment Powder** and **SILIKAL® Filler QM** (or equivalent quartz powder) in a ratio of 2 : 1 and applied liberally to the pre-primed surface.

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Decorations / Top coat

Variant 1: Pigmented smooth

A colour sealant **SILIKAL® RU 727 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder)** is applied to the main coat.

Consumption: **approx. 400 g/m²**

Variant 2: Coloured flakes smooth

Before hardening, **SILIKAL® Coloured Flakes** are thoroughly sprinkled into the main coat. Once the excess flakes have been brushed / vacuumed away, colourless top coat **SILIKAL® R 71** or **SILIKAL® R 72 resin** is applied. The surface is grinded with sand paper after the initial topping and then applied again.

Consumption:	**Coloured flakes**	**approx. 500 – 600 g/m²**
	1st top coat	**approx. 500 g/m²**
	2nd top coat	**approx. 400 g/m²**

Variant 3: Pigmented non-slip

Before hardening, **SILIKAL® Filler QS**, particle size optionally 0.2 – 0.6 mm or 0.7 – 1.2 mm (or the equivalent quartz sand) is sprinkled into the main coat until saturation. Once the excess sand has been brushed / vacuumed away, the surface is rolled-on with **SILIKAL® R 72** or **SILIKAL® RU 727 resin** (each pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**).

Consumption:	**Filler QS**	**2 kg/m²**
	Top coat	**approx. 500 g/m²**

Variant 4: Coloured quartz non-slip

Before hardening, **SILIKAL® Filler FS**, particle size 0.3 – 0.8 mm or 0.7 – 1.2 mm is sprinkled into the main coat until saturation. Once the excess sand has been brushed / vacuumed away, the surface is applied with **SILIKAL® R 72** or **SILIKAL® R 71 resin**.

Consumption:	**Filler FS**	**2 kg/m²**
	Top coat	**approx. 500 g/m²**

Variant 5: Coloured flakes slightly non-slip

Before hardening, **SILIKAL® Coloured Flakes** are thoroughly sprinkled into the main coat. Once the excess flakes have been brushed / vacuumed away, the surface is applied with **SILIKAL® R 71** or **SILIKAL® R 72 resin**.

Consumption:	**Coloured flakes**	**approx. 500 – 600 g/m²**
	Top coat	**approx. 400 g/m²**

Please refer to the data sheets for the relevant Silikal resins for the guideline recipes, material consumption, hardener quantities etc.

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Industrial floors in wet use occur predominantly in production facilities for the food industry. The choice of Silikal system to use varies according to the conditions, e. g. slip resistance and resistance to the relevant media such as water, grease and cleaning agents. The recommended total thickness of the coating is approx. 4 – 6 mm.

Substrate / priming

Possible substrates include concrete, cement screeds and ceramic tiles in interiors with inclination of up to 1.5 %. After the substrate has been suitably prepared, it is primed preferably with **SILIKAL® R 51 resin**. Before hardening, **SILIKAL® Filler QS,** particle size 0.7 – 1.2 mm, can be sprinkled loosely into the fresh primer coat. On tiles the primer to be used is **SILIKAL® RU 727 resin** with 0.3 % pbw. of **SILIKAL® Additive M**. On tiles, and if the concrete surface is very rough, it is recommended that the surface is additionally smoothed off with the elastic **SILIKAL® RV 368 resin**, filled with **SILIKAL® Filler SL** in a 1 : 2 ratio scratch slurry. This enables joints or hollows to be levelled out. It also ensures additional bridging of cracks. Consumption is between 2 and 5 kg/m², depending on the depressions in the substrate.

Consumption: Primer approx. 300 – 400 g/m²

Main coat:

The main coat comprises a self-levelling coating of **SILIKAL® R 61 resin**, mixed with **SILIKAL® Filler SL** according to the recipe indicated in the data sheet. The coat thickness is usually 1 mm less than the required total thickness of the system, since the main coat will also receive an additional non-slip scatter as well as a top coat. A variety of decorations can be used in order to achieve the desired slip resistance (see decorations below).

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Decorations / Top coat

Variant 1: Pigmented non-slip

Before hardening, **SILIKAL® Filler QS**, particle size 0.7 – 1.2 mm is sprinkled into the main coat until saturation. Once the excess sand has been brushed / vacuumed away, the surface is applied once or twice (depending on the desired slip resistance) with **SILIKAL® R 81 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**).

Consumption:	**Filler QS**	**4 kg/m²**
	1st top coat	**approx. 500 g/m²**
	2nd top coat	**approx. 400 g/m²**

Variant 2: Coloured quartz non-slip

Before hardening, **SILIKAL® Filler FS**, particle size 0.7 – 1.2 mm is sprinkled into the main coat until saturation. Once the excess sand has been brushed / vacuumed away, the surface is applied once or twice (depending on the required slip resistance) with **SILIKAL® R 81 resin**.

Consumption:	**Filler FS**	**approx. 4 kg/m²**
	1st top coat	**approx. 500 g/m²**
	2nd top coat	**approx. 400 g/m²**

Please refer to the data sheets for the relevant Silikal resins for the guideline recipes, material consumption, hardener quantities etc.

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Industrial floors used dry are found predominantly in production facilities for the mechanical industry, in warehouses, retail areas and exhibition halls. The choice of Silikal system to use is determined by the conditions found in these areas. There are a number of decorative design options which allow visual as well as technical adaptation to the particular area. The recommended total thickness of the coating is approx. 2 – 4 mm.

Substrate / priming

Possible substrates include concrete, cement, asphalt and ceramic tiles in interior rooms. After the substrate has been suitably prepared, it is primed preferably with **SILIKAL® R 51 resin**. Before hardening, **SILIKAL® Filler QS,** particle size 0.7 – 1.2 mm, can be sprinkled loosely into the fresh primer coat. On tiles the primer to be used is **SILIKAL® RU 727 resin** with max. 0.3 % pbw. of **SILIKAL® Additive M**. On asphalt the primer used must be **SILIKAL® RU 727 resin**. However, we recommend that you consult Silikal before applying coatings on asphalt. On tiles, and if the concrete surface is very rough, it is recommended that the surface is additionally smoothed off with the elastic **SILIKAL® RV 368 resin**, filled with **SILIKAL® Filler SL** in a 1 : 2 ratio scratch slurry. This enables joints or hollows to be levelled out. It also ensures additional bridging of cracks. Consumption is between 2 and 5 kg/m², depending on the depressions in the substrate.

Consumption: Priming approx. 300 – 400 g/m²

Main coat

A self-levelling formulation made from **SILIKAL® R 62 resin** mixed with fine filler and pigment according to the recipe given in the data sheet is used as the main coat. Depending on the desired surface design, the coat is subsequently reworked in different ways.

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Decorations / Top coat

Variant 1: Pigmented smooth

After hardening, the main coat is applied with **SILIKAL® R 72 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**).

Consumption:	**Top coat**	**approx. 400 g/m²**

Variant 2: Coloured flakes slightly non-slip

Before hardening, **SILIKAL® Coloured Flakes** are thoroughly sprinkled into the main coat. Once the unbonded coloured flakes have been brushed / vacuumed away, the coat is applied with colourless **SILIKAL® R 72 resin**.

Consumption:	**Coloured flakes**	**approx. 500 – 600 g/m²**
	Top coat	**approx. 400 g/m²**

Variant 3: Coloured flakes smooth

Before hardening, **SILIKAL® Coloured Flakes** are thoroughly sprinkled into the main coat. Once the excess flakes have been brushed / vacuumed away, the coat is applied with colourless **SILIKAL® R 72 resin**. The first top coat is grinded with sand paper after curing. A second **SILIKAL® R 72 resin** top coat is then rolled on.

Consumption:	**Coloured flakes**	**approx. 500 – 600 g/m²**
	1st top coat	**approx. 500 g/m²**
	2nd top coat	**approx. 400 g/m²**

Please refer to the data sheets for the relevant Silikal resins for the guideline recipes, material consumption, hardener quantities etc.

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In areas in which significant impact stresses are expected, in cold stores and outdoors where temperature influences vary sharply, coating materials such as **SILIKAL® RV 368 resin** which are designed to be impact-resistant and elastic should be used. Assuming that the coat is sufficiently thick, any sudden forces that occur can be better absorbed in this way. The recommended total thickness of the coating is approx. 5 – 7 mm (2 – 4 mm by request).

Substrate / priming

Possible substrates include concrete, cement, asphalt and ceramic tiles. Outdoor asphalt surfaces must **not** be coated. After they have been suitably prepared, cement substrates are primed with **SILIKAL® R 51 resin**. Before hardening, **SILIKAL® Filler QS,** particle size 0.7 – 1.2 mm, can be dispersed loosely into the fresh primer coat. On asphalt the primer used must be **SILIKAL® RU 727 resin**. (It is recommended that you consult Silikal in any case.) On ceramic tiles an additional 0.3 % pbw. of **SILIKAL® Additive M** must be added to the **SILIKAL® RU 727 resin** primer. On tiles, and if the concrete/screed surface is very rough, it is recommended that the surface is additionally smoothed off with the elastic **SILIKAL® RV 368 resin**, filled with **SILIKAL® Filler SL** in a 1 : 2 ratio scratch slurry. This enables joints or hollows to be levelled out. Consumption is between 2 and 5 kg/m², depending on the depressions in the substrate.

Consumption: Primer approx. 300 – 400 g/m²

Main coat

The main coat comprises a self-levelling formulation of **SILIKAL® RV 368 resin**, mixed with **SILIKAL® Filler** according to the recipe indicated in the data sheet (3. Self-levelling coating 4 – 7 mm). The thickness of the coat is usually 1 mm less than the required total thickness of the system, since **SILIKAL® Filler QS** of particle size 0.7 – 1.2 mm is additionally sprinkled into the main coat.

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Decorations / Top coat

Variant 1: Pigmented smooth (for use at temperatures from 0 °C to +35 °C only)

Once the excess sand has been brushed / vacuumed away, a self-levelling thin coating made from **SILIKAL® R 62 resin** filled 1 : 1 with fine filler according to the recipe indicated in the data sheet is applied to the main coat. Then the surface is applied with **SILIKAL® R 72 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**).

Consumption:	**Thin coating 1.5 mm**	**2 kg/m²**
	Top coat	**approx. 400 g/m²**

Variant 2: Coloured flakes smooth (for use at temperatures from 0 °C to +35 °C only)

Once the excess sand has been brushed / vacuumed away, a self-levelling thin coating made from **SILIKAL® R 62 resin** filled 1 : 1 with fine filler according to the recipe indicated in the data sheet is applied to the main coat. Before hardening, **SILIKAL® Coloured Flakes** are thoroughly sprinkled into the thin coating. Once the excess flakes have been brushed / vacuumed away, the coat is applied with colourless **SILIKAL® R 62 resin**. After the first top coat the surface is grinded with sand paper and then applied with **SILIKAL® R 72 resin** again.

Consumption:	**Thin coating 1.5 mm**	**2 kg/m²**
	Coloured flakes	**approx. 500 – 600 g/m²**
	1st top coat	**approx. 500 g/m²**
	2nd top coat	**approx. 400 g/m²**

Variant 3: Pigmented non-slip

Once the excess sand has been brushed / vacuumed away, the main coat is initially applied once, depending on the desired slip resistance, with **SILIKAL® R 62 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**). To ensure that they are easier to keep clean, areas which are not exposed to temperatures of use below 0 °C can be given a further sealing coat of **SILIKAL® R 72 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**).

Consumption:	**1st top coat**	**approx. 500 g/m²**
	2nd top coat (optional)	**approx. 400 g/m²**

Variant 4: Coloured quartz non-slip

Here **SILIKAL® Filler FS** is sprinkled over the main coat in the same grading line instead of **SILIKAL® Filler QS**. Once the coat has hardened and the excess sand has been brushed / vacuumed away, the top coat **SILIKAL® R 62 resin** is rolled on in 1 – 2 coats, depending on the desired slip resistance. If the temperatures of use are above 0 °C, a further top coat of **SILIKAL® R 72 resin** can be rolled on to make the surface easier to keep clean.

Consumption:	**1st top coat**	**approx. 500 g/m²**
	2nd top coat (optional)	**approx. 400 g/m²**

Please refer to the data sheets for the relevant Silikal resins for the guideline recipes, material consumption, hardener quantities etc.

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Industrial floors in dry and warm use often occur in production facilities in the baking industry. The choice of Silikal system to use will depend on the conditions such as slip resistance and resistance to the media that occur. A variety of decorations make it possible to adapt the floors visually to the surroundings. The recommended total thickness of the coating is approx. 4 – 5 mm.

Substrate / priming

Possible substrates include concrete, cement screed and ceramic tiles in interior rooms. After the substrate has been suitably prepared, it is primed preferably with **SILIKAL® R 51 resin**. Before hardening, **SILIKAL® Filler QS,** particle size 0.7 – 1.2 mm, can be sprinkled loosely into the fresh coat. On tiles the primer to be used is **SILIKAL® RU 727 resin** with 0.3 % pbw. of **SILIKAL® Additive M**. On tiles, and if the concrete surface is very rough, it is recommended that the surface is additionally smoothed off with the elastic **SILIKAL® RV 368 resin**, filled with **SILIKAL® Filler SL** in a 1 : 2 ratio scratch slurry. This enables joints or hollows to be levelled out. It also ensures additional bridging of cracks. Consumption is between 2 and 5 kg/m², depending on the depressions in the substrate.

Consumption: Primer approx. 300 – 400 g/m²

Main coat

The main coat comprises a self-levelling formulation of **SILIKAL® R 747 resin**, pigmented with **SILIKAL® Pigment Powder** and mixed with **SILIKAL® Filler SL** according to the recipe indicated in the data sheet. A variety of decorations can be used in order to achieve the desired slip resistance (see decorations below).

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Decorations / Top coat

Variant 1: Pigmented non-slip

When the main coat has cured, a thin coating of **SILIKAL® RU 727 resin** pigmented and mixed with **SILIKAL® Filler QM** is applied in a mixing ratio of 1 : 1. **SILIKAL® Filler QS** of particle size 0.2 – 0.6 mm is sprinkled into the fresh thin coating until saturation. Once the excess sand has been brushed / vacuumed away, the surface is applied with **SILIKAL® R 71 resin** (pigmented with 10 % pbw. of **SILIKAL® Pigment Powder**).

Consumption:	**Thin coating 1.5 mm**	**approx. 2 kg/m²**
	Filler QS 0.2 – 0.6 mm	**approx. 2 kg/m²**
	Top coat	**approx. 500 g/m²**

Variant 2: Coloured quartz non-slip

When the main coat has cured, a thin coating of **SILIKAL® RU 727 resin** mixed with **SILIKAL® Filler QM** is applied in a mixing ratio of 1 : 1. **SILIKAL® Filler FS** of particle size 0.3 – 0.8 mm is sprinkled into the fresh thin coating until saturation. After curing and once the excess sand has been brushed / vacuumed away, the coat is applied with **SILIKAL® R 71 resin**.

Consumption:	**Thin coating 1.5 mm**	**approx. 2 kg/m²**
	Filler FS	**approx. 2 kg/m²**
	Top coat	**approx. 500 g/m²**

Variant 3: Coloured flakes slightly non-slip

Before hardening, **SILIKAL® Coloured Flakes** are thoroughly sprinkled into the main coat. Once the excess coloured flakes have been brushed / vacuumed away, the coat is applied with colourless **SILIKAL® R 71 resin**.

Consumption:	**Coloured flakes**	**approx. 500 – 600 g/m²**
	Top coat	**approx. 500 g/m²**

Please refer to the data sheets for the relevant Silikal resins for the guideline recipes, material consumption, hardener quantities etc.

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Silikal standard resins

Product	Application	Packaging
SILIKAL® R 41 resin	Reactive, very low-viscosity impregnating and injection resin	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 51 resin	Reactive, low-viscosity primer for cement substrates	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 51 (-25 °C) resin	Reactive, low-viscosity primer for cement substrates at low temperatures	5 kg, 25 kg canister
SILIKAL® R 52 resin	Reactive, medium-viscosity primer for cement substrates	5 kg, 25 kg canister; 180 kg drum
SILIKAL® Porfil RE 40	Pore filling, super low viscosity and pressure-water-resistant concrete primer to prevent rising moisture	5 kg, 20 kg combination bucket
SILIKAL® RE 55 resin	Reactive, high-viscosity primer for synthetic resin-modified cement substrates	Comp. A 20 kg hobbock / Comp. B 10 kg bucket
SILIKAL® R 61 resin	Reactive, slightly elasticized resin for slip-resistant floorings in wet areas	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 61 HW resin	Reactive, elasticized resin for slip-resistant floorings in wet areas	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 62 resin	Reactive, slightly elasticized resin for self-levelling coatings	5 kg, 25 kg canister; 180 kg drum
SILIKAL® RU 727 resin	Reactive, hard universal resin for adherent primers and thin coatings	5.3 kg, 21.2 kg canister; 180 kg drum
SILIKAL® RU 747 resin	Reactive, slightly elasticized self-levelling resin with good resistance to thermal deformation	5.4 kg, 21.6 kg canister; 180 kg drum
SILIKAL® RH 65 resin	Low viscosity reactive methacrylic resin for filler-rich indoor screeds of 5 – 20 mm thickness on concrete	25 kg canister; 180 kg drum
SILIKAL® RV 368 resin	Reactive, impact-resistant resin with low-temperature flexibility for self-levelling coatings	5 kg, 25 kg canister; 180 kg drum
SILIKAL® RV 310 resin	Reactive highly-flexible membrane resin	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 71 resin	Reactive, hard, low-viscosity top coat for dry areas	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 71 re resin	Reactive, hard, low-viscosity top coat for dry areas, reduced blue fraction	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 72 resin	Reactive, hard, low-viscosity top coat for dry areas	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 81 resin	Reactive, low-viscosity elasticized top coat for wet areas	5 kg, 25 kg canister; 180 kg drum
SILIKAL® RE 77 resin	Reactive, highly viscous solvent-resistant top coat	Comp. A 20 kg hobbock / Comp. B 10 kg bucket
SILIKAL® F 10 resin	Reactive methacrylate resin for joint filling	5 kg canister
SILIKAL® HK 20 coving paste	Reactive methacrylate coving paste	25 kg hobbock

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Silikal additive products

Product	Application	Packaging
SILIKAL® Hardening Powder		0.1 kg, 0.5 kg, 1.0 kg bag; 10 kg, 25 kg box
SILIKAL® Additive I	System component for RU 727 and RU 747	1 kg, 8 kg, 30 kg canister; 180 kg drum
SILIKAL® Additive M	Adhesion promotor	50 g, 100 g, 250 g bottle
SILIKAL® Additive Z	Low temperature accelerator < 0 °C	4 x 250 g can
SILIKAL® RI / 21	Tensile bond adhesive	5 kg hobbock
SILIKAL® Pigment Powder		500 g bag; 25 kg sack
SILIKAL® Pigment Powder AS	Used in combination with one of 5 different colours of SILIKAL® Pigment Powder to adjust antistatic properties of the top coat (please refer to the separate leaflet “**Colour Concepts**)”	20 kg sack
SILIKAL® TA 1 and TA 2 anti-flow additives	Fibrous thickening and thixotropic agent for covings and wall coatings, asbestos-free	10 kg sack

Silikal fillers

Product	Application	Packaging
SILIKAL® Filler SL	Special fine filler mix for self-levelling coatings, **contains no quartz powder**	25 kg sack
SILIKAL® Filler Si	Special filler mix (0 – 1.2 mm) for self-levelling coatings	25 kg sack
SILIKAL® Filler SV	Fine filler mix for improved self-levelling systems (i. e. SILIKAL® R 62 resin)	25 kg sack
SILIKAL® Filler QM	Fine filler powder for thin coatings and roll-on systems	25 kg sack
SILIKAL® Filler QS	Washed and fire-dried natural sand in various particle sizes: 0.06 – 0.3 mm 0.2 – 0.6 mm 0.7 – 1.2 mm 2 – 4 mm 2 – 8 mm 8 – 16 mm	25 kg sack
SILIKAL® Filler FS	Coloured quartz (individual colours) (Particle size 0.7 – 1.2 mm and 0.3 – 0.8 mm for self-levelling sprinkled floors)	25 kg sack
SILIKAL® Filler CQ	Coloured quartz sand (mixed colours) in prescribed graded particle sizes for trowel-applied (smoothable) decorative sand floorings. (Particle size 15 % 0.3 – 0.8 mm; 70 % 0.7 – 1.2 mm; 15 % 1.2 – 1.8 mm).	25 kg sack
SILIKAL® Filler 65	Filler mix for SILIKAL® RH 65 resin screeds	25 kg sack
SILIKAL® Filler SG	Sharp-edged, opaque gritting material for a subsequent construction of skid resistance	25 kg sack

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Silikal fillers (continued)

SILIKAL® Coloured Flakes	Size 1 = 1 mm diameter Size 3 = 3 mm diameter SILIKAL® Coloured Flakes MF (👁 please refer to the separate leaflet "**Colour Concepts**)"	5 kg, 25 kg box

Silikal mortar systems

Product	Application	Packaging
SILIKAL® R 7/17 – powder component		15 kg sack
SILIKAL® R 17 fine – powder component		15 kg sack
SILIKAL® R 7 – liquid hardener	Hard reactive resin mortar for approx. 5 mm toppings	2 litre, 6 litre, 30 litre canister; 180 kg drum
SILIKAL® R 17 – liquid hardener	Reactive resin mortar for concrete repairs and screeds	2 litre, 3 litre, 6 litre, 30 litre canister; 180 kg drum
SILIKAL® R 17 thix – liquid hardener	Reactive resin mortar, thixotropic version for vertical concrete repairs	2 litre canister
SILIKAL® R 17 (-25°) – powder component		15 kg sack
SILIKAL® R 17 (-25°) – liquid hardener		2 litre canister

Silikal coating systems

Product	Application	Packaging
SILIKAL® R 21 resin	Solvent-based 1-component impregnating resin, low viscosity	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 22 resin	Solvent-based 1-component impregnating resin, medium viscosity	5 kg, 25 kg canister; 180 kg drum
SILIKAL® R 24 resin	Solvent-based 1-component concrete protection, filled	5 kg, 25 kg canister

Silikal cleaning agents

Product	Application	Container size
SILIKAL® MMA Cleaner	Cleaning tools or surfaces and preparing for subsequent coating	10 litre, 30 litre canister; 200 litre drum
SILIKAL® Acetone Cleaner	Cleaning tools etc.	10 litre, 30 litre canister; 200 litre drum
SILIKAL® Topclean	Primary and maintenance cleaner for Silikal floors	10 litre canister
SILIKAL® Protect	Protective film for Silikal floors	10 litre canister
Buzil Stain Remover	Spray for eliminating stubborn dirt	200 ml spray can

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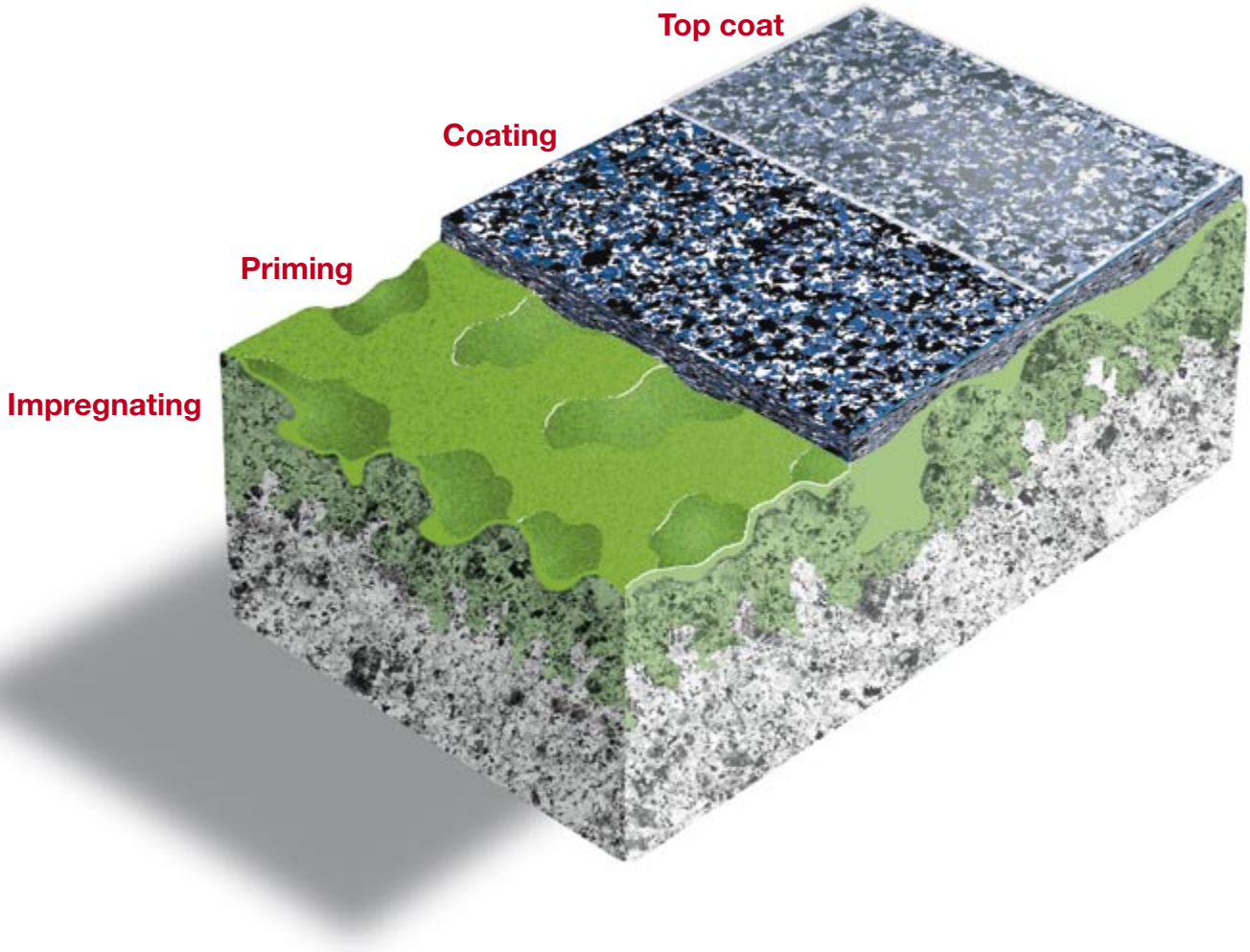

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SILIKAL® priming resins
Overview

Product	Product description / area of application	Data sheet / page
SILIKAL® R 41 resin	Very low-viscosity reactive resin for – impregnating and strengthening extremely porous and absorbent cement substrates – injection for hollow screeds and cracks	Data sheet SILIKAL® R 41 Page 29
SILIKAL® R 51 resin	Low-viscosity reactive resin; standard primer for cement substrates	Data sheet SILIKAL® R 51 Page 31
SILIKAL® R 52 resin	Medium-viscosity reactive resin; primer for cement substrates	Data sheet SILIKAL® R 52 Page 35
SILIKAL® Porfil RE 40	Pore filling, super low viscosity and pressure-water-resistant concrete primer to prevent rising moisture	Data sheet SILIKAL® RE 40 Page 37
SILIKAL® RE 55 resin	High-viscosity reactive resin; primer for synthetic resin-modified cement substrates	Data sheet SILIKAL® RE 55 Page 40
SILIKAL® RU 727 resin	Reactive resin; preferred primer coat for – non-absorbent substrates – intermediate priming of existing coatings	Data sheet SILIKAL® RU 727 Page 51

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SILIKAL® coating resins
Overview

Product	Product description / area of application	Data sheet / page
SILIKAL® R 61 resin	Slightly elasticized reactive resin, preferred for toppings in wet areas	Data sheet SILIKAL® R 61 Page 42
SILIKAL® R 61 HW resin	Elasticized reactive resin, preferred for toppings in wet areas	Data sheet SILIKAL® R 61 HW Page 45
SILIKAL® R 62 resin	Slightly elasticized reactive resin, preferred for self-levelling coatings in dry areas	Data sheet SILIKAL® R 62 Page 48
SILIKAL® RV 368 resin	Impact-resistant reactive resin, flexible at low temperatures, for self-levelling coatings	Data sheet SILIKAL® RV 368 Page 59
SILIKAL® RV 310 resin	Highly elastic reactive resin for membrane layers	Data sheet SILIKAL® RV 310 Page 62
SILIKAL® RU 727 resin	Universally applicable reactive resin for thin coatings	Data sheet SILIKAL® RU 727 Page 51
SILIKAL® RU 747 resin	Reactive resin for self-levelling coatings with good resistance to thermal deformation	Data sheet SILIKAL® RU 747 Page 55
SILIKAL® RH 65 resin	Low viscosity reactive methacrylic resin for filler-rich in-door screeds of 5 – 20 mm thickness on concrete	Data sheet SILIKAL® RH 65 Page 57

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SILIKAL® top coat resins
Overview

Product	Product description / area of application	Data sheet / page
SILIKAL® R 71 resin	Low-viscosity reactive resin for hard top coats in dry areas	Data sheet SILIKAL® R 71 / R 71 re Page 64
SILIKAL® R 71 re resin	Low-viscosity reactive resin, reduced blue fraction, for hard top coats in dry areas	Data sheet SILIKAL® R 71 / R 71 re Page 64
SILIKAL® R 72 resin	Medium-viscosity reactive resin for hard top coats, transparent or pigmented, with good flow properties	Data sheet SILIKAL® R 72 Page 66
SILIKAL® R 81 resin	Low-viscosity reactive resin for elasticized top coats, also for wet areas	Data sheet SILIKAL® R 81 Page 68
SILIKAL® RE 77 resin	High-viscosity solvent-resistant reactive resin for top coats	Data sheet SILIKAL® RE 77 Page 70

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SILIKAL® R 41 resin

Reactive, very low-viscosity impregnating and injection resin

Expect more from your floor.

SILIKAL® R 41 resin is a very low-viscosity, transparent, solvent-free 2-component methacrylic resin.

Application

SILIKAL® R 41 resin is used in order to strengthen and impregnate extremely porous substrates, to close up cracks in composite screeds and as an injection resin for hollow screeds. SILIKAL® R 41 resin should only be used on cement substrates. It is not generally recommended for use on natural stone.

Flooding the surface to saturation point helps to stabilise the substrate. After impregnation, the surface must be primed if it is to be subsequently coated.

If impregnating composite screeds, watch out for cracks extending into the concrete underneath. Otherwise there is a danger of dripping into the storey below. The cracks may need to be stopped up first.

Advice on application

Once the substrate has been inspected, it normally needs to be pre-treated.

The necessary quantity of hardener must be adjusted in light of the temperature of the surface. For exact details, please refer to the table **“Hardener dosages”**.

You must not dose less than the given quantity of hardening powder, as this will jeopardize the curing process. You must also avoid overdosing the hardening powder, as this can likewise lead to serious curing problems.

If the pot life, within which good penetration of the substrate is guaranteed, is to be observed, appropriate batch quantities should be estimated. The material must be applied as soon as the hardening powder has finished dissolving in the resin components.

SILIKAL® R 41 resin must be applied evenly without leaving puddles by means of a paint roller or brush. If rubber blades are used, the surface must always be rolled with a paint roller afterwards. Matt and heavily absorbent patches must be reworked wet in wet before hardening until the pores are closed up.

In the case of wider cracks and holes, SILIKAL® Filler QS 0.2 – 0.6 mm must be sprinkled in before the resin hardens.

SILIKAL® R 41 resin must be completely cured before any further coat is applied.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 41 resin	100 %		5 kg	5 litres
	Total:	**100 %**	**Average consumption: 400 g/m²**	**5 kg**	**5 litres**
2	SILIKAL® Hardening Powder	2 – 7 % related to item 1	See “Hardener dosages” table for quantities	100 – 350 g	

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SILIKAL® R 41 resin

Reactive, very low-viscosity impregnating and injection resin

Expect more from your floor.

Characteristics of R 41 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	15 – 25 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	11 – 14 sec.
Density D_4^{20}	DIN 51 757	0.97 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 3 % pbw. hardening powder)	approx. 10 min.	
Application temperature	-10 °C to +35 °C	

Characteristics of R 41 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.15 g/cm³
Ultimate elongation	DIN 53 455	1.3 %
Shore-D	DIN 53 505	70 – 80 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
-10 °C	7.0	24	60
0 °C	5.5	15	40
+20 °C	3.0	10	25
+30 °C	2.0	8	15

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106

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SILIKAL® R 51 resin

Reactive, low-viscosity primer for cement substrates

Expect more from your floor.

Description

SILIKAL® R 51 resin is a low-viscosity, transparent, solvent-free 2-component methacrylic resin with good penetrating power as a standard primer.

Application

SILIKAL® R 51 resin is used as an adherant primer on concrete and cement substrates.

Advice on application

Once the substrate has been inspected, it normally needs to be pre-treated.

The necessary quantity of hardener must be adjusted in light of the temperature of the surface. For the exact quantities, please refer to the table **“Hardener dosages”**.

You must not dose less than the given quantity of hardening powder, as this will jeopardize the curing process. You must also avoid overdosing the hardening powder, as this can likewise lead to serious curing problems.

If the pot life, within which good penetration of the substrate is guaranteed, is to be observed, appropriate batch quantities should be estimated. The material must be applied as soon as the hardening powder has finished dissolving in the resin components.

SILIKAL® R 51 resin must be applied evenly without leaving puddles by means of a paint roller or brush. If rubber blades are used, the surface must always be rolled with a paint roller afterwards. Matt and heavily absorbent patches must be reprimed wet in wet before hardening until the pores are closed up. Resin consumption is about 0.4 kg/m^2.

SILIKAL® Filler QS 0.7 – 1.2 mm can be sprinkled loosely into the fresh primer coat.

In the case of subsequent coating with SILIKAL® R 68, RV 310 or RV 368 resin, SILIKAL® Filler QS 0.7 – 1.2 mm (0.2 – 0.5 kg/m^2) must always be sprinkled in.

SILIKAL® R 51 resin must be completely cured before any further coat is applied.

Guideline recipe and batch quantities

(Use in systems B, C, D, E)

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 51 resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 400 g/m^2**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	2 – 7 % related to item 1	See “Hardener dosages” table for quantities	200 – 700 g	

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SILIKAL® R 51 resin

Reactive, low-viscosity primer for cement substrates

Characteristics of R 51 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	60 – 80 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	18 – 21 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 3 % pbw. hardening powder)	approx. 12 min.	
Application temperature	-10 °C to +35 °C	

Characteristics of R 51 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.16 g/cm³
Ultimate elongation	DIN 53 455	7 %
Shore-D	DIN 53 505	70 – 80 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
-10 °C	7.0	22	60
0 °C	5.0	15	40
+20 °C	3.0	12	30
+30 °C	2.0	10	25

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106

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SILIKAL® R 51 (-25 °C) resin

Reactive, low-viscosity primer for cement substrates at low temperatures

Expect more from your floor.

SILIKAL® R 51 (-25 °C) resin is a low-viscosity, transparent, solvent-free 2-component methacrylic resin with good penetrating power which cures rapidly even at low temperatures.

Application

SILIKAL® R 51 (-25 °C) resin is used as an adherent primer on concrete and cement substrates at processing temperatures from 0 to -25 °C.

Advice on application

Once the substrate has been inspected, it normally needs to be pre-treated.

Before being applied, SILIKAL® R 51 (-25 °C) resin must be chilled to 0 °C or lower.

The necessary quantity of hardener is 7 percent by weight of the quantity of resin.

You must not dose less than the given quantity of hardening powder, as this will jeopardize the curing process. You must also avoid overdosing the hardening powder, as this can likewise lead to serious curing problems.

If the pot life, within which good penetration of the substrate is guaranteed, is to be observed, appropriate batch quantities should be estimated. The material must be applied as soon as the hardening powder has finished dissolving in the resin components.

SILIKAL® R 51 (-25 °C) resin must be applied evenly without leaving puddles by means of a paint roller or brush. If rubber blades are used, the surface must always be rolled with a paint roller afterwards. Matt and heavily absorbent patches must be reprimed wet in wet before hardening until the pores are closed up. Resin consumption is about 0.4 kg/m².

SILIKAL® Filler QS 0.7 – 1.2 mm can be sprinkled loosely into the fresh primer coat.

In the case of subsequent coating with SILIKAL® R 68, RV 310 or RV 368 resin, SILIKAL® Filler QS 0.7 – 1.2 mm (0.2 – 0.5 kg/m²) must always be sprinkled in.

SILIKAL® R 51 (-25 °C) resin must be completely cured before any further coat is applied.

Special advice

If working in refrigerated rooms in which foodstuffs are stored, we recommend that you work in tents with an extraction unit so that the foodstuffs being stored cannot be contaminated with methacrylic emissions. The extracted air must be led outside. Warm air coming in from outside will lead to condensation of air humidity, which will in turn cause poor adhesion to the substrate. For that reason the incoming air should also be chilled.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 51 (-25 °C) resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 400 g/m²**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	7 % related to item 1		700 g	

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SILIKAL® R 51 (-25 °C) resin

Reactive, low-viscosity primer for cement substrates at low temperatures

Expect more from your floor.

Characteristics of R 51 (-25 °C) as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	60 – 80 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	18 – 21 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at 0 °C (100 g, 7 % pbw. hardening powder)	approx. 12 min.	
Application temperature	0 °C to -25 °C	

Characteristics of R 51 (-25 °C) in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.16 g/cm³
Ultimate elongation	DIN 53 455	7 %
Shore-D	DIN 53 505	70 – 80 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	7.0	12	60
-25 °C	7.0	20	120

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106

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SILIKAL® R 52 resin

Reactive, medium-viscosity primer for cement substrates

SILIKAL® R 52 resin is a medium-viscosity, transparent, solvent-free 2-component methacrylic resin that cures rapidly even at low temperatures if hardener is added. Its higher viscosity makes SILIKAL® R 52 resin more suitable than SILIKAL® R 51 resin for priming vertical and absorbent substrates with sufficient strength.

Application

SILIKAL® R 52 resin is used as an adherent primer on concrete and cement substrates. The higher viscosity means that a thicker and more integral priming film is achieved than with SILIKAL® R 51 resin.

Advice on application

Once the substrate has been inspected, it normally needs to be pre-treated.

The necessary quantity of hardener must be adjusted in light of the temperature of the building. For the exact quantities, please refer to the table **“Hardener dosages”**.

You must not dose less than the given quantity of hardening powder, as this will jeopardize the curing process. You must also avoid overdosing the hardening powder, as this can likewise lead to serious curing problems.

If the pot life, within which good penetration of the substrate is guaranteed, is to be observed, appropriate batch quantities should be estimated. The material must be applied as soon as the hardening powder has finished dissolving in the resin components.

SILIKAL® R 52 resin must be applied evenly without leaving puddles by means of a paint roller or brush. If rubber blades are used, the surface must always be rolled with a paint roller afterwards. Matt and heavily absorbent patches must be reprimed wet in wet before hardening until the pores are closed up. Resin consumption is about 0.4 kg/m².

SILIKAL® Filler QS 0.7 – 1.2 mm can be sprinkled loosely into the fresh primer coat.

In the case of subsequent coating with SILIKAL® RV 310 or RV 368 resin, SILIKAL® Filler QS 0.7 – 1.2 mm (0.2 – 0.5 kg/m²) must always be sprinkled in.

SILIKAL® R 52 resin must be completely cured before any further coat is applied.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 52 resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 400 g/m²**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” table for quantities	200 – 600 g	

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Characteristics of R 52 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	270 – 330 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	47 – 53 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 3 % pbw. hardening powder)	approx. 12 min.	
Application temperature	+5 °C to +30 °C	

Characteristics of R 52 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.16 g/cm³
Ultimate elongation	DIN 53 455	7 %
Shore-D	DIN 53 505	70 – 80 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	$1.05 \cdot 10^{-11}$ g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
+5 °C	6.0	15	50
+10 °C	5.0	15	40
+20 °C	3.0	12	35
+30 °C	2.0	12	30

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

Other applicable documents	Data sheet	Page
SILIKAL® Additive ZA	SILIKAL® Additive ZA	84
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
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SILIKAL® Porfil RE 40

Pore filling, super low viscosity and pressure-water-resistant concrete primer to prevent rising moisture (Vapour barrier)

Expect more from your floor.

Product properties:

- excellent penetration capabilities into concrete / floor screed (grip and surface roughness of the underground are maintained.),
- not film forming,
- permanent sealant (withstands water pressure),
- improves the mechanical properties of concrete surfaces (abrasion resistance, tensile strength),
- vapour barrier, CO_2-diffusion brake,
- high chemical resistance (oil, grease, kerosene, etc.),
- prevents penetration of chlorides etc.,
- easy-to-clean surface,
- UV resistant,
- simple and quick application,
- short waiting time,
- tested product according to the german guidelines and standards for repair & protection of concrete (TL/TP-BEL-EP / ZTV BEL B / DIN EN 1504),
- conductivity according to DIN IEC 61340, DIN 100015, DIN EN 1081-98, ASTM F 150-98.

Applications:

Curing:

- curing of floor screed and green concrete,
- reduction of plastic shrinkage cracks as a result of early drying-out,
- reduction of the deformation behavior of concrete- or floor screed (shrinkage etc.),
- layers of suitable paintings and coatings can be added soon

Pore filling primer:

- For priming backside moisture penetrated concrete- or floor screed elements,
- layers of suitable paintings and coatings can be applied shorty after porfil RE 40 application.

Surface protection:

- Surface protection of concrete- or floor screed elements,
- improving of the mechanical specific values,

Colour	Green - transparent
Packaging	In 20 kg and 5 kg combination package containers.
Shelf Life	Both components can be stored for 12 months if kept dry and cool in the original unopened packagings.
Mixing ratio	100 parts by weight component A 28 parts by weight component B
Air- and underground temperatures	Min. +8 °C (min. +3 °C above dew point, max. +30 °C)

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Preparation

Curing

The surface of the green concrete or floor screed must be clean and free of laitance and/or standing wetness. The surface must be dry, so that the substrate is sufficiently absorbent. The substrate must be clean and free from debris, loose or flaking material and dust.

Pore filling primer

The surface must be clean and free from debris, loose or flanking material and laitance. The surface must be free from contamination such as oil, grease, dust, loose particles, organic growth and other separating substances. The surface must be dry, so that the substrate is sufficiently absorbent.

Surface protection

Before beginning the work, the substrate has to be checked for load carrying capacity. It has to be prepared with a suitable process (milling, ball blasting, sandblasting, etc.).

The surface preparation determines grip, surface roughness and the quality that can be obtained for the surface to be impregnated.

The surface must be clean and free from debris, loose or flanking material and laitance. The surface must be free from contamination such as oil, grease, dust, loose particles, organic growth and other separating substances. The separation-stability of the surface must be at least 1,5 N/mm².

Extreme blow-holes or imperfections should be filled to eliminate surface-defects. For this purpose a scraped-filler on the basis of Epoxy, Epoxy Cement Concrete, Polymer Cement Concrete or with cement based mortar should be carried out before impregnating with SILIKAL® Porfil RE 40 . After the impregnation with SILIKAL® Porfil RE 40, clean cement based mortars should not be used.

Mixing

SILIKAL® Porfil RE 40 consists of a base- and a hardener component, which are delivered in the correct, co-ordinated mixture. Empty the entire hardener (component B) into the base container (component A) and mix thoroughly with an electric drill. Mix for at least 2 minutes until a uniform consistency is obtained. The mixed material has to be poured into a clean container and has to be mixed once again.

Application

Irrespective of the application field, the application of SILIKAL® Porfil RE 40 may be carried out in two steps:

1. application step:

Pour out the mixed epoxy resin onto the concrete surface and spread it with a rubber lip. After a short operating time (appr. 10 minutes) the epoxy excess must be removed with the rubber lip. The remaining epoxy resin can be rolled out with a lint free, epoxy resin proof roller.

Heavy films as well as the building of puddles have to be avoided!

The waiting time between the coats depends on the absorbency of the substrate and is normally between one and three hours. Before applying the second coat if required, the impregnation of the first coat into the substrate should be evident.

2. application step:

See the first application step.

Heavy films as well as the building of puddles have to be avoided!

Before the application of SILIKAL® Porfil RE 40 on power floated industry floors the application method must be verified with the manufacturer.

During application of SILIKAL® Porfil RE 40 take care that there is no film building at the surface. The surface texture has to be maintained after every coating.

Before the next floor coating step (application of a MMA Primer) takes place, it is absolutely necessary that the Silikal Porfil RE 40 treated floor has to be grinded with a coarse sandpaper and to be cleaned.

Air- and underground temperatures

Minimal +8 °C (at least, however, +3 °C over the dew point), maximal +30 °C

Estimating

Normal material consumption is between 100 and 200 g/m² for the first coat and between 50 and 150 g/m² for the second coat. The material consumption depends on the absorbency, surface roughness and moisture of the substrate as well as on the application- and ambient temperature. Therefore, carrying out a test application is be recommended to define the object-specific material consumption.

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Viscosity

SILIKAL® Porfil RE 40 is a super low viscosity material with only slightly increasing viscosity at low temperatures.

	+8 °C	+20 °C	+30 °C
Viscosity	34 mPa · s	17 mPa · s	12 mPa · s

Application time

The useful application time for the material cannot easily be judged by the rise in viscosity. Therefore, SILIKAL® Porfil RE 40 should not be applied after the indicated application times according to the ambient temperature.

	+8 °C	+20 °C	+30 °C
In container [1)]	approx. 40 min	approx. 20 min	approx. 10 min
Effused state [2)]	approx. 60 min	approx. 35 min	approx. 15 min

[1)] Material ≤ 2 kg
[2)] On the concrete floor

Curing time

The curing times of the treated surface depend on the ambient temperature and are indicated below. The temperature of the ambient air and underground should not be less than 4 °C.

	+8 °C	+20 °C	+30 °C
Curing time	> 48 hours	> 24 hours	> 12 hours

Overcoating

A SILIKAL® Porfil RE 40 treated surface can be coated with Silikal resin systems. The coating material can be applied once the surface is tacky free, or in the future.

Cleaning

The uncured epoxy resin coating can be removed from tools with appropriate solvents. The cured epoxy resin coating can only be removed mechanically.

Precaution/Waste disposal

Residual mixtures of component A and component B may not be kept in buckets after finishing the application but must be moved out of the building since the chemical reaction will generate high temperature in the resin which might lead to white smoke. Pour the resin into brick or concrete waste and wait until resin is cured safely.

GISCODE: RE 1

Hazardous material regulations: mark-duty.

For the handling of SILIKAL® Porfil RE 40 the important physical, safety-related, toxic and ecological data have to be extracted from the safety-data-sheet. The instructions for hazardous material handling should be followed. The product information and safety advices on the containers as well as the individual accident prevention regulations from the responsible employees' insurance during the application are to be noticed.

In the uncured condition SILIKAL® Porfil RE 40 is as a rule hazardous to water and is therefore not allowed to get into the sewerage, water and ground. Uncured quantities of this product are as a rule special wastes needing monitoring and must be disposed properly. After the agreement of the relevant responsible body or waste dump (brit.: disposal), cured material can disposed as house-/industrial waste.

The local bodies, for example environmental protection agency or commercial control office, have a duty to disclose information therein.

Other

Delivery only for commercial or industrial uses.

Other applicable documents	Data sheet	Page
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106

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SILIKAL® RE 55 resin

Reactive, high-viscosity primer for synthetic resin-modified cement substrates

Expect more from your floor.

SILIKAL® RE 55 resin is a solvent-free high-viscosity 2-component reactive resin based on EP which is used preferably as a barrier or insulating primer for synthetic resin-modified cement substrates. SILIKAL® RE 55 resin is absolutely essential as the first primer on these substrates if the surface is to be given a further methacrylic resin-based coating.

In contrast to normal methacrylic resin primers, SILIKAL® RE 55 resin is not subject to any hardening problems which may be caused by dispersant/emulsifying additives or other concrete additives, e. g. water-emulsifiable EP/PU coats. Other problematic contaminations such as rubber abrasion, carbon black additives in the substrate, remnants of carpet or tile adhesives and inhibiting epoxy resin hardeners in old coatings can be effectively primed with an insulating coat of SILIKAL® RE 55 resin without any hardening problems being expected in the methacrylic coating.

Application

To ensure perfect adhesion with the subsequent coating, SILIKAL® Filler QS 0.7 – 1.2 mm must be sprinkled liberally into the SILIKAL® RE 55 resin until saturation before the resin cures. When curing is complete, the excess quartz sand is brushed or vacuumed away and the surface can then be given a top coat. Low viscosity coating recipes can be applied directly. Higher-viscosity or highly-filled mortar systems, on the other hand, require a further methacrylic intermediate primer coat of SILIKAL® R 51, R 52 or RU 727 resin in order to close up any pores in the sprinkled sand so that no bubbles form and no partial separation can occur.

Advice on application

SILIKAL® RE 55 resin is supplied in two packing units (resin in a 20 kg hobbock and hardener in a 10 kg bucket). To apply, mix the two components together intensively for about 2 – 3 minutes with an agitator unit in the prescribed ratio of 100 : 50.

The substrate must conform to the rules of the art, i. e. be dry and free of oil and dust, have sufficient bearing and inherent strength for its use and be free of cementitious grout (shot/ball blasting, milling etc.).

The mixed primer is poured onto the substrate and initially spread roughly by means of rubber blades. Then the primer is rolled into the substrate under slight pressure using standard Perlon rollers until the pores are completely closed up and SILIKAL® Filler QS 0.7 – 1.2 mm is immediately sprinkled in liberally until saturation before the surface hardens. It may be necessary prime absorbent substrates again wet in wet before sprinkling the sand in. The pot life depends on the temperature and is generally around 20 minutes (+20 °C), while hardening takes some 6 – 8 hours (+20 °C). Only a perfectly hardened coat of SILIKAL® RE 55 should be overlayed with the next layer.

Under no circumstances may solvents be added to dilute or adjust the viscosity. Suitable solvents such as Silikal cleaning agents must be used to clean the tools.

SILIKAL® RE 55 resin has been adequately tested by Silikal and released for use; it is currently in the introductory phase. However, this does not release the user from his duty of care, in particular to test the product and its application for suitability, particularly in combination with other products or systems.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RE 55 A resin	67 %	1 packing unit Component A	20 kg	approx. 17.5 litres
2	SILIKAL® RE 55 B resin	33 %	1 packing unit Component B	10 kg	approx. 10 litres
	Total:	**100 %**	**Average consumption: 400 g/m²**	**30 kg**	**approx. 27.5 litres**

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SILIKAL® RE 55 resin

Reactive, high-viscosity primer for synthetic resin-modified cement substrates

Expect more from your floor.

Characteristics of RE 55 in summary

Mixing ratio	Component A (resin) = 100 parts by weight Component B (hardener) = 50 parts by weight
Temperature range	min. +10 °C, max. +35 °C
Maximum humidity	75 % air humidity 4 % substrate moisture
Consumption	300 - 500 g/m² depending on the condition of the substrate
Packaging	20 kg hobbock (resin component) 10 kg bucket (hardener component)

Reaction times (approx.)

	+10 °C	+20 °C	+30 °C
Pot life	40 minutes	30 minutes	20 minutes
Hardening time	24 hours	10 hours	6 hours

Other applicable documents	Data sheet	Page
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The substrate	DUG	93 – 95
Information on safety and protection	SUS	102 – 103
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SILIKAL® R 61 resin

Reactive, slightly elasticized resin for slip-resistant floorings in wet areas

SILIKAL® R 61 resin is a solvent-free, medium-viscosity 2-component methacrylic resin of a slightly elasticized character. It is employed as a binder in the manufacture of self-levelling coatings sprinkled with quartz sand or for smoothable floorings with coloured quartz, predominantly in the food industry (wet areas), in coat thickness of 2 – 3 mm or 4 – 6 mm.

Hot water stress is limited to +60 °C. This limit may be briefly exceeded to +80 °C for cleaning purposes, but only if the floor is not completely warmed through.

Application

Depending on the mechanical stresses, a distinction is made between a thin and a thick coating. For fork-lift truck traffic the minimum thickness of 4 mm must be observed. For temperatures below +5 °C and for outdoor use on concrete, more highly-elasticized resin types are preferred (e. g. SILIKAL® R 61 HW or RV 368 resin).

1. Slip-resistant self-levelling thin coating 3 mm:

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 61 resin	33 %		12.5 kg	12.5 litres
2	SILIKAL® Filler SL	65 %	1 sack	25 kg	approx. 18 litres
3	SILIKAL® Pigment Powder	2 %		1 kg	
	Total:	**100 %**	**Average consumption: 5 kg/m²**	**38.5 kg**	**approx. 23 litres**
4	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” table for quantities	250 – 750 g	

Following pre-treatment of the concrete and priming, the above mixture is stirred until there are no lumps, mixed with hardener and applied directly on the surface to the recommended thickness by means of a stripper doctor blade, smoothing trowel or toothed comb.

Before the surface gels/hardens, SILIKAL® Filler QS or FS 0.7 – 1.2 mm is sprinkled in until saturation. A finer sand, e. g. of particle size 0.3 – 0.8 mm, can lead to minor hardening problems in unfavourable conditions. After hardening, the excess sand is removed completely by brushing and/or vacuum and the surface is worked by means of a top coat (in wet areas preferably with SILIKAL® R 81 resin).

Characteristics of the 3-mm topping

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	40 N/mm²
Tensile strength in bending	DIN 1164	27 N/mm²
Module of elasticity	DIN 53 457	2340 N/mm²

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2. Slip-resistant self-levelling thick coating 5 mm

(Use in system B)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 61 resin	28 %		10 kg	10 litres
2	SILIKAL® Filler SL	70 %	1 sack	25 kg	approx. 18 litres
3	SILIKAL® Pigment Powder	2 %		1 kg	
	Total:	**100 %**	**Average consumption: 9 kg/m²**	**36 kg**	**approx. 20 litres**
4	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” table for quantities	200 – 600 g	

This mixture contains a higher proportion of SILIKAL® Filler SL.

It is applied in the same way as the thin coating.

Characteristics of the 5-mm topping

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	46 N/mm²
Tensile strength in bending	DIN 1164	29 N/mm²
Modulus of elasticity	DIN 53 457	4830 N/mm²

3. Decorative coloured quartz coating 4 – 6 mm (screed)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 61 resin	21 – 23 %		e.g. 6.5 kg	6.5 litres
2	SILIKAL® Filler CQ	77 – 79 %	1 sack	25 kg	approx. 16 litres
	Total:	**100 %**	**Average consumption: 2 kg/m² per mm thickness**	**31.5 kg**	**approx. 18 litres**
3	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” table for quantities	130 – 390 g	

Characteristics of the coloured quartz coating (screed)

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	38 N/mm²
Tensile strength in bending	DIN 1164	23 N/mm²

This smoothable coloured quartz coating represents an alternative to the self-levelling formulations. The mixture of resin and filler is applied to the primed and loosely sanded surface and initially spread coarsely to the desired thickness by means of a doctor blade. The mortar must then be compressed and smoothed using the large smoothing trowel so that no pores and trowel marks remain in the floor (danger of hardening problems). Since the smoothable coating does not flow by itself, it is particularly suitable for areas with higher inclinations.

The application of the system requires special skills and practice (the prevention of puddles, good compaction of the mortar) to avoid pores and air bubbles within the mentioned tolerance of fillers and resin with dependence on the thickness.

After hardening, the surface must be applied by top coat again (e. g. with SILIKAL® R 71, R 71 RE, R 72 or R 81 resin).

In the case of coatings and floors in areas between metal profiles and inlets, we recommend that elastic joints with the same decorative look be laid in the transition area. Otherwise temperature stresses could lead to small cracks forming at the contact zone.

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SILIKAL® R 61 resin

Reactive, slightly elasticized resin for slip-resistant floorings in wet areas

Expect more from your floor.

Characteristics of R 61 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	260 – 320 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	50 – 60 sec.
Density D_4^{20}	DIN 51 757	0.99 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 3 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +35 °C	

Characteristics of R 61 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.14 g/cm³
Ultimate elongation	DIN 53 455	34 %
Shore-D	DIN 53 505	61 – 63 units
Water absorption, 4 days	DIN 53 495	90 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	6.0	20	60
+10 °C	4.0	20	45
+20 °C	3.0	15	30
+30 °C	2.0	10	25

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
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Fillers and pigments	FUP	96 – 99
Chemical resistance	CBK	100 – 101
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SILIKAL® R 61 HW resin

Reactive, elasticized resin for slip-resistant floorings in wet areas

Expect more from your floor.

SILIKAL® R 61 HW resin is a solvent-free, medium-viscosity 2-component methacrylic resin of an elasticized character. It is employed as a binder in the manufacture of self-levelling coatings sprinkled with quartz sand or for smoothable floorings with coloured quartz, predominantly in the food industry (wet areas, cold storage cells) or even outdoors in certain conditions, in coat thickness of 2 – 3 mm or 4 – 6 mm.

Because of their higher elasticization, such coatings can be used wherever greater extensibility is important (hot water shock, gutter junctions, cold storage cells etc.).

Hot water stress is limited to +60 °C. This limit may be briefly exceeded to +80 °C for cleaning purposes, but only if the floor is not completely warmed through.

Application

Depending on the mechanical stresses, a distinction is made between a thin and a thick coating. For fork-lift truck traffic the minimum thickness of 4 mm must be observed. For application on extensive outdoor areas or in deep-freeze areas on concrete, more elasticized resin types are preferred (e. g. SILIKAL® RV 368 resin).

1. Slip-resistant self-levelling thin coating 3 mm:

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 61 HW resin	33 %		12.5 kg	12.5 litres
2	SILIKAL® Filler SL	65 %	1 sack	25 kg	approx. 18 litres
3	SILIKAL® Pigment Powder	2 %		1 kg	
	Total:	**100 %**	**Average consumption: 5 kg/m²**	**38.5 kg**	**approx. 23 litres**
4	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” for quantities	250 – 750 g	

Following pre-treatment of the concrete and priming, the above mixture is stirred until there are no lumps, mixed with hardener and applied directly on the surface to the recommended thickness by means of a stripper doctor blade, smoothing trowel or toothed comb.

Before the surface gels/hardens, SILIKAL® Filler QS or FS 0.7 – 1.2 mm is sprinkled in until saturation. A finer sand, e. g. of particle size 0.3 – 0.8 mm, can lead to minor hardening problems in unfavourable conditions. After hardening, the excess sand is completely removed by brushing and/or vacuuming and the surface is worked by means of a top coat. Because of its elasticity adjustment, SILIKAL® R 81 resin is preferred for use outdoors or on surfaces exposed to water stress.

Characteristics of the 3-mm topping

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	21 N/mm²
Tensile strength in bending	DIN 1164	17.5 N/mm²
Modulus of elasticity	DIN 53 457	770 N/mm²

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2. Slip-resistant self-levelling thick coating 5 mm

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 61 HW resin	28 %		10 kg	10 litres
2	SILIKAL® Filler SL	70 %	1 sack	25 kg	approx. 18 litres
3	SILIKAL® Pigment Powder	2 %		1 kg	
	Total:	**100 %**	**Average consumption: 9 kg/m²**	**36 kg**	**approx. 20 litres**
4	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” table for quantities	200 – 600 g	

This mixture contains a higher proportion of SILIKAL® Filler SL.

It is applied in the same way as the thin coating.

Characteristics of the 5-mm topping

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	24.6 N/mm²
Tensile strength in bending	DIN 1164	18.8 N/mm²
Modulus of elasticity	DIN 53 457	1590 N/mm²

3. Decorative coloured quartz coating 4 – 6 mm (screed)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 61 HW resin	21 – 23 %		e.g. 6.5 kg	6.5 litres
2	SILIKAL® Filler CQ	77 – 79 %	1 sack	25 kg	approx. 16 litres
	Total:	**100 %**	**Average consumption: 2 kg/m² per mm thickness**	**31.5 kg**	**approx. 18 litres**
3	SILIKAL® Hardening Powder	2 – 6 % related to item 1	See “Hardener dosages” table for quantities	130 – 390 g	

Characteristics of the coloured quartz coating (screed)

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	22.5 N/mm²
Tensile strength in bending	DIN 1164	15.5 N/mm²

This smoothable coloured quartz coating represents an alternative to the self-levelling formulations. The mixture of resin and filler is applied to the primed and loosely sanded surface and initially spread coarsely to the desired thickness by means of a doctor blade. The mortar must then be compressed and smoothed using the large smoothing trowel so that no pores and trowel marks remain in the floor (danger of hardening problems). Since the smoothable coating does not flow by itself, it is particularly suitable for areas with higher inclinations.

The application of the system requires special skills and practice (the prevention of puddles, good compaction of the mortar) to avoid pores and air bubbles within the mentioned tolerance of fillers and resin with dependence on the thickness.

After hardening, the surface must be applied by top coat again (e. g. with SILIKAL® R 71, R 71 re, R 72 or R 81 resin).

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SILIKAL® R 61 HW resin

Reactive, elasticized resin for slip-resistant floorings in wet areas

Expect more from your floor.

Characteristics of R 61 HW as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	260 – 320 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	50 – 60 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 3 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +35 °C	

Characteristics of R 61 HW in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.12 g/cm³
Ultimate elongation	DIN 53 455	43 %
Shore-D	DIN 53 505	40 – 42 units
Water absorption, 4 days	DIN 53 495	90 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	6.0	25	70
+10 °C	4.0	20	50
+20 °C	3.0	15	40
+30 °C	2.0	10	30

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Chemical resistance	CBK	100 – 101
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106
General cleaning advice	ARH	107 – 108

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SILIKAL® R 62 resin

Reactive, slightly elasticized resin for self-levelling coatings

Expect more from your floor.

SILIKAL® R 62 resin is a medium-viscosity methacrylic resin that is outstandingly suitable for self-levelling coatings of 1 – 4 mm, predominantly indoors or as a top coat for elastic floorings outdoors. Coatings with SILIKAL® R 62 resin can bridge cracks to certain degree. Visually appealing surfaces and systems can be developed when used in conjunction with a variety of fillers, pigments or decorative materials.

SILIKAL® R 62 resin is characterized by good flow properties and therefore tends not to form trowel marks, assuming that the suggested filler recipe is used. The slight plasticization ensures universal application. SILIKAL® R 62 resin is roughly comparable with SILIKAL® R 61 resin in terms of its physical characteristics. SILIKAL® R 62 resin is predominantly recommended for sprinkling coloured flakes (loosely or saturated) and for smooth universal shades. The surface is preferably applied with SILIKAL® R 72 resin.

Application

SILIKAL® R 62 resin is used as a binder in manufacturing various coating types and recipes. Possible substrates for interiors include concrete, screed and ceramic tiles. A variety of different systems can be formulated from SILIKAL® R 62 resin depending on the application and stresses. Some standard recipes, which can be or may have to be adapted if alternative fillers are used, are suggested below. In this regard we suggest that you conduct laboratory tests using your fillers or pigments.

Special advice

Coatings made from SILIKAL® R 62 resin must not under any circumstances be rolled with a spiked roller, as otherwise the protective paraffin film cannot form.

1. Rollable wall coating

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 62 resin	69 %		20 kg	20 litres
2	SILIKAL® Filler QM	25 %		8 kg	approx. 8.6 litres
3	SILIKAL® Pigment Powder	5 %		1.5 kg	
4	SILIKAL® TA2 anti-flow additive	1 %		300 g	
	Total:	**100 %**	**Average consumption: 1.3 kg/m² per mm thickness**	**29.8 kg**	**approx. 23 litres**
5	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	200 – 1200 g	

SILIKAL® R 62 resin must always be applied directly on the primer and to a thickness of at least 1 mm, otherwise hardening problems might occur due to insufficient polymerisation energy. If there is already a methacrylate-based coating on the wall (e. g. concave moulding), the minimum thickness can be 0.5 mm. Since coatings for vertical application have to be made thixotropic, a visually appealing smooth surface is no longer guaranteed. We therefore recommend that large-area wall coatings are not applied by rolling, and that this is instead restricted to the skirting area. To achieve a higher thickness, SILIKAL® R 62 resin can be applied several times after each previous coat has cured thoroughly. To ensure better dirt repulsion, SILIKAL® R 72 resin is required as the last top coat.

The mixture (without hardener) must be dispersed by means of a dissolver to eliminate lumps and can be stored stably for several months in small containers. The container must be stirred intensively before being used again.

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2. Thin coating 1 – 2 mm for moderate stresses

(Use in systems C, D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 62 resin	47 %		20 kg	20 litres
2	SILIKAL® Filler SV	50 %		20 kg	approx. 22 litres
3	SILIKAL® Pigment Powder	3 %		1 kg	
	Total:	**100 %**	**Average consumption: 1.5 kg/m² per mm thickness**	**41.0 kg**	**approx. 27 litres**
4	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	200 – 1200 g	

Floorings under this system are suitable for mechanically well-structured concrete surfaces, particularly corridors, storage facilities, technical rooms, garages, laundry cellars etc.

3. Topping 3 – 4 mm

(Use in system C)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® R 62 resin	33 %		13 kg	13 litres
2	SILIKAL® Filler SV	65 %	1 sack	25 kg	approx. 22 litres
3	SILIKAL® Pigment Powder	2 %		1 kg	
	Total:	**100 %**	**Average consumption: 1.7 kg/m² per mm thickness**	**39 kg**	**approx. 23 litres**
4	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	130 – 780 g	

This variant is the most common industrial floor coating for a smooth surface finish. Layers of 4 mm are preferred, particularly for fork-lift truck and heavy rolling traffic.

Because of the thermoplastic nature of SILIKAL® R 62 resin, in the unsealed state the braking actions of conveyor vehicles can lead to tire marks at times of intensive stress which in simple cases can be eliminated by means of suitable cleaning agents. However, this can be avoided by driving appropriately or using white rubber tyres.

4. Colourless top coat

(Use in system D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 62 resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 600 g/m²**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	100 – 600 g	

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5. Pigmented top coat

(Use in system D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 62 resin	90 %		9 kg	9 litres
2	SILIKAL® Pigment Powder	10 %		1 kg	
	Total:	**100 %**	**Average consumption: 600 g/m²**	**10 kg**	**approx. 9.5 litres**
3	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See „Hardener dosages“ table for quantities	90 – 540 g	

Characteristics of R 62 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	150 – 180 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 51 211	40 – 50 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +35 °C	

Characteristics of the self-levelling 3 - 4 mm flooring

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	45 N/mm²
Tensile strength in bending	DIN 1164	25 N/mm²
Specific weight		1.7 g/cm³
Pot life at +20 °C		12 – 15 min.

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	6.0	20	50
+10 °C	5.0	20	45
+15 °C	3.0	15	40
+20 °C	2.0	15	40
+25 °C	1.5	12	35
+30 °C	1.0	12	30

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

Other applicable documents	Data sheet	Page
SILIKAL® Additive ZA	SILIKAL® Additive ZA	84
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Chemical resistance	CBK	100 – 101
Information on safety and protection	SUS	102 – 103
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SILIKAL® RU 727 resin

Reactive, hard universal resin for adherent primers and thin coatings

SILIKAL® RU 727 resin is a low-viscosity, transparent, solvent-free 3-component methacrylic resin with enhanced substrate adhesion.

Application

SILIKAL® RU 727 resin is used as a primer on concrete, cement and asphalt substrates and as an intermediate primer on existing coatings. SILIKAL® RU 727 resin can be used on metal and ceramic substrates if SILIKAL® Additive M adhesion promotor is used. As a primer on mineral substrates with subsequent colour sealing, SILIKAL® RU 727 must also be in pigmented form. In the case of colour sealing on asphalt, pigmented SILIKAL® RU 727 resin is applied directly, but a careful inspection of the substrate is absolutely essential. If the inherent strength is sufficient, it is only possible to seal or coat asphalt substrates in interior rooms that are as tightly temperature-controlled as possible.

Advice on application

Once the substrate has been inspected, it normally needs to be pre-treated. The necessary quantity of hardener must be adjusted in light of the temperature of the surface. For exact details, please refer to the table **“Hardener dosages”**. You must not dose less than the given quantity of hardening powder, as this will jeopardize the curing process. You must also avoid overdosing the hardening powder, as this can likewise lead to serious curing problems.

SILIKAL® RU 727 resin must be applied evenly without leaving puddles by means of a paint roller. Matt and heavily absorbent patches must be reprimed wet in wet before hardening until the pores are closed up. Further coats should be applied within 24 hours of hardening.

To produce SILIKAL® RU 727 resin in pigmented form, first disperse approx. 10 % pbw. of SILIKAL® Pigment Powder into the SILIKAL® RU 727 resin (5.3 kg of resin) using a dissolver unit, making sure there are no lumps, and then admix in the other components (SILIKAL® Additive I, SILIKAL® Hardening Powder, if necessary SILIKAL® Additive M).

SILIKAL® RU 727 resin must be completely cured before any further coat is applied.

Special advice

SILIKAL® RU 727 resin reaches its final physical properties in terms of compressive strength, final adhesion etc. after a post-reaction period which may last several days.

1. Priming

(Use in systems A – E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® RU 727 resin	84.1 %		5.3 kg	5.3 litres
2	SILIKAL® Additive I	15.9 %		1.0 kg	1.0 litres
	Total:	**100 %**	**Average consumption: 400 g/m²**	**6.3 kg**	**approx. 6.3 litres**
3	SILIKAL® Hardening Powder	2 – 5 % related to items 1 + 2	See “Hardener dosages” table for quantities	130 – 320 g	

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2. Alternative priming for ceramic tiles

(Use in systems B, C, D, E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® RU 727 resin	83.9 %		5.3 kg	5.3 litres
2	SILIKAL® Additive I	15.8 %		1.0 kg	1.0 litres
3	SILIKAL® Additive M	0.3 %		19 g	15 ml
	Total:	**100 %**	**Average consumption: 400 g/m²**	**6.32 kg**	**approx. 6.3 litres**
4	SILIKAL® Hardening Powder	3 – 6 % related to items 1 + 2*	See “Hardener dosages” table for quantities	200 – 400 g	

*** Because of the use of Additive M, the quantity of hardener increases by 1 % compared with the “Hardener dosages” table (cf. also Priming System A).**

3. Thin coating

(Use in system A)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® RU 727 resin	54.0 %		5.3 kg	5.3 litres
2	SILIKAL® Additive I	10.2 %		1.0 kg	1.0 litres
3	SILIKAL® Filler QM	30.6 %		3.0 kg	approx. 3.2 litres
4	SILIKAL® Pigment Powder	5.2 %		500 g	
	Total:	**100 %**	**Average consumption: 500 – 600 g/m²**	**approx. 9.8 kg**	**approx. 7.3 litres**
5	SILIKAL® Hardening Powder	2 – 5 % related to items 1 + 2	See “Hardener dosages” table for quantities	130 – 320 g	

4. Thin coating (intermediate coat)

(Use in system E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RU 727 resin	42.0 %		15.9 kg	15.9 litres
2	SILIKAL® Additive I	8.0 %		3.0 kg	3.0 litres
3	SILIKAL® Filler QM	47.5 %		18.0 kg	approx. 20 litres
4	SILIKAL® Pigment Powder	2.5 %		1.0 kg	
	Total:	**100 %**	**Average consumption: 1.5 kg/m² per mm thickness**	**37.9 kg**	**approx. 25 litres**
5	SILIKAL® Hardening Powder	2 – 5 % related to items 1 + 2	See “Hardener dosages” table for quantities	380 – 950 g	

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5. Pigmented top coat

(Use in system A)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® RU 727 resin	76.5 %		5.3 kg	5.3 litres
2	SILIKAL® Additive I	14.4 %		1.0 kg	1.0 litres
3	SILIKAL® Pigment Powder	9.1 %		630 g	
	Total:	**100 %**	**Average consumption: 400 g/m²**	**approx. 7 kg**	**approx. 7 litres**
4	SILIKAL® Hardening Powder	2 – 5 % related to items 1 + 2	See “Hardener dosages” table for quantities	130 – 320 g	

Characteristics of RU 727 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	170 – 220 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	38 – 42 sec.
Density D_4^{20}	DIN 51 757	0.99 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 3 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +35 °C	

Characteristics of RU 727 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.16 g/cm³
Ultimate elongation	DIN 53 455	28 %
Shore-D	DIN 53 505	65 – 75 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Mixing ratio RU 727 resin / Additive I

Component	Quantity in kg	Quantity in litres
SILIKAL® RU 727 resin	5.3	5.3
SILIKAL® Additive I	1.0	1.0

Plus BPO SILIKAL® Hardening Powder to the total quantity (6.3 kg) according to the **“Hardener dosages”** table. Greater or lesser batches presuppose that the **ratio of SILIKAL® RU 727 resin to SILIKAL® Additive I = 5.3 : 1** is always observed.

Example: Batch quantity 1 kg:
0.84 kg SILIKAL® RU 727 resin + 0.16 kg SILIKAL® Additive I plus hardening powder for 1 kg as per table.

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Hardener dosages

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

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

Other applicable documents	Data sheet	Page
SILIKAL® Additives	SILIKAL® Additive I	82
	SILIKAL® Additive M	83
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
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SILIKAL® RU 747 resin

Reactive, slightly elasticized self-levelling resin with good resistance to thermal deformation

Expect more from your floor.

SILIKAL® RU 747 resin is a solvent-free, medium-viscosity 3-component methacrylic resin with very good self levelling characteristics and enhanced resistance to thermal deformation with simultaneous elasticization. It serves as a binder for ductile 4 – 6 mm self-levelling coatings, preferably on floors with light long-term thermal stress (bakeries).

SILIKAL® RU 747 is fast-hardening and can be applied in a temperature range of 0 °C to +30 °C, so that the surface can generally be used after just 1 – 2 hours. At lower temperatures (below +10 °C) delayed post-curing occurs, so that the full mechanical or chemical durability will not be reached until after at least 2 – 3 days.

Application

Because of the properties described above, SILIKAL® RU 747 resin is particularly suitable for bakeries when combined with SILIKAL® RU 727 and SILIKAL® R 71/R72 resin according to system E.

SILIKAL® RU 747 resin can also be used as a self-levelling coating in interiors to provide a more impact-resistant alternative to SILIKAL® R 61 or SILIKAL® R 62 resin.

Self-levelling coating 4 – 6 mm

(Use in system E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RU 747 resin	18.0 %		6.1 kg	6.1 litres
2	SILIKAL® Additive I	6.6 %		2.3 kg	2.3 litres
3	SILIKAL® Filler SL	73.7 %	1 sack	25 kg	approx. 18 litres
4	SILIKAL® Pigment Powder	1.7 %		500 g	
	Total:	**100 %**	**Average consumption: 1.9 kg/m² per mm thickness**	**33.9 kg**	**approx. 18 litres**
5	SILIKAL® Hardening Powder	4 – 7 % related to items 1 + 2	See “Hardener dosages” table for quantities	350 – 600 g	

The batch is mixed with a hand agitator until no lumps are left and is then immediately poured onto the already primed substrate. To ensure that the desired coating thickness of 4 – 6 mm is achieved, the mixture is initially spread with the doctor blade. In individual cases it may be necessary to use the trowel to ensure more precise levelling.

The following options are available for further composition:

A) Smooth, no reworking: The surface appears smooth and leads to light dirt pick-up in the course of use.

B) Smooth, top coated: Possible pigmented top coats include SILIKAL® RU 727 resin as well as SILIKAL® R 72 resin.

C) Coloured flakes: SILIKAL® Coloured flakes can be sprinkled in before curing. The surface is then sealed with SILIKAL® R 71, R 71 re or R 72 resin.

Special advice:

Overworking with further coats must be done within a period of 24 hours.

SILIKAL® RU 747 must never be applied unpigmented.

Characteristics of RU 747 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	220 – 270 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	48 – 52 sec.
Density D_4^{20}	DIN 51 757	1.00 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 5 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +30 °C	

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SILIKAL® RU 747 resin

Reactive, slightly elasticized self-levelling resin with good resistance to thermal deformation

Expect more from your floor.

Characteristics of RU 747 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.15 g/cm³
Ultimate elongation	DIN 53 455	34 %
Shore-D	DIN 53 505	58 – 61 units
Water absorption, 4 days	DIN 53 495	90 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Characteristics of the self-levelling 4 - 6 mm flooring

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	46 N/mm²
Tensile strength in bending	DIN 1164	26 N/mm²
Modulus of elasticity	DIN 53 457	8000 N/mm²

Mixing ratio RU 727 resin / Additive I

Component	Quantity in kg	Quantity in litres
SILIKAL® RU 747 resin	5.4	5.4
SILIKAL® Additive I	2.0	2.0

Plus SILIKAL® Hardening Powder to the total quantity (7.4 kg) according to the **"Hardener dosages"** table. Greater or lesser batches presuppose that the **ratio of SILIKAL® RU 747 resin to SILIKAL® Additive I = 5.4 : 2** is always observed.

Example: Batch quantity 1 kg:
0.73 kg SILIKAL® RU 747 resin + 0.27 kg SILIKAL® Additive I plus hardening powder for 1 kg as per table.

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	7.0	40	80
+10 °C	6.0	30	60
+20 °C	5.0	15	30
+30 °C	4.0	10	20

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

Other applicable documents	Data sheet	Page
SILIKAL® Additive I	SILIKAL® Additive I	82
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Chemical resistance	CBK	100 – 101
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SILIKAL® RH 65 resin

Low viscous Methacrylic Resin for filler-rich indoor screeds on concrete of 5-20 mm

Expect more from your floor.

Silikal® RH 65 resin is a solvent free, fast curing MMA resin of very low viscosity. It is used for indoor screeds of 5-20 mm on concrete to equalize an uneven concrete surface. Screeds must be overlayed with a Silikal® coating system according to System A – E. The fast curing time of 1 hour, flexibility and filler rich formulation of 1 : 8 makes the mortar economical and can be applied at temperatures between 0 °C and +35 °C (refer to table of hardener).

Hot water loadings must be limited to +60 °C. Excess temperature up to +80 °C will be accepted for a short moment as long as the temperature of the complete layer does not adopt the higher degree.

Application

Layer thickness must be adjusted to the eveness of the concrete and to the mechanical loading and is recommended between 5 and 20 mm. Lower thickness must be avoided as the curing process will slow down. A higher thickness of more than 20 mm will cause shrinkage and tension.

For a proper application mix hardener first to the resin and add finally the filler mix. Normally there is no need to use pigments, however it could be an option.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (Parts by weight)	Comments	Batch	
1	SILIKAL® RH 65 resin	11 %		6 – 6.25 kg	6 – 6.25 litres
2	SILIKAL® Filler 65	89 %	2 sacks	50 kg	25 litres
	Total:	**100 %**	**Average consumption: 2.4 kg/m² per mm thickness**	**approx. 56 kg**	**approx. 24 litres**
3	SILIKAL® Hardening Powder	1 – 5 % related to item 1	See “Hardener dosages” table for quantities	60 – 315 g	

Concrete surface must be treated by required roughening methods like ball/shot blasting or concrete grinder. After collecting dust by vacuum cleaner apply primer such as Silikal® RU 727, R 51 or R 52 resin. A small amount (0.5 kg/m²) of sand of 0,7 – 1,2 mm size must be sprinkled into the fresh primer before curing. Mix the formulation carefully to avoid filler lumbs and pour it onto the prepared surface. To controll the thickness use a pin regulated squeguee and then a trowel or scrape off the entire mortar with an aluminium rail

Characteristics of RH 65 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	< 50 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	25 – 30 sec.
Density D_4^{20}	DIN 51 757	0.97 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 5 % pbw. hardening powder)	approx. 18 min.	
Application temperature	0 °C to +35 °C	

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SILIKAL® RH 65 resin

Low viscous Methacrylic Resin for filler-rich indoor screeds on concrete of 5-20 mm

Expect more from your floor.

Characteristics of RH 65 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.12 g/cm³
Ultimate elongation	DIN 53 455	75 %
Tensile strength	DIN 1164	8 N/mm²
Shore-D	DIN 53 505	40 – 45 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Modulus of elasticity	DIN 53 457	205 N/mm²

Characteristics of RH 65 mortar (1 : 8 with filler) in the hardened state

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	30 N/mm²
Tensile strength	DIN 1164	15 N/mm²
Modulus of elasticity	DIN 53 457	1200 N/mm²

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	5.0	20	80
+5 °C	4.0	19	70
+10 °C	3.0	19	65
+15 °C	2.0	18	60
+20 °C	1.5	18	55
+ 25 to +35 °C	1.0	12	50

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Information on safety and protection	SUS	102 – 103
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SILIKAL® RV 368 resin

Reactive, impact-resistant resin with low-temperature flexibility for self-levelling coatings

Expect more from your floor.

SILIKAL® RV 368 resin is a solvent-free, 2-component methacrylic resin of high impact resistance and low-temperature flexibility whose highly-molecular structure makes it outstandingly suitable for self-levelling coatings subject to extreme stresses, predominantly outdoors or for cold stores. Coatings made from SILIKAL® RV 368 resin are durably elastic and able to crack bridging.

SILIKAL® RV 368 resin is characterized by outstanding impact resistance. Its high elasticity ensures lasting crack bridging, so that substrate movements can be better absorbed. The good low-temperature flexibility improves its behaviour outdoors in the event of changes in climate or load stresses on bridge roadways or in cold stores. Because of the high viscosity, the coarse particles of the filler remains longer in the self-levelling recipe suspension, so that no separation between fine and coarse particles occurs within the flooring (particle homogeneity). This has a further beneficial effect on crack bridging.

When combined with fine filler, SILIKAL® RV 368 resin can also be used as a 1 – 1.5 mm membrane underneath normal flooring systems of SILIKAL® R 61, SILIKAL® R 62 or SILIKAL® RV 368 resin in order to improve impact resistance and crack bridging (tight to liquids).

Application

SILIKAL® RV 368 resin is used as a binder in manufacturing various coating types and recipes. Indoors it can be coated on the following substrates: concrete, screed, ceramic tiles, asphalt and steel.

Outdoors SILIKAL® RV 368 resin, like all other SILIKAL® resins, must not be laid on asphalt surfaces because otherwise cracks may be expected to form, particularly on large surfaces. The various substrates must be primed in accordance with our general recommendations (see literature on substrates).

Membrane coat

SILIKAL® RV 368 resin must always be applied to a minimum thickness of 1 mm. Mixtures in a ratio of 2 : 1 to 3 : 1 with SILIKAL® Filler QM have proven to be most suitable. Membrane coats must not be sanded over their full area before being covered with SILIKAL® R 61, SILIKAL® R 62 or SILIKAL® RV 368 resin self-levelling coatings. Membrane coats are advisable e. g. on blasted sheet steel, critical substrates or if there are particular mechanical stresses.

Main coat

For the main coat, a differentiation must be made between two filler recipes. The finer is used in the manufacture of thinner toppings of 2 – 4 mm, the coarser for thicker coats of 4 – 7 mm. The recommended sand sprinkling of SILIKAL® Filler QS 0.7 – 1.2 mm is absolutely essential, as this ensures the surface straining point stress. Dried basalt chippings or coarse quartz sand is also suitable for sprinkling over areas subject to traffic.

1. Scratch slurry

(Use in systems B, C, D, E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RV 368 resin	35 %		13.5 kg	13.5 litres
2	SILIKAL® SL filler	65 %	1 sack	25.0 kg	approx. 18 litres
	Total:	**100 %**	**Average consumption: 1.6 kg/m² per mm thickness**	**38.5 kg**	**approx. 24 litres**
3	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	135 – 810 g	

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2. Self-levelling coating 2 – 4 mm

(Use in system D or as scratch slurry)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RV 368 resin	35 %		14 kg	14 litres
2*	SILIKAL® Filler SV	65 %	1 sack	25 kg	approx. 22 litres
	Total:	**100 %**	**Average consumption: 1.6 kg/m² per mm thickness**	**39 kg**	**approx. 24 litres**
3	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	140 – 840 g	

*** SILIKAL® Filler SL (contains no quartz powder) can be used instead of SILIKAL® Filler SV (line 2).**

3. Self-levelling coating 4 – 7 mm

(Use in system D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RV 368 resin	30 %		16 kg	16 litres
2	SILIKAL® Filler QM	20 %		10 kg	approx. 11 litres
3	SILIKAL® Filler SL	50 %	1 sack	25 kg	approx. 18 litres
	Total:	**100 %**	**Average consumption: 1.7 kg/m² per mm thickness**	**51 kg**	**approx. 30 litres**
4	SILIKAL® Hardening Powder	1 – 6 % related to item 1	See “Hardener dosages” table for quantities	160 – 960 g	

Special advice:

Because of the high elasticity, no hard materials may be used as the overcoat. If a hard top coat is nevertheless required for reasons of resistance to chemicals, e. g. SILIKAL® R 72 resin, the surface must be pre-sealed with a semi-elastic intermediate sealant (e. g. SILIKAL® R 62 resin).

Extremely high spot stresses may result in slight indentations in the surface, but these are largely reversible.

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SILIKAL® RV 368 resin

Reactive, impact-resistant resin with low-temperature flexibility for self-levelling coatings

Expect more from your floor.

Characteristics of RV 368 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	1000 mPa · s
Flow time at +20 °C, 6 mm cup	ISO 2431	135 – 165 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	approx. 15 min.	
Application temperature	+5 °C to +30 °C	

Characteristics of the self-levelling coating 4 – 7 mm

Property	Measuring method	Approx. value
Compressive strength	DIN 1164	25 N/mm²
Tensile strength in bending	DIN 1164	15 N/mm²
Specific weight		1.7 g/cm³

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
+5 °C	6.0	20	60
+10 °C	4.0	15	40
+15 °C	3.0	15	40
+20 °C	2.0	15	40
+25 °C	1.5	12	30
+30 °C	1.0	10	25

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

Other applicable documents	Data sheet	Page
SILIKAL® Additive ZA	SILIKAL® Additive I	84
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Chemical resistance	CBK	100 – 101
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106
General cleaning advice	ARH	107 – 108

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SILIKAL® RV 310 resin

High flexible membrane resin

SILIKAL® RV 310 resin is a modified methacrylate resin of high flexibility which is – up to a certain extent – suitable for membrane layers and liquid foils under inelastic coatings for interior and exterior surfaces, as well as water proofing indoors under tiles and screed for „Test Categories – Field of Applications C“.

SILIKAL® RV 310 resin is characterised by a very high elasticity, which ensures a lasting extensibility so that movements in the underground can be better absorbed. Due to the surface tackiness the coating surface might tend to become contaminated with dust or dirt. Since a membrane coat made from Silikal® RV 310 resin is generally covered by tiles, screed or a further coat this fact can be ignored.

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

Application

Coating material made from SILIKAL® RV 310 resin need a suitable priming, e.g. SILIKAL® R 51 resin before applying on concrete.

The resin shall be formulated by fine filler and can be stored ready for use in small units.

After preparing the concrete surface according to the technical rules (ball blasting, grinding, cleaning, etc.) apply the primer SILIKAL® R 51 resin first. After curing apply the coating mixture according to the formulation given in table 1 in a layer of 1.5 mm thickness by using comb trowel or smoothing trowel. It is important to avoid blisters during application. Also consider to apply the material up the walls, piles or fixed machinery at least 5-10 cm to avoid water leakage.

German Approval as Waterproofing

Coating material made from SILIKAL® RV 310 resin is approved and authorized as water proofing under tiles and concrete as follows:
(2-layer with following sprinkling of quartzsand, adhesives for floor tiles upon request):

Application Area C: Walls- and floor surfaces in commercial establishments, also in connection with light chemicals (i.e. car wash, kitchens, canteens, food processing) except for those chemicals which require special and additional approvals (regulations concerning the ground water protection act § 19 WHG).

For the compliance with the certified regulations for application please contact us directly.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® RV 310 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 TA1	1 %		100 g	
	Total:	**100 %**	**Average consumption: 1.5 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	

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SILIKAL® RV 310 resin

High flexible membrane resin

Expect more from your floor.

Characteristics 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	50 – 70 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	12 – 15 min.	
Application temperature	+5 °C to +30 °C	
Ultimate elongation when hardened	250 % at +23 °C	

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
+5 °C	6.0	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.
For further information, please refer to the separate product information sheet **"SILIKAL® Hardening Powder"**.

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Chemical resistance	CBK	100 – 101
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SILIKAL® R 71 / R 71 re resin

Reactive, hard, low-viscosity top coat resin for dry areas

Expect more from your floor.

SILIKAL® R 71 resin (SILIKAL® R 71 re resin) is a reactive, solvent-free, low-viscosity and almost non-yellowing 2-component methacrylic resin offering high hardness and good resistance to chemicals.

The extremely low viscosity enhances the penetrative capacity of the resin in sand-sprinkled surfaces. Its high hardness guarantees outstanding resistance to chemicals.

Application

SILIKAL® R 71 resin (SILIKAL® R 71 re resin) is employed primarily as a colourless, scratch-resistant top coat for decorative coloured flakes and coloured sand surfaces.

Compared with SILIKAL® R 71 resin, SILIKAL® R 71 re resin is characterized by a reduced blue fraction. SILIKAL® R 81 resin must be used for surfaces which are used wet in the food industry.

Advice on application

Once moderately sized batches (5 – 10 kg) have been mixed with the necessary quantity of hardener as laid down in the **"Hardener dosages"** table, the resin is immediately poured onto the surface and applied crosswise, preferably by means of a paint roller. Although it is possible to spread it roughly with a rubber blade first, the dwell time of the still liquid resin until final levelling on a coloured flake surface must not be too long, as this may partly dissolve and leave colour tracks behind.

To ensure the best possible properties, the minimum and maximum coating thickness must be observed. Material consumption for smooth coatings is approx. 400 g/m² per application and on areas sprinkled with SILIKAL® Filler QS 0.7 – 1.2 mm approx. 500 g/m². If the coating thickness is exceeded (more than 800 g/m²), the resin will tend to flake and yellow. If the thickness is too low, excessively high monomer loss may occur, leading to insufficient hardness or lower resistance.

Under braking strains the thermoplastic character of the surface may lead to tyre marks which in many cases can be removed again using suitable cleaning agents. It makes sense for the user to protect the surface against damage through careful use and care. In many cases it would be advisable to ensure that fork-lift trucks are driven appropriately, black tyres are exchanged for white ones and/or a surface care agent (e. g. SILIKAL® Protect) is used.

Special advice

Hard top coats must never be applied directly on very elastic coatings, e. g. SILIKAL® RV 368 or R 61 HW resin. In these cases a moderately elasticized intermediate coat made from SILIKAL® R 61, R 62 or R 81 resin must be applied, as otherwise movement caused by temperature will lead to hairline cracks forming in the top coat.

Pigmenting

Pigmenting is possible, but SILIKAL® R 72 has the better properties in this regard. If pigmentation is nevertheless essential, 10 % pbw. of SILIKAL® Pigment Powder is usually added. To avoid lumps in the pigment, it must first be dispersed with the same quantity of resin by means of a dissolver to eliminate lumps. After the dispersion process the residual quantity of resin is added to the new pigment paste until the total content of the mix is again 10 %. You must make particularly sure that pigments which are not made by Silikal are properly tested for their compatibility and storage stability.

1. Colourless top coat

(Use in systems A, E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 71 resin / SILIKAL® R 71 re resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 400 – 500 g/m²**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	1 – 5 % related to item 1	See "Hardener dosages" table for quantities	100 – 500 g	

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2. Pigmented top coat

(Use in systems A, E)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 71 resin / SILIKAL® R 71 re resin	90 %		9 kg	9 litres
2	SILIKAL® Pigment Powder	10 %		1 kg	
	Total:	**100 %**	**Average consumption: 400 – 500 g/m²**	**10 kg**	**approx. 9.5 litres**
3	SILIKAL® Hardening Powder	1 – 5 % related to item 1	See "Hardener dosages" table for quantities	90 – 450 g	

Characteristics of R 71 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	approx. 60 – 80 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	18 – 21 sec.
Density D_4^{20}	DIN 51 757	0.99 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	approx. 15 min.	
Application temperature	-5 °C to +35 °C	

Characteristics of R 71 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.18 g/cm³
Ultimate elongation	DIN 53 455	4 %
Shore-D	DIN 53 505	78 – 80 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
-5 °C	5.0	25	60
0 °C	4.0	17	40
+10 °C	3.0	15	30
+20 °C	2.0	15	30
+30 °C	1.0	8	15

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
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Chemical resistance	CBK	100 – 101
Information on safety and protection	SUS	102 – 103
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SILIKAL® R 72 resin

Reactive, hard, medium-viscosity top coat resin for dry areas

Expect more from your floor.

SILIKAL® R 72 resin is a solvent-free, medium-viscosity 2-component methacrylic resin offering high hardness and low yellowing.

The rather lower reactivity presupposes a temperature of application of at least +10 °C (see also the **"Hardener dosages"** table below).

Application

SILIKAL® R 72 resin is used as a colourless, highly wear-resistant top coat for decorative smooth coatings on coloured flakes and coloured sand and as a pigmented top coat with enhanced flow properties. Because of the high hardness, elastic systems such as SILIKAL® RV 368 or SILIKAL® R 61 HW resin must not be worked over directly with SILIKAL® R 72 resin. In these cases an intermediate coat of SILIKAL® R 61 or SILIKAL® R 62 resin must be applied, as otherwise movement caused by temperature will lead to hairline cracks forming in the top coat.

Advice on application

Once moderately sized batches (5 – 10 kg) have been mixed with the necessary quantity of hardener as laid down in the **"Hardener dosages"** table, the resin is immediately poured onto the surface and applied crosswise, preferably by means of a paint roller. Although it is possible to spread it roughly with a rubber blade first, the dwell time of the still liquid resin until final levelling on a coloured flake surface must not be too long, as this may partly dissolve and leave colour tracks behind.

To ensure the best possible properties, the minimum and maximum coating thickness must be observed. Material consumption for smooth coatings is approx. 400 g/m² and on areas sprinkled with SILIKAL® Filler QS 0.7 – 1.2 mm approx. 500 g/m². The greater consumption means that a second coat can often be omitted. If the coating thickness is exceeded (more than 800 g/m²), the top coat will tend to flake.

Under braking strains the thermoplastic character of the surface may lead to tyre marks which in many cases can be removed again using suitable cleaning agents. It makes sense for the user to protect the surface against damage through careful use and care. Often it would be advisable to ensure that fork-lift trucks are driven appropriately, black tyres are exchanged for white ones or a surface care agent (e. g. SILIKAL® Protect) is used.

Special advice

Hard top coats must never be applied directly on very elastic coatings, e. g. SILIKAL® RV 368 or SILIKAL® R 61 HW resin. In these cases a moderately elasticized intermediate coat made from SILIKAL® R 61, SILIKAL® R 62 or SILIKAL® R 81 resin must be applied, as otherwise movement caused by temperature will lead to hairline cracks forming in the top coat.

Pigmenting

To pigment, about 10 % pbw. of SILIKAL® Pigment Powder is normally added. To avoid lumps in the pigment, it must first be dispersed with the same quantity of resin by means of a dissolver to eliminate lumps. After the dispersion process the residual quantity of resin is added to the new pigment paste until the total content of the mix is again 10 %. You must make particularly sure that pigments which are not made by SILIKAL® are properly tested for their compatibility and storage stability. A small addition (approx. 10 %) of SILIKAL® Filler QM has also been proven to enhance the surface.

1. Colourless top coat

(Use in systems A, C, D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 72 resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 400 – 500 g/m²**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	1 – 4 % related to item 1	See "Hardener dosages" table for quantities	100 – 400 g	

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2. Pigmented top coat

(Use in systems A, C, D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 72 resin	90 %		9 kg	9 litres
2	SILIKAL® Pigment Powder	10 %		1 kg	
	Total:	**100 %**	**Average consumption: 400 – 500 g/m²**	**10 kg**	**approx. 9.5 litres**
3	SILIKAL® Hardening Powder	1 – 4 % related to item 1	See "Hardener dosages" table for quantities	90 – 360 g	

Characteristics of R 72 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	120 – 150 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	30 – 35 sec.
Density D_4^{20}	DIN 51 757	0.97 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	approx. 12 min.	
Application temperature	+10 °C to +30 °C	

Characteristics of R 72 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.18 g/cm³
Ultimate elongation	DIN 53 455	6 %
Shore-D	DIN 53 505	72 – 76 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
+10 °C	4.0	15	40
+15 °C	3.0	15	40
+20 °C	2.0	12	30
+25 °C	1.5	10	30
+30 °C	1.0	10	30

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

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SILIKAL® R 81 resin

Reactive, low-viscosity elasticized top coat resin for wet areas

SILIKAL® R 81 resin is a reactive, solvent-free, low-viscosity, virtually non-yellowing 2-component methacrylic resin offering good resistance to water interaction. It serves primarily as a slightly elasticized and colourless top coat on sprinkled coatings in wet areas.

The low viscosity enhances the penetrative capacity of the resin in sand-coated surfaces.

Hot water stress is limited to +60 °C. The temperature stress may be increased to +80 °C for short periods, e. g. to allow cleaning, provided that the coating is not thoroughly warmed through to the substrate.

Application

SILIKAL® R 81 is used primarily as a colourless top coat for decorative SILIKAL® Coloured Flakes and SILIKAL® Coloured Quartz surfaces.

It is possible to apply two coats to the thickness envisaged.

Advice on application

Once moderately sized batches (5 – 10 kg) have been mixed with the necessary quantity of hardener as laid down in the **"Hardener dosages"** table, the resin is immediately poured onto the surface and applied crosswise, preferably by means of a paint roller. Although it is possible to spread it roughly with a rubber blade first, the dwell time of the still liquid resin until final levelling on a coloured flake surface must not be too long, as this may partly dissolve and leave colour tracks behind. It is essential that no puddles form!

To ensure the best possible properties, the minimum and maximum coating thickness must be observed. Material consumption for smooth coatings is approx. 400 g/m² per application and on areas sprinkled with SILIKAL® Filler QS 0.7 – 1.2 mm approx. 500 g/m². If the coat thickness is exceeded (more than 800 g/m²), the resin will tend to flake and yellow. If the thickness is too low, excessively high monomer loss may occur, leading to insufficient hardness or lower water resistance.

Under braking strains the thermoplastic character of the surface may lead to tyre marks which in many cases can be removed again using suitable cleaning agents. It makes sense for the user to protect the surface against damage through careful use and care. Often it would be advisable to ensure that fork-lift trucks are driven appropriately, black tyres are exchanged for white ones or a surface care agent (e. g. SILIKAL® Protect) is used.

Pigmenting

If pigmentation is nevertheless essential, 10 % SILIKAL® Pigment Powder is usually added. To avoid lumps in the pigment, it must first be dispersed with the same quantity of resin by means of a dissolver to eliminate lumps. After the dispersion process the residual quantity of resin is added to the new pigment paste until the total content of the mix is again 10 %. You must make particularly sure that pigments which are not made by SILIKAL® are properly tested for their compatibility and storage stability.

1. Colourless top coat

(Use in systems B, D)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 81 resin	100 %		10 kg	10 litres
	Total:	**100 %**	**Average consumption: 400 – 500 g/m²**	**10 kg**	**10 litres**
2	SILIKAL® Hardening Powder	1 – 3 % related to item 1	See "Hardener dosages" table for quantities	100 – 300 g	

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2. Pigmented top coat

(Use in system B)

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® R 81 resin	90 %		9 kg	9 litres
2	SILIKAL® Pigment Powder	10 %		1 kg	
	Total:	**100 %**	**Average consumption: 400 – 500 g/m²**	**10 kg**	**approx. 9.5 litres**
3	SILIKAL® Hardening Powder	1 – 3 % related to item 1	See "Hardener dosages" table for quantities	90 – 270 g	

Characteristics of R 81 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	approx. 120 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	28 – 32 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 1 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +30 °C	

Characteristics of R 81 in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	1.14 g/cm³
Ultimate elongation	DIN 53 455	2,7 %
Shore-D	DIN 53 505	75 units
Water absorption, 4 days	DIN 53 495	125 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.05 · 10^{-11} g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	3.0	20	40
+10 °C	2.0	20	40
+20 °C	1.0	15	30
+30 °C	1.0	8	20

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

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SILIKAL® RE 77 resin

Reactive, highly viscous solvent-resistant top coat

Expect more from your floor.

SILIKAL® RE 77 resin is a solvent-free, highly viscous glossy 2-component EP-based top coat that offers better resistance to solvents. It is used as a top coat solely on floors into which SILIKAL® Coloured Flakes or coloured quartz have been sprinkled in liberally.

Application

In areas exposed to greater stresses from solvent-type chemicals such as alcohols (pharmaceutical industry), paint thinners (paint industry) or engine/brake cleaners (car workshops), SILIKAL® RE 77 offers enhanced resistance. SILIKAL® RE 77 resin is only to be applied if the surface of the coat underneath has been liberally sprinkled with SILIKAL® Coloured Flakes or SILIKAL® Coloured Quartz. Smooth coatings are less suitable as a substrate for SILIKAL® RE 77.

Advice on application

SILIKAL® RE 77 resin is supplied in two separate packing units (component A = 20 kg and component B = 10 kg). Before application, both components are mixed together intensively for about 2 – 3 minutes using an agitator. If smaller quantities are required, the components are to be mixed in the ratio A = 100 and B = 50.

The surface must be free of sprinkled material (use a vacuum cleaner) before the top coat is applied. A rubber blade can be used for preliminary spreading. Thus wetted, the surface is evenly rolled crosswise by means of a fine Perlon roller until the desired coat thickness of 400 – 700 g/m² has been reached. A second coat of a further approx. 300 – 400 g/m² is possible if, for instance, a smooth surface is desired. Nevertheless, the second coat must be applied within 12 hours of the earliest accessibility in order to ensure good inter-layer adhesion.

The total thickness of the SILIKAL® RE 77 sealer coat may not exceed 1 mm.

For more reliable curing, a minimum substrate temperature of +14 °C is required. The pot life is about 30 minutes at +20 °C. Full chemical resistance and resistance against water is achieved after at least 7 days. For the exact quantities, please refer to the table **“Reaction times”**.

Under no circumstances may solvents be added to dilute or adjust the viscosity. Suitable solvents such as SILIKAL® Cleaner must be used to clean the tools and equipment.

SILIKAL® RE 77 resin has been adequately tested by Silikal and released for use. However, this does not release the user from his duty of care, in particular to test the product and its application for suitability, particularly in combination with other products or systems.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 30 litre bucket	
1	SILIKAL® RE 77 A resin	66.7 %	1 packing unit Component A	20 kg	approx. 17.4 litres
2	SILIKAL® RE 77 B resin	33.3 %	1 packing unit Component B	10 kg	approx. 9.8 litres
	Total:	**100 %**	**Average consumption: 400 – 700 g/m²**	**30 kg**	**approx. 27.2 litres**

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Characteristics of RE 77 in summary

Mixing ratio	Component A (resin) = 100 parts by weight Component B (hardener) = 50 parts by weight
Temperature range	min. +14 °C, max. +35 °C
Maximum humidity	75 % air humidity
Consumption	approx. 400 – 700 g/m² depending on surface roughness
Packaging	20 kg hobbock (resin component) 10 kg bucket (hardener component)

Reaction times (approx.)

	+15 °C	+20 °C	+30 °C
Pot life	45 minutes	30 minutes	20 minutes
Hardening time			
(walking)	48 hours	24 hours	12 hours
(vehicles)	4 days	3 days	2 days
(chemical)	7 days	7 days	7 days

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SILIKAL® R 21 / R 22 / R 24 resins

Solvent-based 1-component methacrylic resins

Expect more from your floor.

The SILIKAL® R 21 / R 22 / R 24 resin range comprises solvent-based 1-component methacrylic resins of varying consistencies offering high light fastness and chemical resistance for surface protection.

SILIKAL® R 21 resin = low viscosity, colourless, glossy

SILIKAL® R 22 resin = medium viscosity, colourless, matt

SILIKAL® R 22 OM resin = medium viscosity, colourless, glossy

SILIKAL® R 24 resin = high viscosity, contains filler, silk-finish

Physical drying results in thin, highly weather-resistant protective films which have proven their worth particularly as carbonation inhibitors for reinforced concrete, dust protection on floors and decorative coats for floors and walls.

Application

These resins serve to impregnate concrete, cement and anhydride screeds. SILIKAL® R 22 or SILIKAL® R 24 resin can be pigmented by SILIKAL® Pigment Powder to provide a decorative concrete protective coat. SILIKAL® R 24 resin already contains fine filler. Because of its low viscosity, however, SILIKAL® R 21 resin also acts as a deep-penetration primer for poorly absorbent substrates. Long durability presupposes that the substrate has sufficient bearing capacity, is dry and is free of dust.

The addition of SILIKAL® Pigment Powder to SILIKAL® R 24 resin produces quick-drying marking paints, e. g. for multi-storey car parks and parking lots, courtyards, entry roads and factory halls. Light reflection at night can be improved by sprinkling in glass beads of particle size 0.5 mm.

Advice on application

The lower application temperature for all 4 products is +5 °C. Adequate interior ventilation must be provided. Puddles must not be allowed to form.

After intensive stirring, the resin is usually applied by means of a paint roller or brush. The solvents were selected to ensure sufficient penetrative capacity even under warm weather conditions.

Special advice

The substrate generally needs to be pre-treated.

Characteristics as delivered

Property	Measuring method	R 21	R 22	R 24
Flow time at +20 °C, 3 mm cup	ISO 2431	13 sec.	26 sec.	72 sec.
Density D_4^{20}	DIN 51 757	0.87 g/cm³	0.92 g/cm³	1.38 g/cm³
Flash point	DIN 51 755	-13 °C	-12 °C	-11 °C

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SILIKAL® F 10 resin

Reactive methacrylate resin for joint filling

Expect more from your floor.

SILIKAL® F 10 resin is a modified methacrylic resin of high elasticity and low-temperature flexibility whose highly molecular structure and extensibility makes it outstanding under certain conditions for the filling of concrete joints in floors constructions.

SILIKAL® F 10 resin is characterized by very high elasticity in comparison with all other SILIKAL® resins, ensuring lasting joint filling so that movements in the substrate can be better absorbed. Its excellent low-temperature flexibility improves its behaviour outdoors as the climate changes. Because of the surface tackiness (due to the materials), the joint surfaces can tend to become contaminated. This can be resolved by a thin top coat of SILIKAL® R 61 or R 62 resin or by sprinkling in quartz sand of particle size 0.7 – 1.2 mm.

Like all other SILIKAL® resin types, joints made from SILIKAL® F 10 resin are resistant to acids and lyes.

SILIKAL® F 10 resin is not suitable for structural expansion joints. In outdoor applications SILIKAL® F 10 resin must always be coloured with at least 5 % pigment powder.

Advice on application/use

After being mixed with the hardening powder, SILIKAL® F 10 resin is immediately poured into the joint, which was previously primed as deep as possible on both sides with SILIKAL® R 51 resin. To avoid endless seepage into cavities below, the joint floor must be sealed. This can be done by using flexible PVC cables, for instance. Similar materials (e. g. cellular rubber) must be checked for compatibility so as to avoid hardening problems. It is also common practice to add SILIKAL® Filler QS 0.7 – 1.2 mm, assuming that the joint movement will be slight.

The joint width should be between 8 mm and 20 mm and the joint depth at least 20 mm.

To ensure better pouring homogeneity and less contamination, the resin can be made up with SILIKAL® Filler QM so that it can be kept in stock in small containers over several months. This will restrict the diminution of its extensibility.

Within a large area of coating, filled-in joints must always be visible as a line. Modern practice – in consultation with the customer – has demonstrated the merits of covering the filled-in joint with the floor coating as part of the coating operations. In many cases, particularly if flexible coatings are used in any case, no cracks form, so that the coating can be said to be seamless. Should cracks in the flooring nevertheless occur at a later stage, these can be cut open with a diamond wheel to allow joint mass to be poured in.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® F 10 resin	94 %		9.4 kg	9.4 litres
2	SILIKAL® Pigment Powder	5 %		500 g	
3	SILIKAL® Anti-flow Additive TA1	1 %		100 g	
	Total:	**100 %**	**Average consumption: 1.1 kg per litre volume**	**10 kg**	**approx. 9.5 litres**
4	SILIKAL® Hardening Powder	1 – 5 % related to item 1	See “Hardener dosages” table for quantities	95 – 475 g	

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Characteristics of F 10 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	2000 – 3000 mPa · s
Flow time at +20 °C, 6 mm cup	ISO 2431	240 – 300 sec.
Density D_4^{20}	DIN 51 757	0.98 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (100 g, 2 % pbw. hardening powder)	approx. 15 min.	
Application temperature	+5 °C to +30 °C	

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
+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	1.0	10	30
+30 °C	1.0	8	25

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

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SILIKAL® HK 20 coving paste

Reactive methacrylate coving paste

Expect more from your floor.

SILIKAL® HK 20 coving paste is a formulated ready-to-use methacrylic-based paste for the easy manufacture of covings.

Application

SILIKAL® HK 20 coving paste is outstandingly suitable for the manufacture of indoor covings in both dry and wet areas when applied with SILIKAL® Filler CQ or SILIKAL® Filler QS 0.7 – 1.2 mm. The hardening time of the almost non-yellowing coving paste is about 40 minutes at +20 °C. It can be used at temperatures ranging from 0 °C to +35 °C, enabling application to progress rapidly. For coating thickness of more than 10 mm, a first half thick cove must be installed for curing as to avoid any overheating. The final coving to follow as soon as the first layer has cooled down.

For covings thicker than 20 mm and for all outdoor covings SILIKAL® R17-thix mortar must be used.

Advice on application

The mixing ratio is 15 kg of SILIKAL® Filler CQ or SILIKAL® Filler QS 0.7 – 1.2 mm and 5 kg of SILIKAL® HK 20 coving paste. The quantity of filler can be varied from 12 – 18 kg according to the material and ambient temperature in order to ensure individual application or stability.

This batch is sufficient for approx. 8 – 10 m of coving at a height of 10 cm.

Under no circumstances should other untested additives be added to the mixture.

Mixing the coving paste

The corresponding quantity of SILIKAL® Filler CQ or SILIKAL® Filler QS 0.7 – 1.2 mm as well as SILIKAL® Hardening Powder is added to the SILIKAL® HK 20 coving paste as indicated in the **“Hardener dosages”** table, all mixed together intensively for about one minute using a high-speed propeller agitator. You must remember that the hardening powder has to be mixed in with the coving paste first before the filler is added.

The pot life at normal temperatures is about 15 minutes, the hardening time about 40 minutes. The values indicated will vary according to the ambient temperature.

Guideline recipe and batch quantities

Item	Component	Guideline recipe (% by weight)	Comments	Batch for 10 litre bucket	
1	SILIKAL® HK 20 coving paste	25 %		3 kg	3 litres
2	SILIKAL® Filler CQ	75 %		9 kg	approx. 6 litres
	Total:	**100 %**	**Average consumption: 1.85 kg per litre Coving volume**	**12 kg**	**approx. 6.5 litres**
3	SILIKAL® Hardening Powder	1,5 – 5 % related to item 1	See “Hardener dosages” table for quantities	45 – 150 g	

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Characteristics of HK 20 as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C		Pasty
Flow time at +20 °C, ISO 4 cup	DIN 53 244	N/A
Density D_4^{20}	DIN 51 757	1.02 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C (2.5 % pbw. hardening powder)	approx. 15 min.	
Application temperature	0 °C to +35 °C	

Characteristics of HK 20 in the hardened state (1 : 3 filled)

Property	Measuring method	Approx. value
Density	DIN 53 479	1.85 g/cm³
Compressive strength	DIN 1164	40.0 N/mm²
Tensile strength in bending	DIN 1164	17.0 N/mm²
Modulus of elasticity	DIN 53 457	2100 N/mm²
Water absorption, 4 days	DIN 53 495	125 mg/(50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	$1.05 \cdot 10^{-11}$ g/cm · h · Pa

Hardener dosages

Temperature	Hardening powder % pbw. *	Pot life approx. min.	Hardening time approx. min.
0 °C	5.0	20	60
+10 °C	4.0	15	50
+20 °C	2.5	15	40
+25 °C	2.0	12	30
+30 °C	1.5	10	30

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

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SILIKAL® R 7 mortar

Hard reactive resin mortar for floorings

Expect more from your floor.

SILIKAL® R 7 mortar is a solvent-free 2-component methacrylic resin mortar with a very high compressive strength. It is used as a fillable, highly stress-resistant concrete coating in thickness of 4 – 6 mm.

Because of the enormously great strength, the concrete surface can be made resistant to heavy wear. The mortar surface has a similar appearance to that of a modified concrete grade. The hardening time is about 1 hour at +20 °C, and hardening takes place in temperatures ranging from -10 °C to +35 °C. The very low viscosity enables rapid mixability and application to be achieved.

Application

Preferred fields of use are floors for indoor areas in heavy industry which are subject to strong mechanical stresses. **SILIKAL® R 7 mortar should not be applied over large areas of deep-freeze rooms and outdoors.** We recommend that you use impact-resistant types such as SILIKAL® RV 368 instead.

Advice on application

The substrate generally needs to be pre-treated.
Please refer to the technical information entitled **“The Substrate”**.

SILIKAL® R 7 mortar consists of SILIKAL® R 7/R 17 Powder to which fillers of particle diameter up to 1.8 mm has been added and the watery methacrylic-based SILIKAL® R 7 Hardener Liquid.

The recommended primer for mineral substrates is SILIKAL® R 51 resin with loosely quartz sand of particle size 0.7 – 1.2 mm sprinkled in.

The mixing ratio is 15 kg (1 sack) of SILIKAL® R 7/R 17 Powder and 1.7 – 2.0 litres of SILIKAL® R 7 Hardener Liquid. You must not use more or less than these quantities, as they already cover the range from stiff to low viscosity.

Under no circumstances should other additives be added to the mixture. The exact coating thickness of 4 – 6 mm must be observed. Thinner coats will lead to a reduction in strength and hardening problems, while exceeding the maximum coating thickness can lead to cracks forming or shrinkage stress.

Mixing the reactive resin mortar

To produce the mortar mix, 1.7 – 2.0 litres of SILIKAL® R 7 Hardener Liquid (depending on the desired mortar consistency) is added to the SILIKAL® R 7/R 17 Powder. Because of its thin, viscous consistency, the mix can be easily prepared in a short time by means of a high-speed agitator, while smaller quantities can be prepared manually.

The finished mortar is spread evenly by means of a doctor blade and smoothed or applied using an aluminium lath and screed board. The boards should normally be made from polypropylene strips (PP), as these can be easily detached from the mortar after hardening and then cleaned.

The pot life at normal temperatures is about 12 – 14 minutes, the hardening time about 60 – 90 minutes. The values indicated will vary according to the ambient temperature.

Special formulations:

If sealed batches and minimum quantities are purchased, special colours are also available on request.

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Characteristics of R 7 Hardener Liquid as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	0,6 – 0,7 mPa · s
Flow time at +20 °C, 3 mm cup	ISO 2431	20 – 21 sec.
Density D_4^{20}	DIN 51 757	0.94 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C with R 7/R 17 Powder	approx. 15 min.	
Application temperature with R 7/R 17 Powder	-10 °C to +35 °C	

Characteristics of R 7 mortar in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	2.16 g/cm³
Compressive strength	DIN 1164	105.0 N/mm²
Tensile strength in bending	DIN 1164	37.5 N/mm²
Modulus of elasticity	DIN 53 457	20300 N/mm²
Water absorption, 4 days	DIN 53 495	90 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	1.6 · 10^{-8} g/cm · h · Pa

Calculation aid for application and costing

SILIKAL® R 7 mortar	Quantity in kg	Quantity in litres Loose	Quantity in litres Solid volume	Thickness (mm)
R 7/R 17 Powder	15.00	11.50		
R 7 Hardener Liquid	1.85	2.00		
	16.85		8.50	5

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SILIKAL® R 17 mortar

Reactive resin mortar for concrete repairs and screeds

Expect more from your floor.

SILIKAL® R 17 mortar is a solvent-free 2-component methacrylic resin mortar with a high compressive strength and tensile strength in bending. It is characterized by very low linear shrinkage.

Because of its high strength, the mortar is suitable as a wear-resistant concrete coating for coating thickness of 6 – 20 mm. The low shrinkage rate enables even larger unevenness to be levelled out. The mortar surface resembles that of a fine exposed concrete and can be topped with suitable Silikal coatings to ensure a decorative surface look. The hardening time is about 1 hour at +20 °C, and hardening takes place in temperatures ranging from -10 °C to +35 °C (approx. 1 – 3 hours). The very low viscosity enables rapid mixability and application to be achieved.

Application

Special areas of use are on floors for traffic areas in industrial concerns which are subject to heavy mechanical stress and as a localized repair mortar for indoors and outdoors. Greater coat thicknesses can be achieved by adding further coarse aggregates (e. g. for ramps, rail bedding, filler and screed mortars, casting bridge bearings). Suitable coarse aggregates include non-absorbent mineral particles (e. g. quartz gravel) in the proportions listed in the table below. For large-volume applications, individual gravel stones up to 30 cm in diameter can be inserted. However, these should not touch each other, as otherwise this place will have an increased tendency to fracture.

Advice on application

The substrate generally needs to be pre-treated.

Please refer to the technical information sheet entitled **“The Substrate”**.

SILIKAL® R 17 mortar consists of SILIKAL® R 7/R 17 Powder to which quartz sand of particle diameter up to 1.8 mm has been added and the watery methacrylic-based SILIKAL® R 17 Hardener Liquid.

The consumption of basic mortar mix is 2 kg/m^2 per mm of coat thickness. The recommended primer for cement substrates is SILIKAL® R 51 resin with quartz sand of particle size 0.7 – 1.2 mm loosely sprinkled in.

The mixing ratio is 15 kg (1 sack) of SILIKAL® R 7/R 17 Powder and 1.7 – 2.2 litres of SILIKAL® R 17 Hardener Liquid. You must not use more or less than these quantities of hardener liquid, as they already cover the range from stiff to low viscous.

Under no circumstances should other untested additives be added to the mixture. The exact coating thickness of 6 mm must be observed. On unevenness which runs out to zero, cuts must be made in the edge area. Thinner coats will result in reduced strength and hardening problems.

Mixing the reactive resin mortar

To produce the mortar mix, 1.7 – 2.2 litres of SILIKAL® R 17 Hardener Liquid (depending on the desired mortar consistency) is added to the SILIKAL® R 7/R 17 Powder. Because of its thin, viscous consistency, the mix can be easily prepared in a short time by means of a high-speed agitator, while smaller quantities can be prepared manually. Mixes with coarse aggregates can also be produced using low-speed forced agitators or in the normal concrete mixer. You must ensure that the coarse particles are not added until the SILIKAL® R 7/R 17 Powder and SILIKAL® R 17 Hardener Liquid have already been mixed together.

The finished mortar is spread evenly by means of a doctor blade and smoothed or applied using an aluminium lath and screed board. The boards should normally be made from polypropylene strips (PP), as these can be easily detached from the mortar after hardening and then cleaned.

The pot life at normal temperatures is about 12 – 14 minutes, the hardening time about 60 – 90 minutes. The values indicated will vary according to the ambient temperature.

If mortar surfaces made from SILIKAL® R 17 mortar are then coated with reactive methacrylic resin systems, another coat of primer (e. g. SILIKAL® R 51 or RU 727 resin) must be applied first.

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Special formulations:

SILIKAL® R 17-fine mortar

If the basic mortar mix is too coarse for finer concrete work, we recommend that you use SILIKAL® R 17-fine powder instead (minimum thickness of SILIKAL® R 17-fine mortar: 2 mm). In this case, the necessary quantity of SILIKAL® R 17 Hardener Liquid is about 2.7 – 3.0 litres per 15 kg of fine powder.

SILIKAL® R 17 (-25 °C) mortar

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

SILIKAL® R 17-thix mortar

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

Special shades/colours

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

Characteristics of R 17 Hardener Liquid as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	0.6 – 0.7 mPa · s
Flow time at +20 °C, 3 mm cup	ISO 2431	20 – 21 sec.
Density D_4^{20}	DIN 51 757	0.93 g/cm³
Flash point	DIN 51 755	+10 °C
Pot life at +20 °C	approx. 15 min.	
Application temperature	-10 °C to +35 °C	

Characteristics of R 17 mortar in the hardened state

Property	Measuring method	Approx. value
Density	DIN 53 479	2.15 g/cm³
Compressive strength	DIN 1164	75.0 N/mm²
Tensile strength in bending	DIN 1164	27.5 N/mm²
Module of elasticity	DIN 53 457	7000 N/mm²
Water absorption, 4 days	DIN 53 495	90 mg (50 · 50 · 4 mm)
Water vapour permeability	DIN 53 122	$1.05 \cdot 10^{-11}$ g/cm · h · Pa

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Calculation aid for application and costing

SILIKAL® R 17 mortar	Quantity in kg	Loose (litres)	Solid volume (litres)	Minimum thickness (mm)
a) R 7/R 17 Powder	15.00	11.50		
R 17 Hardener Liquid	1.85	2.00		
	16.85		8.50	6
b) R 7/R 17 Powder	15.00	11.50		
R 17 Hardener Liquid	1.85	2.00		
SILIKAL® Filler QS 2 – 8 mm	8.00	5.00		
	24.85		11.60	25
c) R 7/R 17 Powder	15.00	11.50		
R 17 Hardener Liquid	1.85	2.00		
SILIKAL® Filler QS 2 – 8 mm	3.00	1.90		
SILIKAL® Filler QS 8 – 16 mm	12.00	7.50		
	31.85		14.25	50

Other applicable documents	Data sheet	Page
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
Fillers and pigments	FUP	96 – 99
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106

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SILIKAL® Additive I

System component for SILIKAL® RU 727 and RU 747 resins

SILIKAL® Additive I is a polyisocyanate-based methacrylic resin. It is a constituent of the urethane-modified reactive resins SILIKAL® RU 727 and RU 747 (see corresponding product data sheets).

Application

To bind surface moisture and on slightly moist substrates, a proportion of 10 – 15 % pbw. of SILIKAL® Additive I can be added to the primer resin SILIKAL® R 51. The penetrative capacity and the hardening times of the primer are hardly influenced by the admixture. However, you must ensure that subsequent coats with the corresponding SILIKAL® reactive resins are applied within 8 hours.

Characteristics of Additive I as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	approx. 70 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	18 – 21 sec.
Density D_4^{20}	DIN 51 757	1.07 g/cm³
Flash point	DIN 51 755	+10 °C

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
Chemical resistance	CBK	100 – 101
Information on safety and protection	SUS	102 – 103
Storage and transport	LUT	104 – 106
General cleaning advice	ARH	107 – 108

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SILIKAL® Additive M

Adhesion Promotor

SILIKAL® Additive M is a bonding enhancer for ceramic and other poorly absorbent substrates. It can also be used at joins to metal and when working over small areas of metal substrates.

SILIKAL® Additive M is employed solely in combination with the urethane-modified reactive resin SILIKAL® RU 727. It is essential that the required quantity of max. 0.3 % pbw. (related to the resin content) is not exceeded, as a higher dosage will lead to curing problems.

Resins mixed with SILIKAL® Additive M are not stable for storage. It is therefore important that it is not added until immediately before application. In the premixed condition SILIKAL® Additive M loses its effectiveness after about 2 hours.

Recommended batch quantity:

5.3 kg of SILIKAL® RU 727 resin
1.0 kg of SILIKAL® Additive I
19 g of SILIKAL® Additive M (0.3 % pbw.)

Characteristics of Additive M as delivered

Property	Measuring method	Approx. value
Viscosity at +20 °C	DIN 53 015	approx. 60 mPa · s
Flow time at +20 °C, 4 mm cup	DIN 53 211	17 – 20 sec.
Density D_4^{20}	DIN 51 757	1.21 g/cm³
Flash point	DIN 51 755	+15 °C

You must remember that admixing SILIKAL® Additive M will result in a slight delay in the curing process and an intensive yellowing of the resin. It is therefore recommended that the quantity of hardener powder be increased by 1 % on the quantity indicated under SILIKAL® RU 727 resin in the "Hardener dosages" table.

For the required quantity of hardener for applying SILIKAL® RU 727 resin in combination with SILIKAL® Additive M, please refer to the following table.

Hardener dosages for RU 727 in combination with Additive M

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

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

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
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SILIKAL® Additive ZA

Low-temperature accelerator

SILIKAL® Additive ZA supports the low-temperature hardening of methacrylic-based Silikal reactive resins in combination with dibenzyl peroxide as hardener in the temperature range from +5 °C to -25 °C.

SILIKAL® Additive ZA is a thin, brownish liquid which is stirred into the relevant methacrylic resin together with the fillers and/or pigments immediately before the coating material is applied. Only then is the hardening powder added. The added accelerator ensures better through-hardening at temperatures below +5 °C. The effect is limited to -25 °C with the simultaneous use of the greatest possible quantity of hardening powder. As a rule of thumb, the quantity to add is 1 % per -10 °C, i. e. at -25 °C the quantity is 2.5 – 3 %, and at -5 °C about 0.5 %, in relation to pure resin. These include SILIKAL® R 52, R 62, RV 310 or RV 368 resin. Other resin types on request.

SILIKAL® Additive ZA must never be used in areas above +10 °C, as this can lead to an overreaction with increased quantities of residual monomers. This will restrict the mechanical properties. Application at low temperatures will lead to very little reduction in mechanical values since sufficient heat dissipation into the surroundings is ensured. All resins and fillers must be cooled down to the low ambient temperatures in good time, as otherwise the pot life will be greatly reduced. Colourless resin types can be expected to show significant yellowing. It is therefore recommended that they are used primarily in filled and pigmented systems. If the coating is to be designed specifically for use at low temperatures, the resin types must also be suitable for that purpose, so we recommend that the highly elastic types such as SILIKAL® RV 368 be used with SILIKAL® R 62 as a top coat.

SILIKAL® Additive ZA is subject to strict safety regulations governing transport, storage and handling. Please follow the relevant instructions in the safety data sheets.

ATTENTION:

SILIKAL® Additive ZA must never come into contact with the hardening powder (see product data sheet), as otherwise an uncontrollable explosion might occur. Both substances must be stirred separately into the mass (stir before adding!).

Additive quantities, based on SILIKAL® RV 368 resin

Temperature	% pbw. Additive ZA	% pbw. Hardening powder
+5 °C to -5 °C	0.5	6
-5 °C to -10 °C	1.0	6
-10 °C to -15 °C	1.5	6
-15 °C to -20 °C	2.0	6
-20 °C to -25 °C	2.5 – 3.0	6

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
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SILIKAL® RI/21

Tensile bond adhesive

Expect more from your floor.

SILIKAL® RI/21 is a quick-hardening, 2-component methacrylic-based adhesive. It was developed specifically for bonding steel to concrete substrates.

Application

The bond component is mixed thoroughly with 5 % pbw. of hardening powder and applied on the substrate to be bonded to a thickness of 1 – 2 mm. The metal side to be bonded should be roughed and free of grease and dust.

Characteristics of RI/21 as delivered

Consistency	Pourable and spreadable, thixotropic
Density at +20 °C	1.2 g/cm³
Viscosity at +25 °C	40 – 60 Poise
Added hardener	5 % pbw.

Characteristics of RI/21 in the hardened state

Temperature	Pot life	Hardening time	Tensile strength of 20 N/mm²
-10 °C	approx. 13 min.	approx. 60 min.	after approx. 4 hours
0 °C	approx. 9 min.	approx. 45 min.	after approx. 2 hours
+10 °C	approx. 7 min.	approx. 30 min.	after approx. 2 hours
+20 °C	approx. 5 min.	approx. 20 min.	after approx. 1 hour

Other applicable documents	Data sheet	Page
SILIKAL® Hardening Powder	SILIKAL® Hardening Powder	86 – 87
General processing information	AVH	89 – 92
The substrate	DUG	93 – 95
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The manufacture of polymers through the interlinking of many small molecules is known as polymerisation (hardening). In Silikal reactive resins, this hardening mechanism is triggered by the addition of a hardening powder (dibenzyl peroxide, or BPO for short). The hardening powder sets off a chain reaction and can therefore be regarded as the initiator for a chemical reaction.

Dosage

The quantity of hardening powder required depends on temperature and can be taken from the relevant product data sheets in the **"Hardener dosages"** table. The quantities of hardening powder are indicated as a percentage by weight (pbw.), related to the proportion of resin.

More hardening powder is advisable for

1. thinner coating thickness
2. higher degree of filling

Less hardening powder is advisable for

1. coating over thicker old methacrylic coatings
2. sealing of self-levelling, smooth methacrylic coatings not sprinkled with sand or colour flakes

However, you must not dose less than the quantity of hardening powder indicated in the respective product data sheets, as this will jeopardize the curing process. You must also avoid overdosing the hardening powder, as this can likewise lead to serious curing problems triggered by excessive temperatures.

Hardener quantities are best dosed by means of an electronic scale. Should there be no scale on the building site, graduated measuring beakers can be used instead; in this case the quantity of hardener must be converted from weight to volume. Measuring beakers with a special BPO scale can be obtained from Silikal.

To convert from weight to volume, apply the following basic rule of thumb:

Quantity of hardening powder in g x 1.5 = volume of hardening powder in ml

Example:

Batch quantity of SILIKAL® R 51 resin: 1.0 kg

According to the "Hardener dosages" table, at +20 °C add 3 % by weight of hardening powder.

3 % by weight of 1.0 kg of R 51 is 30 g, i. e. 30 g of hardening powder must be added to 1.0 kg of SILIKAL® R 51 resin.

Convert from g to ml using the following formula:

30 g x 1.5 = 45 ml

Advice on application

The hardening powder must not be added to the corresponding Silikal reactive resin and resin/filler mix until immediately before application. In the case of pourable mixes, the hardener should be the last component added, while for mortars or very thixotropic resins the full amount of filler or thixotropic agent should be stirred in first. Only in this way can the hardener dissolve evenly within the mixture.

The hardening powder must always be stirred into the corresponding mixture or the pure resin until it has completely dissolved. The stirring time will depend on the nature and the condition of the mixing equipment used and on the temperature of the material.

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Special safety advice

BPO hardening powder must never come into contact with Additive ZA accelerator (see product data sheet), as this can lead to an uncontrollable explosion. Both substances must be stirred separately into the coating mass (stir before adding!).

Metal vessels (e. g. beakers, shovels) are not suitable for handling BPO hardening powders. Lengthy contact could cause an explosion!

Special advice

In practice, circumstances which cannot always be foreseen in advance (e. g. poor ventilation, colder substrate, thinner coats, or a combination of such circumstances) mean that there is a danger of slight (possibly only localized) hardening problems. In this case the quantity of hardener should be increased as a precaution by 0.5 – 1 % on the quantity recommended in the table.

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Silikal®
Expect more from your floor.

Silikal flooring systems
Karl Stierschneider vineyard,
Weissenkirchen/Austria

It is essential that the substrate is inspected before any work begins. The inspection should focus not only on the structural or static conditions of the construction, but also weather and environment-related influences. An important criterion is above all the intended chemical or mechanical use to which the flooring system will be put. Sufficient attention must also be paid to possible disruptive influences from the substrate, e. g. the use of concrete additives, PCC stopper masses, emulsion-based screeds, the application of wax or release agents on a surface, in order to avoid hardening problems or poor adhesion of the subsequent methacrylic coating. For more on this subject please refer to our technical information sheet **"The Substrate".**

The building site must be inspected in the presence of the customer and applicator so that the right coating system and the associated thickness, colour, decorative effect and slip resistance can be selected, making due allowance for the anticipated mechanical and chemical strains and the condition of the substrate. This "General advice on application" is the result of our many years of experience and has been tailored to the application of our Silikal products. The terms are defined on the basis of Worksheet AGI "A80" of Arbeitsgemeinschaft Industriebau e.V., Ebertplatz 1, 50668 Cologne/ Germany and the "BEB Worksheets KH0 – KH6" of the Bundesverband Estriche und Beläge e.V., Industriestraße 19, 53842 Troisdorf/Germany.

Interior ventilation

When applying products based on methacrylic resins, you must remember that these binders are normally a fire hazard during application. It is therefore essential that you follow the safety advice in **"Safety advice and precautions"**. Adequate air inflow and outflow must be provided. We recommend that neighbouring people are informed of the possible odour pollution by means of an information sheet when the building site is erected. As well as the aspects of health and safety, good interior ventilation also has a significant influence on the quality of the flooring system. If there is insufficient fresh air coming in, hardening problems may occur on the surface. In simple cases this will result in later contamination, white discolouration under water strains, premature wear or yellowing. In the worst case, particularly on thinner coats, the resin may not harden at all but instead remain tacky. It is also important that objects, particularly packed or loose foodstuffs, are always stored elsewhere in consultation with the operator, as these can very quickly absorb the odour or taste. You must also ensure that sufficient time is allowed after the coating work for post-ventilation so as to get rid of any existing residual vapours before goods are brought back in.

Hot or cold

If methacrylic resins are processed at higher application temperatures, the reaction time shortens. Conversely, the hardening time is longer in cold temperatures. That makes it absolutely essential to observe the hardener dosage figures given in the tables of the relevant product data sheets as well as the minimum and maximum temperature of the substrate.

The application of cured coatings under different climatic conditions can be optimized by selecting resins accordingly. In the cold, e.g. deep-freeze stores or outside applications with cold winters, elastic or soft toppings should always be preferred. When heat is a factor, on the other hand, e.g. hot water systems, in the vicinity of boilers, smoking or baking ovens, harder toppings should be applied.

In both cases the only reason is the substantially greater coefficient of linear expansion of the reactive resin topping when compared with concrete. The right choice of resin type will reduce the danger of flaking, blistering and cracking in the event of high temperature differences.

However, this basic rule is often diametrically opposed to other physical requirements such as compressive strength, compression point load capability, ease of cleaning, slip resistance and crack bridging. Unlike concrete, toppings made from reactive resins should be thought of as similar to thermoplastics because they become softer as temperatures rise and harder as they fall.

Reactive resin coatings are usually used at ambient temperature. They can also – after allowing for the temperature-dependent compressive strength – be subject to the following stresses:

	Permanent temperature	**Transient, e.g. for cleaning purposes** **Complete heat penetration must be avoided!**
Systems A, B and C	0 °C to +60 °C	to +80 °C
System D	-25 °C to +45 °C	to +60 °C
System E	+5 °C to +70 °C	to +80 °C

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All other parameters that may be influenced must be considered on a case-by-case basis. The increasing softness at higher application temperatures can, of course, lead to greater dirt absorption, brake marks, gritting sand being pushed in (resulting in decreasing slip resistance), sharp-edged shelf or pallet feet sinking, etc. On the positive side, crack bridging, toughness under impact and substrate adhesion all improve.

There is no such thing as a reactive resin coating that retains all its physical properties in both cold and heat. Even so, a floor coating made from reactive resins is the best way of protecting the substrate in the majority of applications.

Coating thickness

The coating thickness will depend on the choice of binder in question, the evenness of the substrate and the mechanical stress. The general rule here is that all 3 influences have to be adapted to each other. In particular, you must make sure that the minimum and maximum thickness of each resin system are observed. Coats that are too thin could give rise to curing problems. On the other hand, coats that are too thick could become too hot while hardening due to the exothermic reaction and thereby bulge, tear off or remain tacky or soft. A multiple application of more or less pure layers of resin one on top of another, especially those with shore D of more than 70, causes higher stress that may lead to cracks and/or flaking off depending on the mechanical loads. That is why the coat thickness ranges for the individual systems are laid down in the corresponding product descriptions.

Hard or flexible

The question often arises as to which resin is the best for a particular case. There are a number of ways of looking at this, but two have proven to be applicable to the use of methacrylic resins: Elastic systems are used for outdoor applications and for very durable floors which are exposed to significant shocks and impacts as well as strong movements. By contrast, hard systems are preferred for floors with high static bearing capacity, scratch resistance and resistance to chemicals. What is interesting is how soft and hard coats can be combined. Normally the softer type is laid at the bottom, the moderately elastic type in the middle and the hard type above. An extremely hard coat should never be laid on an extremely soft coat, as otherwise hairline cracks can arise in the surface, particularly when thermal stresses (hot water or outdoor applications) occur.

Soft or moderately elasticized systems tend more towards contamination and increased braking mark problems. Extremely hard types, on the other hand, can tend to flake if the coats are too thick. Hard binders usually develop a higher reactivity and must also not exceed the recommended coat thickness ranges due to the shrinkage. One notable exception to this rule is our reactive resin mortar SILIKAL® R 17.

Flexible types tend more to curing problems at temperatures exceeding the maximum temperature recommended by Silikal.

Solvent-based products

Silikal methacrylic reactive resins do not contain solvents. However, some 1-component and multi-component binders contain organic solvents. Drying is either physically by evaporation of the solvent and/or as a result of a chemical reaction. Unlike 100 % reactive systems, these solvents pollute the environment. For this reason solvent-free products are preferred. If, however, a solvent-based resin absolutely has to be used, much greater attention needs to be paid to intensive interior ventilation. In addition, the substrate and the coat must not contain any solvent residues after drying has taken place if they are to be covered with other, thick-coated materials. Drying out also depends heavily on the depth of penetration into the substrate, the coat thickness and the ambient temperature. Solvent-based coats must never be applied on methacrylic reactive resins, since the solvents could otherwise penetrate the layer underneath and no longer be able to dry. If solvents are to be added, it is essential that you consult Silikal before selection.

Impregnations

Thin liquid impregnations are initially applied excessively until saturation is reached and spread evenly to the intended thickness by means of a paint roller or brush. You must not allow puddles to form, especially with solvent-based products. An impregnation is not usually worked over and serves instead as a simple concrete coat or to reinforce the surfaces of porous substrates.

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Scratch slurry

A stonechip-filled stopper is very useful for compensating for minor unevenness, structured surfaces or deep-lying voids. Based on a coating resin, e. g. SILIKAL® RU 727 or SILIKAL® RV 368 resin in combination with SILIKAL® Filler SL and some anti-flow additive if necessary in a 1:1 (resin/filler) ratio, the stonechip-filled stopper is spread over the largest particles by means of a trowel. The trowel must be applied several times back and forth in both directions so that deeper lying cavities are completely closed up. The sluggish filler enables craters and pores to be sealed without any air bubble inside it being able to force its way out during hardening. This prevents what are known as pinhole craters, which can occasionally occur with self-levelling coatings on very porous substrates. The previous application of a low-viscosity primer can bring about a further improvement.

Primers

Primers are in principle applied in one operation to fill up pores until the substrate is saturated. If the primer resin is completely absorbed by the substrate, primer must be applied again wet-in-wet before the first coat hardens until an integral resin film remains. No puddles must be left behind on very uneven surfaces, as this could lead to an overreaction due to the excessive coat thickness. Normally about 10 kg of primer is mixed with hardening powder and this is then poured out in rows onto the floor. The primer is initially spread without great pressure by means of rubber blades, or even better by the rubberized toothed edge of the blades, and worked over evenly crosswise with the varnishing (paint) roller. It can be very useful to carry out spot checks of the consumption rate. To ensure better adhesion between layers, SILIKAL® Filler QS 0.7 – 1.2 mm should be sprinkled loosely into the primer before it hardens.

Top coats

There are two types of top coats. On the one hand there are thin resin films, applied in one or two coats, which cannot be coated over and represent a separate, low-cost coat protecting against abrasion or chemicals. On the other hand they may refer to a top coat on a thicker topping. In this case it also fulfils the function of a scratch or chemical-resistant surface. Only paint rollers of medium hair length are suitable. The absolute absence of fluff must be ensured. Again, the coat may initially be spread with the rubber blade and worked in crosswise using the roller. The roller should cover large distances each time, preferably across the working direction, in order to avoid blobs when starting off. To ensure that the roller can be used for a long time, it must be squeezed out down to the roller core after every new resin mixture, as otherwise hardening will begin too quickly from inside. Great care must be taken if the sealing film is to be applied properly. If the paint roller is rolled into the thin coat too often and too late, hardening problems or visual defects will occur because this will interrupt or destroy the paraffin film that forms on the surface of the resin. To avoid shiny patches or yellowing in the surface, do not allow puddles to form.

Hard top coats must never be applied directly on very elastic coatings, e. g. SILIKAL® RV 368 or SILIKAL® R 61 HW resin or the like. In these cases a moderately elasticized intermediate coat made from SILIKAL® R 61, R 62 or R 81 resin must be applied, as otherwise movement caused by temperature will lead to hairline cracks forming in the last coat.

Coatings without any top coat do often not have a satisfactory view, especially when using resins with good self-levelling properties (e. g. SILIKAL® R 62 or RU 747 resin) on substrates with slope.

Important information about top coats:

If different batches of a Silikal product are used (particularly in the case of top coats), slight variations in colour or gloss may occur within a surface due to the batches. We recommend that the complete surface is applied with material coming from one and the same production batch; this applies to the pigment and the hardening powder as well as the resin. Should it not be possible for various reasons to work with material from just one batch, the material from the different batches should be mixed together, taking care to keep the quantities in the right proportions.

Example:

On the building site are 2 drums of SILIKAL® R 71 resin of batch xxx and 3 drums of SILIKAL® R 71 resin of batch yyy. The mixture to be produced must then consist of 40 % SILIKAL® R 71 resin of batch xxx and 60 % SILIKAL® R 71 resin of batch yyy plus pigment and hardening powder.

Exact observance of the mixing ratio and the stirring time when pigmenting the binder and the subsequent addition of the hardening powder will ensure that colour variations within a surface are kept to a minimum.

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Coatings

(0.3 – 2 mm)

Self-levelling coatings are applied by means of a smoothing trowel, pointed trowel or doctor blade. They are then finished with a top coat.

Toppings/Coatings

(2.0 – 6.0 mm)

Toppings are generally rather thicker coatings. The same applies for coverings as for coatings. Smoothable coatings require particular skill if trowel marks are to be avoided. The desired coating thickness is first achieved roughly with a blade and then compressed and smoothed manually with the smoothing trowel.

Screed, mortar, stopper masses

Because of their liquidy consistency, Silikal mortars are self-compressing and can also be regarded as self-levelling. They do not therefore require any special application equipment. Scrapers and smoothing trowels are all the tools required. Recesses of more than 10 mm should preferably be filled only with SILIKAL® R 17 mortar. Unevenness of 2 – 10 mm, on the other hand, can be levelled out on the basis of SILIKAL® R 61, R 62, R 68, RV 368 or RU 747 resin with the addition of e. g. SILIKAL® Filler SL. On coats above 5 mm, 20 % SILIKAL® Filler QS 0.7 – 1.2 mm or 1.2 – 1.8 mm in size can be added to the standard mixtures if discribed in the datasheets.

Decorations

The decoration is critical if an attractive and suitable surface is to be achieved. A distinction is made between the colour, slip resistance and structure. The shade is primarily provided by the pigment, in the shape of a powder, particles or coloured flakes. The slip resistance, by contrast, depends on the size of the macroparticles used. Structures are generated by the form and nature of structural elements used. Specifically, these could be universal smooth or coarse shades, salt-and-pepper effects through the combination of various coloured quartz (mixed in or sprinkled) or through the colour variation of structural elements such as coloured flakes, foil punchings, paint spray fibres or drops of spray. Only in a few cases are the natural colours of the fillers accepted as they are. It is recommended that particles, sprinkling sand, coloured flakes or spray fibres are worked over with colourless sealant afterwards.

Non-slip surfaces

Open areas or wet rooms must often be made non-slip. According to the stipulations of the German Employers' Insurance Association Institute for Occupational Safety, there are several classes of slip resistance, all designated with the letter "R". Different slip resistances can be achieved through the size of the sprinkling particles and/or the quantity of oversealant used. Please note the specifications of our test certificates and coating systems.

Special advice

For sprinkling, Silikal recommends the use of a minimum particle size of 0.7 – 1.2 mm in principle. If the particle size is finer, unfavourable conditions can lead to the risk of slight curing problems in the uppermost layer. If all application guidelines are followed, there is no reason not to use finer sand, e. g. SILIKAL® Filler QS 0.2 – 0.6 mm or 0.3 – 0.8 mm. To be on the safe side, in this case the quantity of hardener should be increased by 0.5 – 1 % on the quantity recommended in the table.

Mixing

Because of their low viscosity, all Silikal systems can be stirred together in a sufficiently large mixing container by means of an electric hand agitator. Depending on the size of the building site, primers and top coats are mixed in batch sizes of 5 – 10 kg, coatings and mortars roughly in sizes from 20 – 50 kg. The mixed mass can be poured directly onto the floor in combination with several containers in circulation. From about 20 kg in content, the mixing container should be moved around on small trolleys. After it has been emptied, it is recommended that the bucket-walls are scraped, both to avoid any premature polymerisation on the walls and to save on solvents for cleaning.

Storage, particularly at low temperatures over lengthy periods of time, can lead to small quantities of dissolved paraffin separating out on the surface of the resin. In these cases it is essential to stir before use.

Cleaning the tools

Simple cleaning in an unhardened state is best done by using organic ester or ketone-based solvents (e. g. acetone, MMA cleaner). Solvent residues must be wiped away before further use. **Solvents must not be used to dilute the mixtures.** Solvents are also covered by the safety regulations such as explosion protection or MAK specifications.

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General

If the long durability of coatings (toppings, sealants etc.) and a good bond with the substrate are to be achieved, it is essential that the latter is inspected, assessed and prepared beforehand.

The most common causes of deficient workmanship, defects and complaints lie in the non-observance of these requirements.

Under the guidelines and worksheets A80 of the AGI, Arbeitsgemeinschaft Industriebau e.V., Ebertplatz 1, 50668 Cologne/Germany, and KH0 – KH6 of the BEB, Bundesverband Estriche und Beläge e.V., Industriestraße 19, 53842 Troisdorf/Germany, the substrate must be firm for all treatments, free of loose constituents and impurities and free of any dust and oil. Moreover, the substrate must not have had any post-treatment or contain any additive agents or additives which have a negative effect on the bond or the hardening action of the reactive resin to be applied.

According to German construction contract procedures, one of the services of the contractor is to inspect the substrate for its suitability for application of the prescribed topping. He must inform the customer in writing of any objections to the way the work is to be executed if this does not correspond to the condition of the substrate.

Inspection of the substrate

Moisture

After being laid, cement screeds and concrete surfaces cannot be coated until they have a household moisture of about 4 %. This is not normally the case before 28 days. Under certain climatic conditions (e. g. sub-tropical to tropical weather), restrictions with regard to the possible achievable household moisture may be required. The substrate must also be sufficiently sealed against ground water and rising damp (capillary moisture), e. g. through a gravel-cast layer or a horizontal barrier (plastic foil). Hydrophobic concrete and hydrophobic screeds do not offer protection against moisture penetration because they let in vapour. Moisture can be measured by means of a kiln sample (+80 °C/2h), CM unit and suitable electronic measuring devices. However, the CM unit offers the most reliable figures. Rising damp can be inspected by sticking a thick polyethylene film down over an area of about 1 m^2 in size. If the covered concrete turns dark within 24 hours through the formation of condensation, rising damp is present. In case of rising moisture or fresh concrete the special primer SILIKAL® Porfil RE 40 must be applied first.

Firmness

The substrate must be sufficiently firm because coatings and toppings, despite their own high inherent strength, cannot offer any load distribution due to the low layer thickness. The compressive strength of concrete and composite screeds can usefully be determined using a bounce hammer (known in German as a Schmidt hammer). The surface hardness can be checked by scratching with a steel nail or performing a pull-off test with the Herion unit. For industrial floors, the compressive strength should be at least 25 N/mm^2, the pull-off strength at least 1.5 N/mm^2.

Adhesion test

Before any work on cleaned floors is started, a sufficient number of hardening and adhesion tests at various locations must always be carried out. Tensile bond testing devices (e. g. Schenk-Trebel, Herion) have proven to be useful in this regard. As adhesive for the tensile bond punch we recommend SILIKAL® RI/21 tensile bond adhesive. Should no testing device be available, it is nevertheless recommended that at least a quick test is performed. This can be done using SILIKAL® R 51 resin mixed with hardening powder. Half of the resin is used to form a primer film. The remaining resin is mixed with sand (0.7 – 1.2 mm) to form a viscous mortar which is then applied to about half the primed surface to a thickness of approx. 3 mm. After hardening sufficiently not to be sticky, the manual samples are chiselled off with a hammer and chisel. The surface of the substrate must adhere fully to the reactive resin coat and show a particular fracture of the upper zone of the substrate. The primed surface must be cured without being sticky and it must not be possible to detach it by scratching using a knife or screwdriver.

Pretreatment of the substrate

Evenness

Thin layers of reactive resin cannot eliminate unevenness in the substrate. Unevenness can be compensated by applying an extra levelling mortar or slurry or it may be necessary to apply a Silikal topping to a higher thickness.

Contamination

Reactive resins will not adhere well to contaminated substrates, if at all. That is why, depending on the type of contamination, the surface must be cleaned wet or dry until all the pores are open. Oily and greasy substrates can be cleaned by means of special cleaners with the use of scrubbing machines, high-pressure jets or flame descalers. Flame descalers are recommended for the cleaning of substrates contaminated with chemicals and substrates which have been treated with evaporation-inhibiting sprays. Substrates to which paint, bitumen or tar are stuck are cleaned by milling or blasting.

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Soft and detachable constituents

Cementitious grout, cement flakes, mortar residue and all surface constituents which do not adhere firmly and indissolubly to the substrate must be removed by chiselling, milling, blasting or grinding before the first reactive resin is applied.

Absorbency

For reactive resins to anchor themselves firmly on the surface of concrete or mortar, their primer must penetrate into the capillary/pore structure of the substrate, which must be correspondingly absorbent. A particularly high absorbency indicates that the substrate has little strength. It is therefore essential that it is primed until saturated.

Cracks

On cement-bonded substrates “spidery” surface cracks have no detrimental effects on reactive resin applications; however, they may need to have several coats of primer resin. Continuous shrinkage cracks can be sealed up non-positively with filled Silikal reactive resins if the shrinkage of the substrate is eliminated. Settling cracks and other cracks resulting from structural movements are not generally bridged by reactive resin coatings; they must be resealed on a case-by-case basis.

Joints

Joints with a low tendency to move must be taken over. They should run straight, be evenly wide and have firm sides. Damages to the sides of joints must be repaired with Silikal reactive resin mortar. The joint is then sealed with SILIKAL® F 10 resin.

In most cases, rigid joints can be filled and coated over after priming. Expansion joints must not be filled and coated over, though.

Hollows

Hollow areas, particularly those which have cracks, must be filled with Silikal reactive resin.

Special advice on standard structural substrates

Concrete

The surface of cement concrete generally has a fine layer of mortar (cementitious grout) which, because of its low strength and adhesion to the substrate, has to be removed before any reactive resin is applied. The suitable methods for doing so depend on the condition of the substrate: milling, sandblasting, shot-peening or flame descaling.

Cement screeds

Cement screeds, particularly hard-aggregate screeds, can have such a dense surface that reactive resin primers can scarcely penetrate. The pores of this surface may need to be opened up, e. g. by blasting. In cement screeds, the cementitious grout must be removed by milling or blasting. Hard-aggregate screeds can, in the most advantageous cases, be roughed up by shot-blasting. In any case, it is essential that the primer closes up the pores. Manual samples should be taken first.

Anhydrite and magnesite screeds

Anhydrite and magnesite screeds are not resistant to moisture. In the case of reactive resin toppings which are impermeable to water vapour, moisture penetration through the rear and through adjacent elements must be reliably excluded. There is great risk not only that the coating will loosen given deficient sealing but also that these screeds themselves will be destroyed in their upper zones.

Toppings which are impermeable to water vapour on anhydrite and magnesite screeds have not performed well in practice.

Mastic asphalt screeds

Because of their considerable reaction to fluctuations in temperature, mastic asphalt screeds should only be coated in indoor areas. Coatings should only be laid with flexible reactive resins because mastic asphalt can deform or lose its strength under stress and under fluctuating temperatures. It is absolutely essential that the adhesion and the strength of the substrate is analysed.

Ceramic toppings

Ceramic toppings must be firmly bonded with the substrate. In order to achieve sufficient adhesion between reactive resins and ceramic toppings, their surface may need to be mechanically roughed (e. g. by sandblasting) under some circumstances (adhesion test!). SILIKAL® RU 727 resin must be used as the primer on ceramic substrates along with SILIKAL® Additive M adhesion promotor.

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Metals

Under Swedish standard SA 2.5, prepared metal substrates, being non-absorbent, must be pretreated with a special primer coat. SILIKAL® RU 727 resin with the addition of SILIKAL® Additive M adhesion promotor is used to this end. Metal substrates should only be coated with flexible reactive resins. We recommend that you consult Silikal.

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Silikal Fillers at a glance:

SILIKAL® Filler SL	Silica powder-free Silikal Filler for flooring strewn with flakes or quartz
SILIKAL® Filler Si	Mixture of silica powder and silica sand of various grain sizes for flooring with strewn flakes over 4 mm thickness (approx. 0 – 1.2 mm)
SILIKAL® Filler SV	Mixture of silica powder and finer silica sand for self levelling layers (1 – 4 mm)
SILIKAL® Filler QM	Silica powder as fine-filler for thin-poured and roll-applied coatings
SILIKAL® Filler QS	Silica sand in various grain sizes for scattering, sprinkling, mortar additive or as additional filler for certain coatings
SILIKAL® Filler FS	Coloured silica (single colours) of same grain size for scattering onto self levelling layers
SILIKAL® Filler CQ	Coloured silica mixtures, graduated grain sizes, for trowel-smoothed flooring
SILIKAL® Filler 65	Silikal mortar sand for high-fill SILIKAL® RH 65 resin
SILIKAL® Filler SG	Sharp-edged, semi-transparent gritting material for a subsequent construction of slip resistance.

This comprehensive range of fillers from Silikal covers all significant applications for industrial flooring. All fillers offered by Silikal are perfectly suited for use with Silikal resins and have been tested exhaustively. All these fillers have proved themselves in practice. Under certain circumstances and further consultation with Silikal, some prefabricated mixtures commonly found in the market can also be used as an alternative. However, the use of non-tested fillers can lead to difficulties in curing or proper levelling, for example.

Main Fields of Application for the fillers:

SILIKAL® Filler SL:

The silica powder-free SILIKAL® Filler SL is designed for use in flooring layers where silica sand or coloured flakes is to be scattered on. The main Silikal resins used in such cases are R 61, R 61 HW and RU 747. Mixtures of these resins with SILIKAL® Filler SL result in well flowing properties where silica grains scattered onto do not sink down to the bottom of the layer. This means that the layer becomes capable for a bigger load from the bottom to top so that small movements within the substrate will not necessarily cause the coating material to tear.

Another application is the manufacturing of a raked flat coat with a proportion of 1 part SILIKAL® RV 368 resin to 2 parts SILIKAL® Filler SL.

SILIKAL® Filler Si:

Can be used in the same way as SILIKAL® Filler SL. SILIKAL® Filler Si, however, has a greater share of rough grain which makes it particularly suitable for coating layers over 4 mm in thickness only. It is applicable in cases where – contrary to Silikal recommendations – work shall be done with a higher filling degree.

SILIKAL® Filler SV:

SILIKAL® Filler SV is designed for use in flooring layers with single-coloured pigmentation or with flakes scattered on them. The main resin which is used in such cases is SILIKAL® R 62 resin. Mixtures of this resin with SILIKAL® Filler SV result in flooring layers with excellent levelling which bind coloured flakes well and maintain a smooth even surface for flooring in single colours. SILIKAL® Filler SV is also used with cold-flexible and impact-resistant SILIKAL® RV 368 resin to create thin poured-on floors.

SILIKAL® Filler QM:

Fine silica powder of 0 – 0.2 mm particle size serves, as an additive to SILIKAL® Filler SV in 1 – 3 mm coatings, to improve the levelling of thin layers of flooring. It can also be used as additive for rolled thin-layer coatings using SILIKAL® RU 727 resin. In this case, it allows layers to be rolled out in even thickness which ensures that materials scattered onto the surface subsequently can be bond well. Also single-coloured rolled coatings will be smooth and tracki-free. In single-coloured sealings, the addition of SILIKAL® Filler QM results in a smooth, almost trackless surface.

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SILIKAL® Filler QS:

0.06 – 0.3 mm
0.2 – 0.6 mm
0.7 – 1.2 mm
1.2 – 1.8 mm
2 – 4 mm
2 – 8 mm
8 – 16 mm

Some of these specially fire-dried sands are used for scattering over primers when either an adhesive bridge (full-surface scattering) or an aid to work (loose sprinkling) is required. For this grain sizes of 0.7 – 1.2 mm are primarily used. Grain sizes of 0.06 – 0.3 mm and 0.2 – 0.6 mm are needed in connection with SILIKAL® Filler QM as filler for flooring SILIKAL® RV 368 resin. Grain sizes of 2 – 4 mm, 2 – 8 mm and 8 – 16 mm serve as additives for thicker layers of SILIKAL® Mortar R 17.

SILIKAL® Filler FS:

SILIKAL® Filler FS is a coloured silica sand of one grain fraction (e.g. 0.4 – 0.8 mm or 0.7 – 1.2 mm) which is designed to be scattered onto self levelling coatings in order to achieve an anti-slip surface. The individual colours can be mixed and matched as favored.

SILIKAL® Filler CQ:

SILIKAL® Filler CQ is a multicoloured, ready-to-use sand mixture. The various grain fractions are pre-mixed in a way that a mixture with SILIKAL® R 61 or R 61 HW resins is perfectly suited for trowel application.

Exact mixing ratios and applications can be found in the Silikal technical documentation.

SILIKAL® Filler 65:

SILIKAL® Filler 65 is specially designed for high-fill SILIKAL® RH 65 resin. The mortar made of SILIKAL® RH 65 resin can be used as a screed for adjusting surfaces of 5 – 20 mm thickness. In certain areas of up to approx. 0.5 m^2, the thickness can be increased to 50 mm. When in doubt, it is recommended to make a test in advance. SILIKAL® Filler 65 is to be used with SILIKAL® RH 65 resin only.

SILIKAL® Filler SG:

SILIKAL® Filler SG is a sharp-edged gritting material on a hard mineral basis which is semitransparent and used primarily for the subsequent improvement in the slip resistance of smooth floor coatings on a Methacrylate basis. To be considered can be coloured flakes, smooth self levelling systems respectively used up colour sand linings, which receive a new, slip resistant and translucent sealing with this system. SILIKAL® Filler SG is especially characterized by its high natural hardness. It is different to normal quartz sand as the surface is broken and sharp edged, so that a better imbedding in the resin takes place and the peaks lead to a higher slip resistance. The colour of the grain itself is thereby bright to opaque so that underlying coloured decoration such as coloured flakes or coloured sand still comes into one's own. The grain size is available in the sizes 0.6 – 0.8 mm and 1.0 – 1.4 mm and allows thereby stages of slip resistance of approx. R 11 – R 12.

The surface of old and used up Methaycrylate coatings need to be pre-treated according to the regulations for the preparation of an underground, e.g. by grinding, cleaning and drying. It is understood, that the appearance of the new surface can only correspond to a cleaned and pre-treated surface. This applies particularly then, when coloured sand and surfaces with coloured flakes needs to be blasted or grinded.

The favoured sealing is rolled up colourless in a minimum quantity of 400 g/m^2, and SILIKAL® Filler SG is scattered evenly up to the maximum quantity of 1 kg/m^2. It needs to be guaranteed that the grain is not applied fully covering, since otherwise the underlying decoration shows no advantage anymore. After the scattering an additional sealing layer (approx. 400 – 500 g/m^2) is applied.

SILIKAL® Filler SG is especially qualified for coatings with flakes as a new construct.

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Fillers

The physical properties and the application of coating compounds, toppings and mortars are determined to a large extent by the nature, condition and particle size of the fillers.

All recipes and recommended mixtures for the various coating systems have been prepared on the basis of Silikal's many years of experience. Fillers which Silikal recommends as finished mixes or fractions have been tested for their suitability and approved. If commercial products of other suppliers are used, these must be examined for suitability and approved by Silikal. This applies not only for the condition of an individual filler, but for the mix recipe as a whole, including the binder.

Fillers essentially consist of mineral rock in the form of sand, chippings or flour. Quartz is an ideal filler in any form, as it not only has high strength but is also resistant to chemicals and colour-neutral. The disadvantage is that increased safety measures are required in order to avoid the formation of dust. Calcite, chalk and barite are only interesting as flour, since their coarse particles are very easily destroyed under stress.

The outer form of the filler also has a noticeable influence on the development of the coating mass. Self-levelling systems must always contain a certain quantity of floury filler as well as a graded curve of different, round-shaped sands of varying particle sizes. Trowel-smoothed toppings, on the other hand, must not contain any flour as otherwise the mass will very quickly adhere to the laying device. As coarse particles, chippings require more binder than round particles and do not lend themselves to smoothing either, since the surface keeps coming apart when being scraped. At the same time, though, chippings increase slip resistance when used simply as sand to sprinkle in.

Fillers must be fire-dried since moisture reduces particle adhesion, causes the coating mass to quickly become thixotropic (poor flow) and encourages the formation of white patches. Strewing sand, whether round particles or chippings, must be free of dust, i. e. the particle size spread must be very narrow as finer particles act like a separating layer for the subsequent top coat. Certain limits in the lower particle size apply for sprinkling. The 0.7 – 1.2 mm fraction is preferred in every case. For those binders which have a high reactivity, e. g. SILIKAL® RU 727, a strewing grain of 0.3 – 0.8 mm is also permitted.

If the amount of material is exceeded or the graded curve is not observed, hardening problems will occur. The same applies for fillers which are surface-treated (e. g. have been made hydrophobic).

Coloured quartz

Coloured quartz of other suppliers must be analysed, particularly in respect of its resistance to MMA and water. You must also ensure that epoxy-coated sands, for instance, do not contain any of these amine hardeners, which can cause hardening problems when Silikal methacrylic resins are used. More or less the same applies for water-emulsifiable binders. You may need to approach another supplier. Other binder top coats such as sodium silicate, dispersants or soluble polymers must not be used under any circumstances. Coloured quartz from Silikal (SILIKAL® Filler FS or CQ) has been adequately tested and is sufficiently suitable.

Coloured flakes

Coloured flakes can likewise tend to cause hardening problems, depending on the binders used. Again, no disruptive pigments (carbon black) or water-based binders may be used. We therefore recommend that you use only tested coloured flakes from Silikal. (Please refer to the separate leaflet **"Colour Concepts"**)

Pigments

The pigments (coloured powder) used for pigmentation are predominantly inorganic. They are stirred into the resin together with the fillers. You must ensure that the dispersant contains no lumps. This applies particularly for mixtures which do not contain sand as coarse particles, e. g. top coats.

The quantity to add depends on the type of pigment and the desired coat thickness. 2 – 5 % is adequate for coatings above 2 mm. On the other hand, at least 10 % pigment is required for thin roll-on formulations of 0.5 mm. Pigments must also be absolutely dry.

SILIKAL® Pigment Powders are tested and can be supplied in many standard RAL shades.
(Please refer to the separate leaflet **"Colour Concepts"**)

Carbon black is not suitable as a black pigment, as it leads to hardening problems. The same applies for grey shades which contain black pigment alongside titanium dioxide as the white pigment.

We advise you not to use untested pigment powders, as these may lead to incompatibility with Silikal resins, e. g. curing problems.

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Other advice

Metal bronze or tinsel can be used in certain conditions. You should consult us on a case-by-case basis.

Metal powders are structured in roughly the same way as bronze and can lead to interesting technical effects. Aluminium powder or aluminium grit in particular is worth considering, as it enables thermal conductivity to be drastically improved. Mortars almost entirely made up of aluminium can take on the function and appearance of metal in thermal applications. The electrical properties, e. g. conductivity ability or electrostatic behaviour, can also be enhanced.

Fly ash or hollow glass beads are suitable for some applications under certain conditions. More details are available on request.

Glass beads can be used in the same way as quartz sand. Stirred into the mixture, they improve the flow of a compound. Sprinkled into the surface, they improve light reflection in the dark (floor and road markings). Because of their very smooth surface, however, glass beads should be silanised in order to ensure better adhesion to the methacrylic resin as well. Reflective coats made from glass beads must not be covered with sealant.

Thixotropic agents, also referred to as anti-flow additives, prevent flowing away on vertical surfaces or on gradients. These are stirred in with filler and pigment in the recommended quantities until the desired effect of thixotropy has been achieved. Over-dosing can lead to the greater inclusion of air pores, so that hardening will suffer. This is particularly the case with amorphous silicates. Micronised textile fibres are thus more suitable. We recommend SILIKAL® TA 1 or TA 2 anti-flow additive.

Fabric and fibres made from glass, carbon or textile can either be worked physically into the coat or stirred into the mass as macerated fibres. Fine fibres, regardless of their basis, enhance viscosity and perform the function of an anti-flow additive from a certain point. Smaller quantities of longer fibres increase mechanical strength. Carbon fibres improve electrical conductivity. Gauze fabric, on the other hand, must be sufficiently open to allow the spaces to be completely filled with resin. Fibres and fabric should not contain any organic finish, as this can result in hardening problems.

Structural steel is suitable for inlaying in any form. Whether as a mat or rods, the same effects as for reinforced concrete are achieved. Because of its nature, only a thick, highly filled mortar (e. g. SILIKAL® R 17 reactive resin mortar) is suitable if a stable structure is to be achieved. Nevertheless, you must ensure that there is a sufficient coat above it. Dowel pins can also be used to achieve a non-positive anchoring in concrete constructions; this improves the mechanical anchoring of the mortar. They can, of course, also be used horizontally at critical points in a structure, e. g. in doorways, for heavy-duty areas or if there is a risk of poor adhesion to the substrate.

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Chemical resistance

Expect more from your floor.

The data contained in the following table apply for room temperature (approx. +20 °C) and are provided as a guide only. Given the large number of recipes in practical use – e. g. in cleaning and disinfection – and the possible interactions where several chemicals are used at one location, it is not possible to offer any overall or individual guarantee. The chemical resistance of a coating is also influenced by the fillers and pigments that are used. For these reasons, it is essential that you do your own tests as each case arises.

Under some circumstances chemicals may lead to discoloration, but without attacking the material.

You must also remember that the aggressiveness of acids and other chemicals can increase as the temperature rises. It is also possible that acids on the ground will change concentration through evaporation or the absorption of moisture, making them tend to react more aggressively.

The stresses that occur in practice are often associated with greater and longer temperature stresses and can therefore lead to deviating results under some circumstances. You are welcome to contact Silikal's Application Technology department if you have any questions on this subject.

Test medium	SILIKAL® resin RU 727, R 62, R 81	SILIKAL® resin R 71, R 72	SILIKAL® resin RE 77
Alkalies:			
Ammonium hydroxide 10 %	+	+	+
Ammonium hydroxide 25 %	O	O	+
Ammonium hydroxide, alcoholic	O	O	O
Pottassium hydroxide 10 %	+	+	+
Pottassium hydroxide 50 %	+	+	+
Calcium hydroxide 50 %	+	+	+
Sodium hydroxide 10 %	+	+	+
Sodium hydroxide 50 %	+	+	+
Acids:			
Formic acid 10 %	+	+	–
Formic acid 30 %	–	O	–
Boric acid 3 %	+	+	+
Chromic acid 20 %	+	+	–
Chromic acid 40 %	O	+	–
Acetic acid 10 %	+	+	–
Acetic acid 25 %	+	+	–
Acetic acid 30 %	O	+	–
Acetic acid 80 %	–	–	–
Fatty acid (tall oil fatty acid)	O	O	+
Lactic acid 30 %	+	+	O
Oxalic acid 10 %	+	+	O
Phosphoric acid 40 %	+	+	+
Phosphoric acid, conc. (85 %)	O	O	O
Nitric acid 10 %	+	+	O
Nitric acid 30 %	O	O	O
Nitric acid, conc. (65 %)	–	–	–
Hydrochloric acid 10 %	+	+	+
Hydrochloric acid, conc. (36 %)	+	+	+
Sulphuric acid 30 %	+	+	+
Sulphuric acid 50 %	O	+	O
Sulphuric acid 80 %	–	–	O
Citric acid 30 %	+	+	+

Test medium	SILIKAL® resin RU 727, R 62, R 81	SILIKAL® resin R 71, R 72	SILIKAL® resin RE 77
Solvent:			
Petrol, 2 star	+	+	+
Petrol, 4 star	–	O	+
Benzene	–	–	+
Butanol	–	–	+
Butyl ether	–	–	O
Chloroform	–	–	–
Cyclohexane	+	+	+
Dibutyl phthalate	O	O	+
Dicyclophthalate	O	O	+
Diesel oil/heating oil	+	+	+
Ethyl acetate	–	–	O
Ethyl alcohol 10 %	O	+	+
Ethyl alcohol 96 %	–	–	+
Glycerine	O	+	+
Heptane	+	+	+
Hexane	+	+	+
Isopropyl alcohol	–	O	+
Kerosine	+	+	+
White spirit	+	+	+
Methanol	–	–	O
Methylene chloride	–	–	–
Monochlorobenzene	O	O	+
n-Propyl acetate	–	–	O
Perchloroethylene	O	O	–
Petroleum	O	+	+
Phenol	O	O	O
Styrene	O	O	O
Toluene	–	–	O
Trichloroethylene	–	–	–
Xylene	–	–	O

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Chemical resistance

Expect more from your floor.

Test medium	SILIKAL® resin RU 727, R 62, R 81	SILIKAL® resin R 71, R 72	SILIKAL® resin RE 77
Water and aqueous solutions:			
Waste water (sewage)	+	+	+
Chlorine water	+	+	+
Formaldehyde 37 %	+	+	O
Anti-freeze (glycol-based)	O	+	+
Tap water	+	+	+
Sea water	+	+	+
Sodium chloride 5 %	+	+	+
Sodium chloride, saturated	+	+	+
Sodium hypochlorite 15 %	+	+	+
Sodium carbonate (soda)	+	+	+
Soap solution	+	+	+
Water, deionised	+	+	+
Water +80 °C	O	O	+
Hydrogen peroxide 30 %	+	+	O
Hydrogen peroxide 80 %	O	O	–
Drinks:			
Beer	+	+	+
Brandy 40 % vol.	O	+	+
Vegetable juice	+	+	+
Lemonade	+	+	+
Milk	+	+	+
Grape juice	+	+	+
Wine	+	+	+
Oils and greases:			
Blood	+	+	+
Cutting oil	O	O	+
Hydraulic oil (e. g. Skydrol B 500)	O	O	O
Linseed oil	+	+	+
Mineral oil	+	+	+
Olive oil	+	+	+
Vegetable fats	+	+	+
Castor oil	+	+	+
Crude oil	+	+	+
Animal fats	+	+	+

Test medium	SILIKAL® resin RU 727, R 62, R 81	SILIKAL® resin R 71, R 72	SILIKAL® resin RE 77
Cleaning agents:			
Chlorine bleach 15 %	+	+	+
FEWA®	+	+	+
Stain remover	–	–	–
PERSIL®	+	+	+
PRIL®	+	+	+
P3	+	+	O
P3 ASEPTO®	+	+	O
Petroleum	O	O	+
REI®	+	+	+
Sagrotan® 5 %	O	O	+
Ammonia solution	+	+	+
Soap water	+	+	+
Turpentine	+	+	+
Turpentine substitute (white spirit)	O	+	+
TOLO®	+	+	+

Evaluation		
+	**Resistant**	Preliminary testing shows that the coating material may be permanently stressed with this medium.
O	**Limited resistance**	Permanent stress is not possible, because lengthy action could lead to significant softening or swelling. Short-term stress (approx. 1 – 2 hours) is possible.
–	**Not resistant**	Damage could occur even under brief stress.

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Preliminary remarks

When handling properly, Silikal reactive resins are safe, unproblematic and not harmful to health. Nevertheless, like any other chemicals, they must be treated according to strict rules. The manufacturer is also obliged by law to print on the corresponding information and to give it in data sheets as well.

Additional regulations abroad (outside Germany or EU) can vary or could be differently issued. Please check carefully individual regulations of your authorities in your country as they are subject of conditions for your case locally.

When applying Silikal reactive resins, perfectly hygienic conditions at the place of application are absolutely essential if they are to be handled safely and without danger. The place of application and its surroundings must be kept clean and unobstructed. Foodstuffs and tobacco products as well as items of personal clothing do not belong at the workplace! It should be a matter of course that you wear work safety clothing, safety goggles and protective gloves. Resin-contaminated work clothing must be changed immediately. Hands must be cleaned thoroughly during work breaks and particularly before eating. First Aid materials such as bandages, eyewash bottles etc. must be within easy reach at the workplace. You must ensure sufficient ventilation (cross-ventilation) with fresh air while the work is going on. You must follow the danger warnings and safety advice shown on the relevant containers. Further information can be found on the EU safety data sheets, which are enclosed in the relevant applicable version with every delivery of materials.

Fire hazards

Silikal reactive resins are a fire hazard. At the place of work you must make absolutely sure that

- **no one smokes while working;**
- **there is no naked flame nearby, e. g. ignition flames from gas heaters, and no electrical appliances such as radios, mobile phones etc.;**
- **electrostactic charges are avoided;**
- **no sparks can be given off, e. g. through grinding or welding.**

The place of work must be identified and protected by putting up the corresponding **prohibiting signs**.

Emissions

When Silikal reactive resins are laid, a certain quantity of methylmethacrylate evaporates. This can be perceived as a bad odour.

It is recommended that you always use respiratory equipment when mixing, transporting and coating (filter class A1 or A2). The filter devices used should preferably be fitted with a blower and hood or helmet (Airstream helmets). These are not subject to the restrictions on wearing time under No. 6.3 of ZH1/701 “Rules for the use of respiratory equipment” or to precautionary occupational health examinations under German trade association principle G26, or to the keeping of a precautionary index according to VBG 100.

Since § 19 of GefStoffV [German Hazardous Substances Order] requires that the wearing of respiratory equipment is not a permanent measure, the corresponding exceptional approval of the competent trade supervisory authorities must be obtained.

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Technical safety data for methylmethacrylate (MMA)

Flash point:	+10 °C
Lower explosive limit:	2.1 % v/v
Upper explosive limit:	12.5 % v/v
Ignition temperature:	+430 °C
Ignition group:	G 2 and T 2

Contact with the eyes

We recommend that you always wear safety goggles. Should resin splashes nevertheless get into your eyes, you must rinse them thoroughly with a lot of clear tap water. You should also consult an eye specialist.

Contact with the skin

You should wear protective gloves as a matter of course. A suitable protective cream must be rubbed in to exposed parts of the skin. Splashes landing on the skin must be soaked up with absorbent paper. The skin is then washed with a lot of water and mild soap, dried and rubbed with skin creme.

First Aid

See EU safety data sheets.

Notice sheets of the German Chemical Trade Association:

M 001: “Organic peroxides”

M 004: “Caustic substances – corrosive substances”

M 017: “Handling solvents”

M 042: “Prevention of industrial skin diseases”

T 005: “Handling empty containers”

These can be obtained from: Jedermann-Verlag, Postfach 10 31, 69021 Heidelberg/Germany

You must also comply with:

VBG 23 “Applying coating substances” (this MUST be available at the place of work).

LASI / ALMA recommendation LV 19:

“Coating industrial floors and other large areas in interiors with methylmethacrylate (MMA resins)”.

It is recommended to refer to the safety data sheets when using quartz flour containing fillers.

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Storage

Silikal resins are low-viscosity methacrylic resins with monomer esters of acrylic and methacrylic acid, in particular methylmethacrylate (MMA). The proportion of monomer MMA determines the storage and transport regulations. For other products which do not contain MMA monomer, such like Epoxies or Polyurethanes apply different regulations. Please refer to the Product Safety Data Sheets for more details.

Silikal resins with monomer MMA are a fire hazard.

For more about the safe handling of Silikal resins, please refer to our safety information “Protective and safety measures”. Because of the fire hazard, Silikal methacrylate resins should be kept well away from open sources of ignition. They must be stored in sealed containers in a cool place protected against direct sunlight, preferably at temperatures below +20 °C. You must always ensure that the store rooms are sufficiently ventilated. If this advice is followed, the Silikal resins can be stored in their unopened original containers for at least 6 months. Storage at low temperatures over lengthy periods of time can lead to small quantities of dissolved paraffin separating out on the surface of the resin. In these cases it is essential to stir the container before use. Certain restrictions on quantities apply for storage. Stores from a certain size are subject to notification and/or approval.

Transport

Silikal resins and SILIKAL® Hardening Powder are subject to the following transport regulations:

GGVSE / ADR (roads)
GGVBinsch / ADNR (inland waterways)
GGVSee / IMDG (open seas)
ICAO-Ti / IATA-DGR (air).

They must be packed, labelled, loaded, conveyed and unloaded in accordance with these regulations (Germany).

A) Packing

(1) The packaging must be established and sealed in such a way that the content cannot escape under normal conveying conditions from a shippable consignment, particularly as a result of a change in temperature, humidity or pressure. No hazardous substances may adhere to the outside of the articles. These regulations apply for new packaging and for packaging that is reused.

(2) The parts of the packaging coming into direct contact with hazardous substances must not be impaired through the chemical or other actions of these substances; they may need to be given a suitable inner lining or treatment as the case arises.

These parts of the packaging must not contain any constituent elements which could react dangerously with the content, form hazardous substances or considerably weaken parts of it.

(3) Each packaging, with the exception of the inner packaging of assembled packaging, must conform to a design type that is tested and approved according to the regulations in section IV. Mass-produced packaging must conform to the approved design type.

(4) If packaging is filled with liquids, there must remain an unfilled space to enable you to check that the expansion of the liquid as a result of the temperatures which can be reached during transportation has neither caused the liquid to escape nor resulted in any lasting deformation of the packaging (Germany).

B) Identification marking

Hazardous goods labels must be affixed to the individual consignments according to the following regulations:

(1) Labels 1, 2, 3, 4.1, 4.2, 4.3, 5.1, 5.2, 6.1, 6.2, 7, 7 B, 7 C, 8 and 9 inc. UN No. must be in the shape of a square standing on one corner with a side length of 10 cm. They must have an uninterrupted black line running down the side at a distance of 5 mm from the edge. The hazardous goods labels intended for affixing to firmly connected tanks, set-down tanks, containers and change platforms must have sides at least 25 cm in length.

(2) Labels 10, 11 and 12 must be in the form of a rectangle in standard A5 format (148 x 210 mm). Labels on shipping articles may be reduced to standard A7 format (74 x 105 mm).

(3) The lower half of the hazardous goods label must have an inscription in numbers of letters which indicates the type of hazard.

(4) The hazardous goods labels required under the regulations for this equipment must be stuck to shipping articles and firmly connected tanks or secured in some other suitable way. Only if the outer condition of the shipping article does not permit this may they be stuck to cardboard or sheets, but these must then be firmly affixed to the shipping article. Instead of labels, permanent harzardous goods symbols which conform exactly to the models described above may be affixed to the shipping packs and to the firmly connected tanks.

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(5) Shipping articles with Silikal reactive resins, acetone or MMA cleaners must have a label of model 3:

Shipping articles with SILIKAL® Hardening Powder must have a label of model 5.2:

C) Loading

- Only undamaged shipping articles which have been packed and labelled according to regulations are permitted for transport.
- Written instructions, if required, are to be handed to the vehicle driver.
- Smoking is absolutely prohibited during the loading operation.
- Only vehicles which conform to regulations and carry the corresponding equipment are permitted for loading. This must be checked by the loading supervisor.
- The cargo is to be secured on the floor against tipping over and slippage.
- Warning signs must be attached if required.

The loader shares responsibility for ensuring that all provisions laid down in the individual regulations for loading and transport are observed.

Conveying hazardous goods by car/estate car

It is common practice both privately and in industry to carry hazardous goods in passenger cars or estate cars. Small quantities of hazardous goods are also frequently transported by car in the chemical industry (e. g. sales representatives carrying samples).

The conveyance of hazardous goods on roads is governed by the transport regulations, regardless of whether they are conveyed by truck or by car. Nevertheless, cars are less suitable for the transport of hazardous goods because they are designed first and foremost for carrying people.

All those involved in the conveying of hazardous goods must take the necessary precautions required according to the nature and extent of the hazards in order to prevent incidents and, in the event of damage, to keep this as limited as possible.

The following requirements must be noted before commencing the journey:

1. Goods which could react dangerously with each other must not be packed together.
2. The cargo must be secured in such a way that it cannot change position, or only very slightly, during transportation (e. g. form-fit loading, securing with lashing belts etc.).
3. Stow separately from the driver (e. g. in the boot).
4. Distribute the load evenly.
5. Make sure the packaging is properly sealed.
6. Do not carry packaging which is damaged or leaks or to the outside of which product adheres.
7. Carry a fire extinguisher (recommended!).
8. Check your insurance cover. Consult your insurer to check whether you have sufficient insurance cover in the event of an incident with hazardous goods.
9. Do not park the vehicle in bright sunlight.
10. Note the restrictions on quantities.

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D) Transport (road)

– All the papers required for conveyance must be carried.
– The driver must be informed and suitably trained with regard to the dangers.
– Passengers are not allowed to be carried in vehicles subject to identification marking.

All other requirements (e. g. about stopping and parking) in the individual regulations must also be observed.

E) Unloading

– Smoking is absolutely prohibited during the unloading operation.
– The floor of the vehicle must be cleaned immediately if necessary.
– If there are no more hazardous goods in the vehicle, warning signs and accident report sheets must be removed.

All requirements laid down in the regulations must also be observed. In general, it is a statutory requirement that the personnel entrusted with transporting hazardous goods are trained with regard to accidents that could occur when transporting hazardous goods.

Finally, you are advised that this list does not by any means cover all the rules regarding transport. The Silikal Hazardous Goods Officer would be happy to provide further information.

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General

Industrial floors, types of contamination, requirements on hygiene standards etc. will vary according to the branch of industry. The food processing industry, for example, has different floors and types of contamination than are found in the metalworking industry or for exhibitions.

Even within a particular branch of industry there are a number of different applications which require various cleaning methods.

The size of the surface area is normally the deciding factor in whether cleaning is performed manually or by machine. The cleaning methods applied are influenced by

- the nature of that particular industry;
- use within such a branch of industry;
- the size of the area to be cleaned;
- the condition of the industrial floor;
- types of contamination;
- the level of contamination;
- the accessibility of the area to be cleaned;
- the hygiene requirements.

Cleaning agents

The choice of cleaner and cleaning method depends primarily on the nature of the contamination. Essentially, all alkaline cleaning agents are suitable, regardless of whether they are sodium or potassium hydroxide-based. Tensides and hypochlorite additives do not normally have any negative effect on Silikal methacrylic resin coatings.

To remove lime blast, salic acid or acetic acid (max. 10%) can be used, for instance. However, subsequent rinsing with clear water is essential.

High concentrations of cleaning agent, e. g. ammonia solution or of nitric acid, can lead to turbidity or discolouration in the floor, but without attacking it.

Methacrylic systems react sensitively to alcohols. Caution must also be exercised with all organic solvents. Aromatic and halogenized hydrocarbons must not be used (see also the data sheet entitled **“Chemical resistance”**).

Cleaning equipment

Combination scrub-and-pick-up machines are increasingly being used in the wet cleaning of large areas. They replace time-consuming wet wiping with a bucket, mop and press or wet scrubbing with a disk machine and water suction device. Scrub-and-pick-up machines can be differentiated into

- push-along machines,
- stand-in machines,
- and ride-on machines.

These cleaning machines are available in a variety of widths, convenience options and price levels.

Contra-rotating three-disk machines have proven to be useful for this purpose. The constant change in the angle of incidence of each and every bristle means that all uneven areas and deeper structures are cleaned from all sides, instead of just two as in the conventional technique.

However, a device with a rotary nozzle is recommended. These devices are height-adjustable, enabling an optimal result to be achieved by adapting the height to the roughness.

Properly sealed and undamaged surfaces can normally resist the stresses even of a high-pressure jet (operating pressure approx. 100 – 130 bar). The actual pressure of the water jet on the floor naturally depends on the jet form that is set and the distance from which the surface is sprayed, and in usual practice is much less than the operating pressure.

Care must be taken with edges and at joins!

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Example of a cleaning concept

When it comes to cleaning industrial floors, you must distinguish between maintenance cleaning and primary cleaning.

New floors

Before being used for the first time, newly laid Silikal floors should be cleaned thoroughly with an alkaline primary cleaner. A protective film that is appropriate to the use and based on a self-drying wax emulsion can then be applied. This protective film ensures that the industrial floor coating is not directly attacked by contamination. In addition, such protective films are also available in slip-resistant formulations, allowing them also to be used in wet areas.

Floors already in use

Floors already in use should be subjected to regular maintenance cleaning, e. g. using a cleaning machine. In the event of heavy contamination, an alkaline primary cleaner can also be used for interim cleaning.

Heavily contaminated floors

These normally require intensive primary cleaning with an alkaline primary cleaner. The dosage of the primary cleaner will depend on the particular level of contamination. Floors that have been primary cleaned should then be covered with a new protective film.

Silikal industrial floor coatings have been subjected to intensive testing by a variety of cleaning agent manufacturers. The tested cleaning concept described below is given by way of example.

Primary cleaning

In the case of heavily contaminated floors, primary cleaning with **SILIKAL® Topclean** is required. The dosage depends on the amount of contamination. The topping must then be rinsed thoroughly with clear water.

Protective film

Whether or not a protective film is laid down depends, among other factors, on the surface structure. If a coating is required, **SILIKAL® Protect** must be used in two coats, and each coat must be thoroughly dry.

Tyre abrasion

Tyre abrasion, e. g. caused by fork-lift truck traffic, is normally unavoidable. How the fork-lift trucks are handled and driven, and the type of tyres, have a critical influence on the level of tyre abrasion. In most cases minor tyre marks can be removed using the primary cleaner. A stain remover, e. g. **Buzil® G 502,** can be used for the partial cleaning of stubborn tyre marks. Since these cleaners contain solvents, you must take greater care when handling them (limit the exposure time; rinse thoroughly with clear water).

In addition to cleaning agents, there are ways of avoiding such contamination by using special types of tyre which prevent black tyre marks from appearing in the first place.

The advice on use outlined above is based on laboratory and practical analyses. Because of the diversity of possible contamination and conditions of use, this information is not binding. We recommend that you consult the manufacturer of the cleaning agent on a case-by-case basis. It is absolutely essential that cleaning agents are tested for suitability.

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Test certificates

Silikal is currently in possession of the following test certificates, among others. The list is constantly updated.

Test	Institution	Test no.	Issue date	Validity
SILIKAL® R 17 mortar Testing of synthetic mortar prisms for tensile strength in bending and compressive strength	Philipp Holzmann AG, Germany	B 7 – 1473 to B 7 – 1479 and B 6 – 2062 and B 7 – 1862	28.08.2002	
SILIKAL® R 61 resin CQ topping 4 – 6 mm Testing for normal flammability	State Materials Testing Institute, Darmstadt, Germany	K 97 1404.1 K 97 1404.2	08.09.1997	31.05.1999 Extension to 02.07.2007 received
Various layer combinations Testing of fire behaviour according to DIN 4102 Part 1 Class B1	FMPA Stuttgart, Germany	16-900 8097 000 a 16-900 8097 000 b	02.08.2004	31.08.2009
Systems A – E Declaration of non-objectionability of floors in the food industry	ISEGA Research Institute, Aschaffenburg, Germany	23055 U 06	30.05.2006	30.05.2008
SILIKAL® R 17 reactive resin mortar as an embedding mortar supervision test	MPA NRW	220002252-05	21.04.2006	
SILIKAL® RV 310 resin Waterproofing system according to Classification C	Polymer-Institut	P-2997-1	18.06.2003	
System C Radon gas permeability	Sarad Geolab GmbH		02.12.2004	
SILIKAL® R 17 mortar according to TL BEB RH-StB 02	RWTH Aachen	M 785	08.03.2006	
SILIKAL® Porfil RE 40	Polymer-Institut	P 4485-1 / 06-278	31.01.2003	30.01.2008
Various systems Surface skid resistance	BIA	on request		

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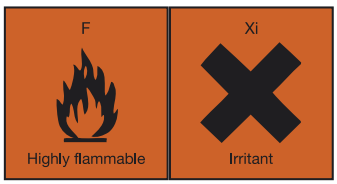
Explanation of the regulations on operating resources

Silikal products which are based on methacrylic (MMA) resins and the associated hardening powders based on dibenzyl peroxide powder 50% are subject to the German Hazardous Substances Order (GefStoffV) as at 15 November 1999, § 6 of which requires that they be identified as follows:



Contains:

METHYLMETHACRYLATE

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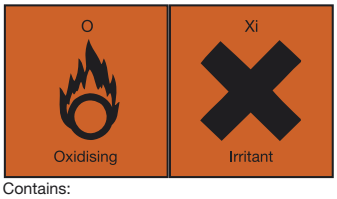
Risk phrases:

Highly flammable. Irritating to eyes, respiratory system and skin. May cause sensitization by skin contact.

Safety phrases:

Keep container tightly closed in a cool, well-ventilated place. Keep away from sources of ignition. No smoking. Do not empty into drains. Take precautionary measures against static ischarges. Wear suitable gloves and eye/face protection.



Contains:

DIBENZYL PEROXIDE 50 %

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Risk phrases:

Can cause fires. Irritates the eyes. Sensitization through skin contact possible.

Safety phrases:

Keep container tightly closed and store in a cool, well-ventilated place. Keep away from reducing compounds (e.g. accelerators). Change contaminated or saturated clothing immediately. Wear suitable protective gloves and safety goggles/face mask when working.

It is absolutely essential that persons handling these products also observe our safety advice **“Information on safety and protection”** and the **“Safety data sheets”** for the Silikal products which are to be used.

The information on fire and explosion protection and on toxicity is particularly important.

A. Risk of fire and explosion

The above information states that there is an acute risk of fire and explosion under the following conditions:

1. There must be a source of ignition of at least +430 °C.
2. The MMA concentration must be 2.1 to 12.5 % v/v. Below 2.1 % v/v (21,000 ppm) the MMA concentration is not sufficient for an explosion. Above 12.5 % v/v, on the other hand, the MMA concentration is too high; it would first have to be thinned with air so that an explosive gas/air mixture could form.

B. Toxicity of methylmethacrylate

The chemical industry as a whole carried out comprehensive tests on the toxicity of methylmethacrylate between 1975 and 1980. The following extract gives a brief summary of the results:

Exposure to methylmethacrylate was analyzed for the following causes in laboratory tests:

1. Carcinogens
2. Birth defects
3. Mutagenic changes
4. Other impairments of health

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The results of the individual analyses are summarised briefly below:

1. Possibility of cancer

These studies included a series of short and long-term experiments on rats and hamsters.
MMA did not show any carcinogenic effect on the laboratory animals.

2. Possibility of birth defects

Experiments on pregnant rats and mice exposed to a high concentration of methylmethacrylate in the air did not reveal any influence whatsoever on the unborn creatures.

3. Possibility of mutagenic changes

A large number of mutagene tests were carried out. While a few indicated that MMA exercises a slight influence, the majority of the tests showed that MMA does not have any mutagenic effect. Additional experiments are planned in order to analyse the indicators in the tests in question.

4. Possibility of other damage to health

A large number of further tests on animals, observations by authorities on a limited number of workers in 5 factories which produce MMA acrylic sheets and additional experiments did not show any hazardous effects on health whatsoever through the handling of MMA.

Finally, it should be noted that methacrylate reactive resins have for decades been used as adhesives in bone surgery, e. g. for skull damage and hip joint implants, and in the dental industry to manufacture artificial teeth and dental prostheses, for casted or extruded acrylic sheets or solid surface panels, as well as for crack injections, paints and layers and MMA polymer concrete sanitary ware.

The hardening powder = dibenzyl peroxide should be kept away from sources of heat above +60 °C and from reducing substances such as heavy metals, accelerators, strong acids and lyes so as to avoid decomposition. In contrast to liquid peroxides, dibenzyl peroxide is not irritating to the skin and is only irritating to the eye given lengthy contact. In all cases you must observe the safety data sheets for the products and the safety advice we offer in the leaflet entitled **“Information on safety and protection”**.

The following applies for methylmethacrylate-based products:

Ignition temperature:	+430 °C
Lower explosive limit:	2.1 % v/v
Upper explosive limit:	12.5 % v/v
LD_{50} (oral, rat)	8400 mg/kg

For other products which do not contain MMA monomer, such like Epoxies or Polyurethanes apply different regulations. Please refer to the Product Safety Data Sheets for more details.

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Expect more from your floor.

Silikal GmbH

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