



Food



HIGH PERFORMANCE FLOORS

# THE STRONGEST INDUSTRIAL FLOORS EVER

## **Remmers Crete PU Concrete**

Impact loads, high frictional forces, chemicals and aggressive mediums are the daily bread of industrial floors – and that makes these floors a real challenge. The type and intensity of the loads differ, depending on the sector of industry or trade. In the food industry you often find heavy mechanical loads along with extreme temperature peaks through hot liquids. Many of these liquids contain aggressive substances, such as lactic acid or acetic acid.

For many years, polyurethane concrete (PU concrete) has proved to be a suitable floor coating system for different kinds of loads. Consisting of three components, the system protects against high thermal, mechanical and chemical loads, is free of harmful substances and thus complies with the applicable provisions of the EU Regulation, the German Foodstuffs and Consumer Products Act as well as the German Consumer Good Ordinance. Remmers Crete PU Concrete is a strong protective shield for floors in the food industry.

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# SPECIAL PROPERTIES FOR INDIVIDUAL REQUIREMENTS

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Every branch of industry or trade has individual requirements on floor coatings. Remmers Crete is the perfect surface protection system for many extreme requirements. We will be glad to help you when selecting the right Remmers Crete Floor System. Please get in touch with your Remmers Crete experts for advice: [www.remmers-fachplanung.de](http://www.remmers-fachplanung.de)

## TEMPERATURE RESISTANCE

The first thing you must know when determining which Remmers Crete System is to be used is the required resistance to temperature. This defines not only the composition of the system but also the layer thickness of the floor covering.

## RESISTANCE TO CHEMICALS

Vinegar and oil, hot water or lactic acid – every branch works with different chemicals that strongly tax the floor. Remmers Crete System solutions are highly resistant to aggressive chemicals.

## RESISTANCE

Mechanical loading capacity is an important selection criterion for the right floor. To ensure that the floor is able to perform over the long-term, Remmers Crete Systems with thick layers and slip resistant surfaces are used in areas with heavy loads.

## SAFE FOR FOOD

Remmers Crete Systems do not give off any substances or materials to food which constitute a health hazard to humans.

## ODOUR AND TASTE NEUTRAL

Food and animal feed that comes in contact with the Remmers Crete System are not impaired from a sensory standpoint (regarding odour and taste).

## EC REGULATION / LFGB AND BGV

Remmers Crete Systems comply with all valid provisions of the German Food and Feed Act (LFGB) as well as the German Consumer Goods Ordinance (BGV).

## HYGIENE AND CLEANING

The hygiene standards in the food processing industry are increasingly more demanding. And cleaning agents are becoming more “aggressive” as a result. Thanks to their high resistance to chemicals, the Remmers Crete Systems can also be cleaned with strong cleaners.

## SLIP RESISTANCE

Wet areas, like those often found in the food industry, endanger a safe working environment. Based on guidelines set out in the German Workplaces Ordinance ASR A1.5/1,2, the necessary anti-slip ratings as well as the required displacement space, if applicable, must be defined according to requirements. From smooth to textured, Remmers Crete provides the appropriate surface profiles.

## SUSTAINABILITY

Interruptions in production due to newly applied floor coatings are always very time-consuming and costly. The greater part of the Remmers Crete Systems can be installed on the weekend. This reduces down times to a minimum and that with the greatest possible durability.

Production of milk products



Processing of meat and fish



Production of confectionaries



Production of beverages



# TYPES OF COATINGS

## SEALANT | Resistant up to 60°C

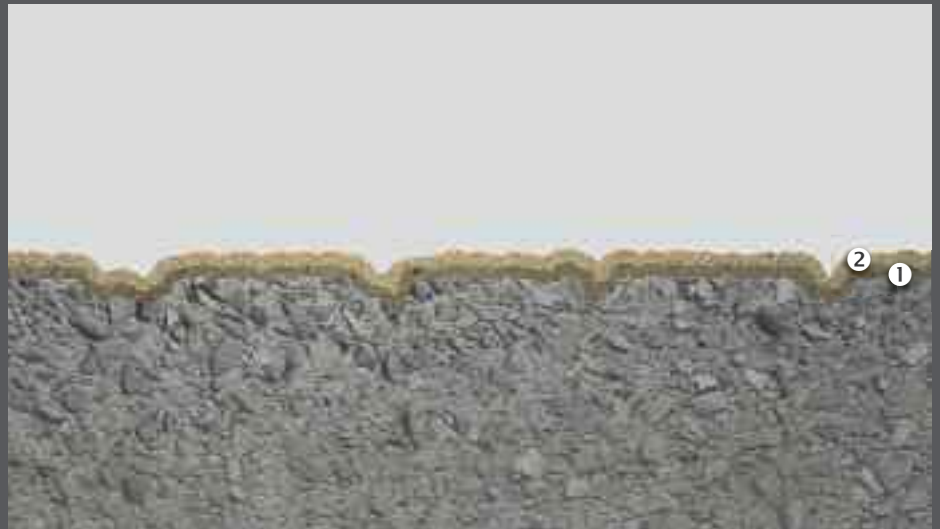
In the case of floors with light to medium loads, sealants have a protective effect and, with a layer up to 0.5 mm thick, are a cost-favourable option.

### Properties

- Provides reliable protection (e.g. against weak acids)
- Follows the textures of the substrate
- Cost-favourable

### Application areas

- Concrete floors with light to medium loads
- For production and storage areas



1 Primer 2 Sealant

## FLOW COATING | Resistant up to 80°C

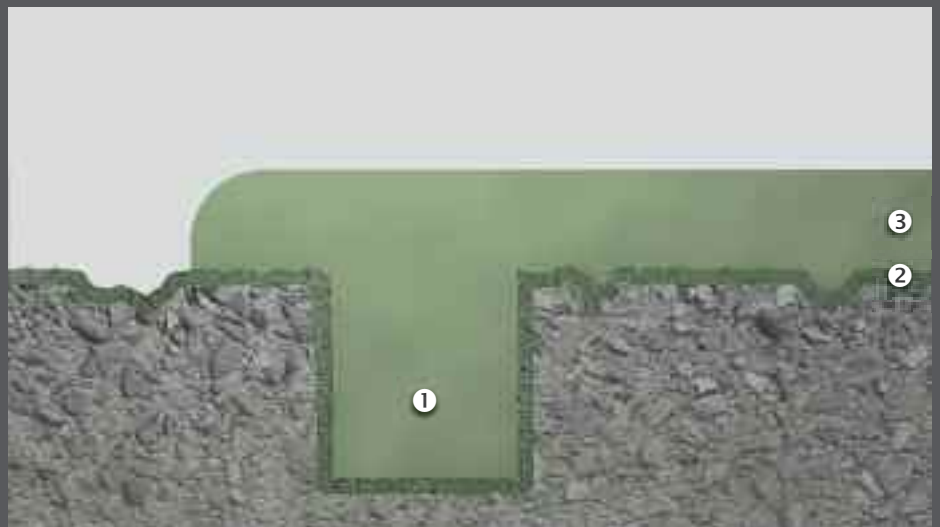
Flow coatings can level slight unevenness in the substrate. The material is uniformly distributed and continues to flow which results in a smooth surface. A layer up to 3.0 mm thick is applied. Anchorage cuts are required as specified in the Technical Data Sheet.

### Properties

- Self-flowing
- Pigmented
- For medium mechanical and chemical loads
- Temperature resistant (depending on thickness of layer)
- Evens slight roughness

### Application areas

- For areas without mediums that promote slipping in which sure footing is required
- Areas with strong, dynamic and chemical loads



1 Anchorage cut 2 Primer 3 Flow coating

## BLINDED COVERING | Resistant up to 120 °C

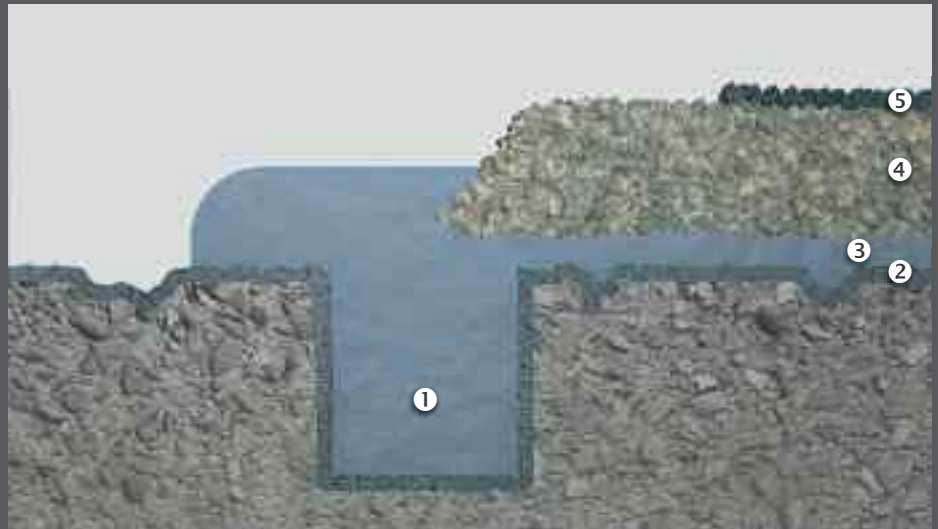
A blinded covering consists of a flowable base layer onto which the blinding material (e.g. quartz sand or Hard Grain) is generously broadcast. After hardening, excess blinding material that has not bonded is removed and a sealant is applied. The thickness of the layer can vary between 4.0 and 9.0 mm. Anchorage cuts are required which are specified in the Technical Data Sheet.

### Properties

- Highly resistant to mechanical, chemical and thermal loads
- Slip resistant, safe surfaces which can be individually formulated

### Application areas

- Permanently wet areas in the food industry
- Large-scale kitchens
- Meat processing



- ① Anchorage cut   ② Primer   ③ Base coating  
④ Blinding material   ⑤ Sealant

## MORTAR COVER | Resistant up to 130 °C

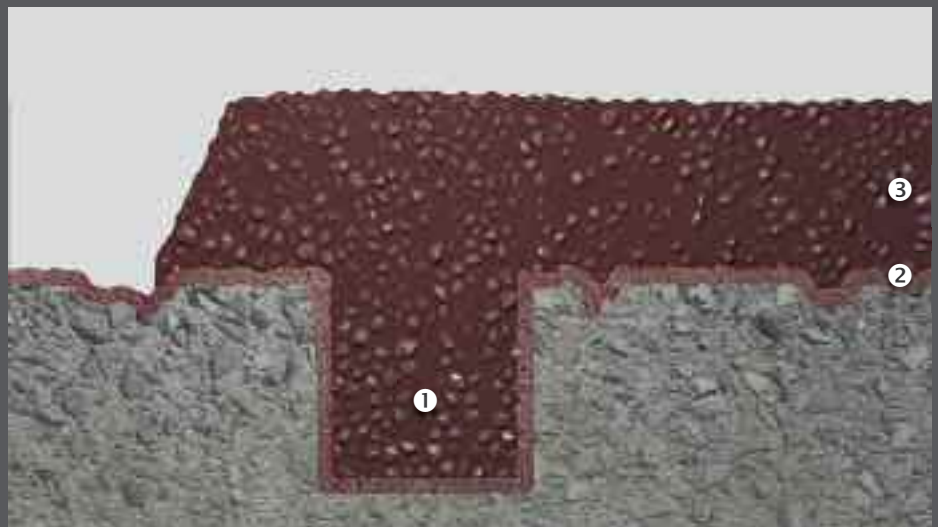
The mortar covering has the lowest proportion of binders and the fillers have a finely coordinated aggregate grading curve. The mortar mixture can be applied with a squeegee and must then be smoothed with a trowel. The coarse constituents in the filler create a textured surface. The layer is approx. 9.0 mm thick. Anchorage cuts are required as specified in the Technical Data Sheet.

### Properties

- Can be subjected to very high mechanical loads
- Levels greater unevenness
- Slip resistant
- Can also be installed on a slope

### Application area

- Areas in which slip resistance is required
- Areas in which no displacement factor is required



- ① Anchorage cut   ② Primer   ③ Mortar covering

# THE CRETE SYSTEMS

System designation	Type of system	Primer	Base coating	Blinding material	Sealant	Layer thickness	Temp. resistant	SR rating V factor
<b>TF Floor CR 60</b> Thin Film Floor Chemical Resistant	Sealant	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	–	–	Crete TF 60 at least 0.40 kg/m <sup>2</sup>	< 0.5 mm	60 °C	①
<b>SR Floor CR 60</b> Slip Resistant Floor Chemical Resistant	Slip resistant sealant	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	–	Quartz sand 0.3 – 0.8 mm approx. 4.00 kg/m <sup>2</sup>	Crete TF 60 at least 0.80 kg/m <sup>2</sup>	approx. 1.00 mm	60 °C	R 11 V 04
<b>SL Floor CR 80</b> Self Leveller Floor Chemical Resistant	Flow coating	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	Crete SL 80 approx. 6.00 kg/m <sup>2</sup>	–	–	approx. 3.00 mm	80 °C	①
<b>SR Floor CR 80</b> Slip Resistant Floor Chemical Resistant	Blinded covering	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	Crete SL 80 approx. 6.00 kg/m <sup>2</sup>	Quartz sand 0.3 – 0.8 mm approx. 6.00 kg/m <sup>2</sup>	Crete TF 60 at least 1.00 kg/m <sup>2</sup>	approx. 6.00 mm	100 °C	R12 V 04 ②
<b>SR Floor CR 120 Variation 1</b>	Blinded covering	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	Crete BL 120 approx. 14.00 kg/m <sup>2</sup>	Quartz sand 0.3 – 0.8 mm approx. 6.00 kg/m <sup>2</sup>	Crete TF 60 at least 1.00 kg/m <sup>2</sup>	approx. 8.00 mm	120 °C	R 13 V 04 ②
<b>SR Floor CR 120 Variation 2</b>	Blinded covering	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	Crete BL 120 approx. 14.00 kg/m <sup>2</sup>	Mandurax Brite 0.3 – 0.8 mm approx. 6.00 kg/m <sup>2</sup>	Crete TF 60 at least 1.00 kg/m <sup>2</sup>	approx. 8.00 mm	120 °C	R13 V 04 ②
<b>SR Floor CR 120 Variation 3</b>	Blinded covering	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	Crete BL 120 approx. 14.00 kg/m <sup>2</sup>	Mandurax Brite 1.0 – 2.0 mm approx. 6.00 kg/m <sup>2</sup>	Crete TF 60 at least 1.20 kg/m <sup>2</sup>	approx. 9.00 mm	120 °C	R 13 V 10 ②
<b>SC Floor CR 130</b> SCreed Floor Chemical Resistant	Mortar covering	Crete TF 60 approx. 0.40 kg/m <sup>2</sup>	Crete RT 130 approx. 18.00 kg/m <sup>2</sup>	–	–	approx. 9.00 mm	130 °C	R 10

① Through the use of an additional slip resistant sealant, slip resistant ratings can be adjusted.

② Depending on the blinding material used and application rate of the sealant, different slip resistance ratings and displacement spaces can be achieved.

Remmers Crete products are based on a polyurethane binder made of an aqueous polyol emulsion (Crete Part A) and a polymer MDI (Crete Part B).

This binder is mixed with different filler components: Crete Filler TF 60; Crete Filler SL 80; Crete Filler BL 120 and Crete Filler RT 130.

The filler components contain not only reactive fillers (including cement) but also non-reactive fillers in differing proportions and grain compositions. On the one hand, the polyol emulsion reacts with the reactive fillers and, on the other, with the polymer MDI, becoming a polyurethane concrete. This complex reaction

produces an extremely resistant covering.

The texture of the surface is determined by how the material is applied and, optionally, by the blinding material that is broadcast over the fresh layer. From the primer all the way to the sealant, the same binder system with reactive fillers is used. The non-reactive fillers used vary, depending on the thickness of the layer and application method and are always completely bound into the matrix. The situation is similar with blinding material that sinks into the base layer and is permanently fixated afterward when

a sealant is applied. Utilisation and loading capacity of the placed system is determined by the high chemical, mechanical and thermal resistance of the binder system, but also decisively depends on the thickness of the cover. Simultaneously occurring thermal and mechanical loads can often be taken up with correspondingly thick layers and transferred to the substrate in a weakened form.



# THE CRETE PRODUCTS

## CRETE TF 60 | Primer and Sealant

Crete TF 60 is a primer for all systems and can also be used as a sealant if required. As a rule, the material is distributed with a rubber wiper and worked over with a nylon roller.

**Composition for a 10 kg\* unit made of individual components:**

- Crete Part A; 2,9 kg (Art. No. 20659103 / 20659203 / 20659303)
- Crete Part B; 2.4 kg (Art. No. 21659102)
- Crete Part C Filler TF 60; 4.7 kg (Art. No. 22660005)

## CRETE SL 80 | Flow Coating

Crete SL 80 is a self-levelling coating. The material is distributed with a toothed trowel / notched squeegee and work can be executed standing. The coating is then de-aired with a spiked roller and levelled. If required, the still fresh layer can be generously broadcast with quartz sand to produce a blinded covering for moderate mechanical loads.

**Composition for a 20 kg\* unit made of individual components:**

- Crete Part A; 2,9 kg (Art. No. 20659103 / 20659203 / 20659303)
- Crete Part B; 2.4 kg (Art. No. 21659102)
- Crete Part C Filler SL 80; 14.7 kg (Art. No. 22659115)

## CRETE BL 120 | Base Layer for Heavily Loadable Blinded Coverings

Crete BL 120 is a highly filled, self-levelling base layer for blinded coverings in thicker layers. It is applied kneeling or standing with a toothed trowel / notched squeegee and then worked over with a loop roller to promote the flow of the material and ensure de-airing. The material is always blinded afterward, using very generous quantities of material.

**Composition for a 26 kg\* unit made of individual components:**

- Crete Part A; 2.9 kg (Art. No. 20659103 / 20659203 / 20659303)
- Crete Part B; 2.4 kg (Art. No. 21659102)
- Crete Part C Filler BL 120; 20.7 kg (Art. No. 22659421)

## CRETE RT 130 | Mortar Covering Applied with a Floor Finish Scraper

Crete RT 130 is the highest filled version and can only be applied with a trowel. It is distributed with a floor finish scraper and then smoothed with a trowel which is executed kneeling. A textured cover is produced by the largest grain in the mixture.

**Composition for a 30 kg\* unit made of individual components:**

- Crete Part A; 2.9 kg (Art. No. 20659103 / 20659203 / 20659303)
- Crete Part B; 2.4 kg (Art. No. 21659102)
- Crete Part C Filler RT 130; 24.7 kg (Art. No. 22659725)

## SHADES OF COLOUR\*\*



medium grey



red



beige



ochre



green



blue

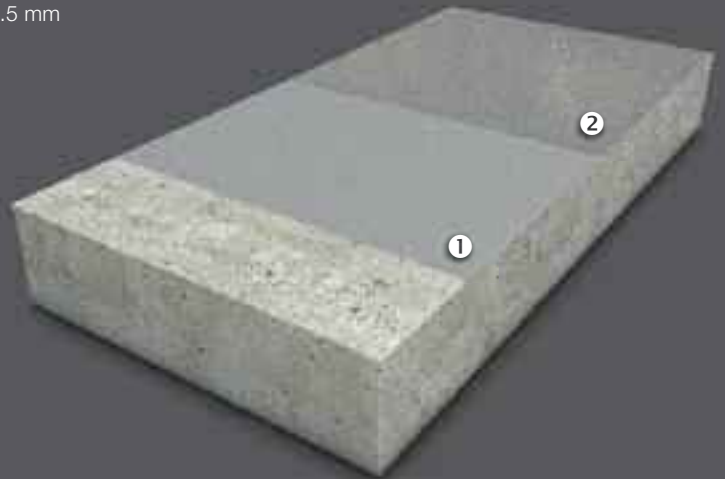


# SEALANTS

## TF FLOOR CR 60 – Thin Film Floor, Chemical Resistant | Sealant

The food industry is broadly diversified but the many branches all have one requirement in common: Flawless hygiene conditions. Sealants with Crete TF 60 are ideal for areas with sensitive hygiene requirements. With low to medium heavy mechanical loads and a thermal load up to 60 °C, this system maintains its dimensional stability and functioning capacity.

**Layer thickness:** < 0.5 mm



### Application areas

- Food production/food industry
- Light to medium mechanical and chemical loads
- Perfect for areas with high hygiene requirements

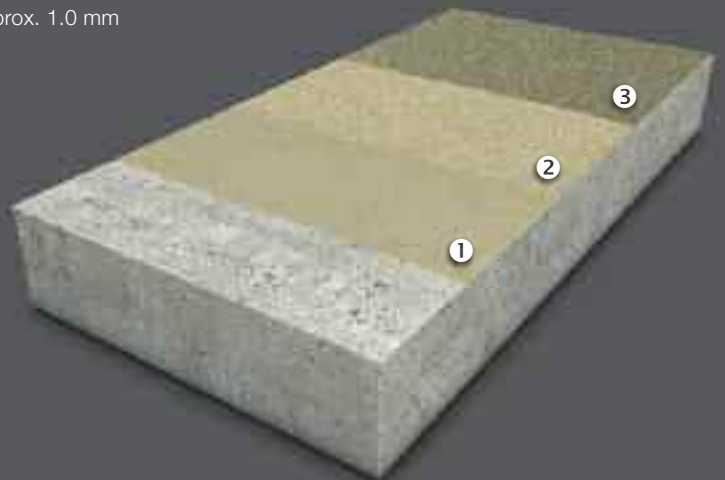
	Construction	Product designation	Application rate
1	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
2	Sealant	Crete TF 60	at least 0.40 kg/m <sup>2</sup>

## SR FLOOR CR 60 – Slip Resistant Floor, Chemical Resistant | Slip Resistant Sealant

In areas where substances that promote slipping can fall on the floor, slip resistant sealants blinded with quartz sand can provide the necessary safety.

The rough surface of the blinding material combined with Remmers Crete TF 60 ensure permanently good footing.

**Layer thickness:** approx. 1.0 mm



### Application areas

- Industrial floors in the food processing industry
- Light to medium mechanical and chemical loads
- Ideal for floors with moisture loads

	Construction	Product designation	Application rate
1	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
2	Blinding material	Quarzsand 0.3 – 0.8 mm	4.00 kg/m <sup>2</sup> incl. surplus
3	Sealant	Crete TF 60	at least 0.80 kg/m <sup>2</sup>

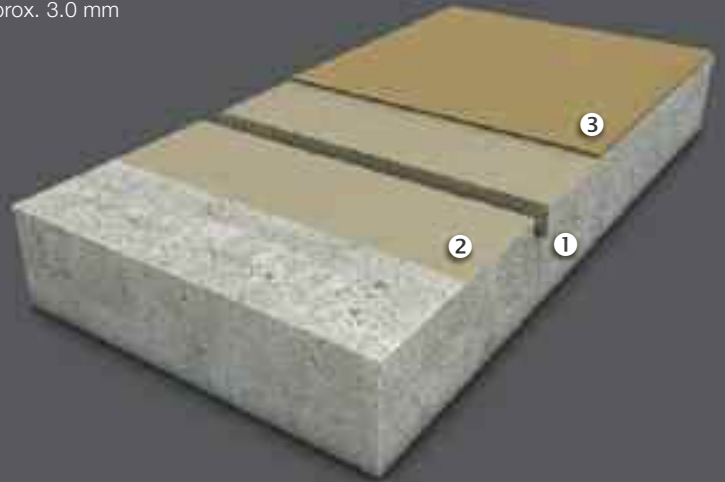
Depending on the blinding material and application rate of the sealant, different slip resistance ratings and displacement spaces can be produced.

# FLOW COATINGS

## SL FLOOR CR 80 – Self Leveller Floor, Chemical Resistant | Flow Coating

Floors in the food industries are subjected to heavy mechanical loads through production processes and associated traffic. Remmers Crete SL 80, which was especially developed for floors with heavy mechanical loads, is resistant to temperatures up to 80 °C.

**Layer thickness:** approx. 3.0 mm



### Application areas

- Storage spaces, corridors
- Floors subjected to mechanical and thermal loads
- Optimal for areas in which sure footing is required

	Construction	Product designation	Application rate
1	Anchorage cut		
2	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
3	Flow coating	Crete SL 80	at least 6.00 kg/m <sup>2</sup>

The slip resistance rating can be adjusted by the use of an additional sealant.

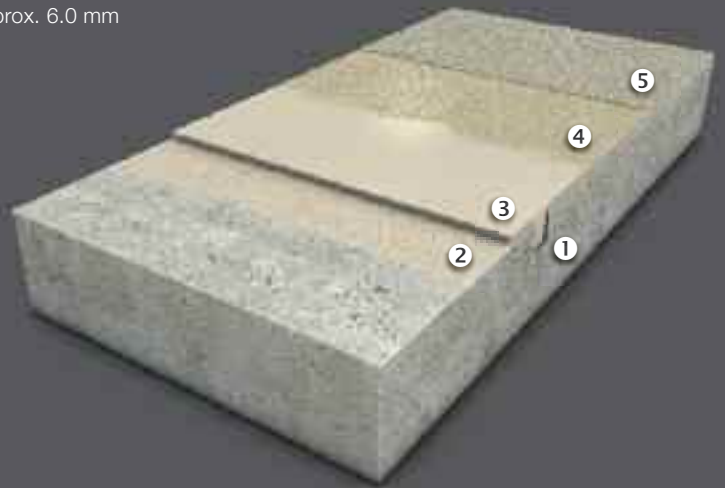


# BLINDED COVERINGS

## SR FLOOR CR 80 – Slip Resistant Floor, Chemical Resistant | Blinded Covering

Moisture, water and other substances that promote slipping pose a risk to job safety in large-scale kitchens. In these areas, Remmers Crete SL 80 blinded with quartz sand is recommended for slip resistant flooring systems that resist temperature up to 100 °C.

**Layer thickness:** approx. 6.0 mm



### Application areas

- Large-scale kitchens, salad production
- Floors subjected to mechanical and thermal loads
- Work areas in which increased slip resistance is required

	Construction	Product designation	Application rate
1	Anchorage cut		
2	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
3	Base coat	Crete SL 80	approx. 6.00 kg/m <sup>2</sup>
4	Blinding material	Quartz Sand 0.3 – 0.8 mm	approx. 6.00 kg/m <sup>2</sup> incl. surplus
5	Sealant	Crete TF 60	at least 1.00 kg/m <sup>2</sup>

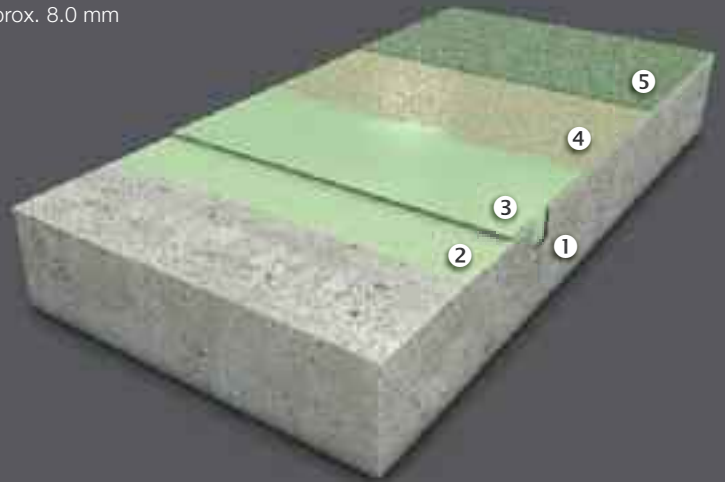
Depending on the blinding material and application rate of the sealant, different slip resistance ratings and displacement spaces can be produced.



## SR FLOOR CR 120 – VARIATION 1 – Slip Resistant Floor, Chemical Resistant | Blinded Covering

Thermal loads caused by hot liquids are simply too much for many synthetic resin coatings. In a system, Remmers Crete BL as a base layer combined with quartz sand blinding and then sealed is temperature resistant up to 120 °C. This construction also guarantees the required slip resistance.

**Layer thickness:** approx. 8.0 mm



### Application areas

- Dairies, fish processing
- Floors subjected to heavy mechanical, chemical and thermal loads

	Construction	Product designation	Application rate
1	Anchorage cut		
2	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
3	Base coat	Crete BL 120	approx. 14.00 kg/m <sup>2</sup>
4	Blinding material	Quarzsand 0,3 – 0,8 mm	approx. 6.00 kg/m <sup>2</sup>
5	Sealant	Crete TF 60	at least 1.00 kg/m <sup>2</sup>

Depending on the blinding material and application rate of the sealant, different slip resistance ratings and displacement spaces can be produced.

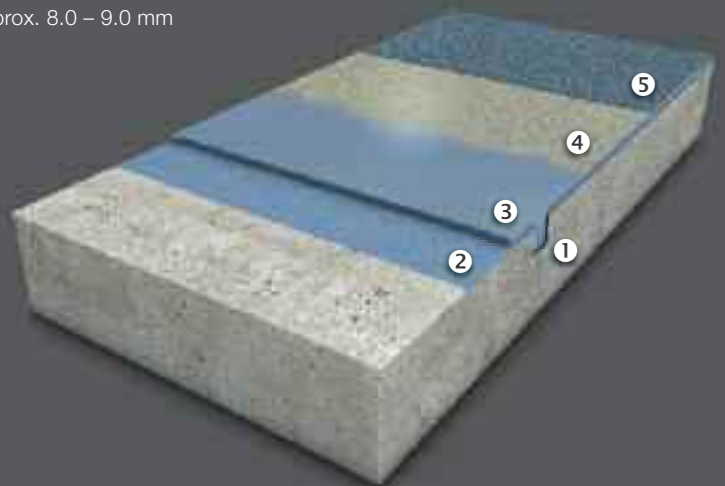




**SR FLOOR CR 120 – VARIATION 2/3** – Slip Resistant Floor, Chemical Resistant | Blinded Covering

Mechanical loads caused by small, hard rollers present a real challenge for any floor covering. The blinding material Mandurax Brite can withstand these loads. Together with a base layer of Remmers Crete BL 120 and a sealant, a most robust floor covering can be produced that can withstand simultaneous thermal and mechanical loads – loads that cause considerable damage to many conventional floor coverings.

**Layer thickness:** approx. 8.0 – 9.0 mm



**Application areas**

- Meat processing
- Floors with very heavy mechanical loads
- Floors with heavy thermal and chemical loads

	Construction	Product designation	Application rate
1	Anchorage cut		
2	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
3	Base coating	Crete BL 120	approx. 14.00 kg/m <sup>2</sup>
4	Blinding material	Variante 2: Mandurax Brite 0,3 – 0,8 mm Variante 3: Mandurax Brite 1,0 – 2,0 mm	approx. 6.00 kg/m <sup>2</sup>
5	Sealant	Crete TF 60	Variation 2: at least 1.00 kg/m <sup>2</sup> Variation 3: at least 1.20 kg/m <sup>2</sup>

Depending on the blinding material and application rate of the sealant, different slip resistance ratings and displacement spaces can be produced.



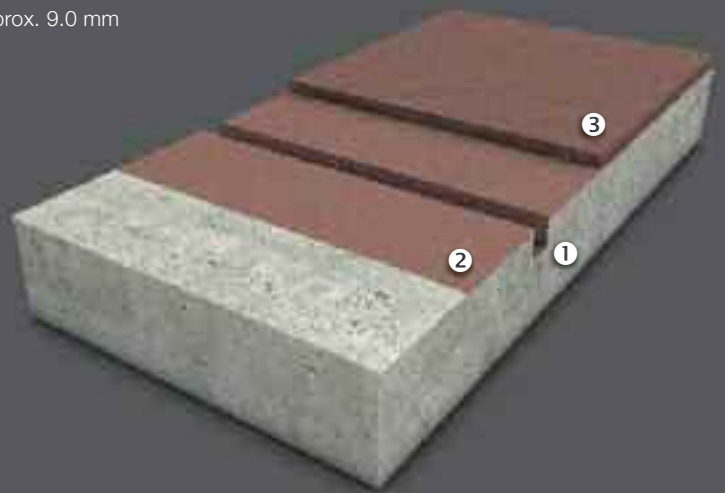


# MORTAR COVERINGS

## SC FLOOR CR 130 – SCreed Floor, Chemical Resistant | Mortar Covering

Heavy loads on small rollers represent the heaviest loads for any floor. Remmers Crete RT 130 was developed for the most demanding application areas. It can withstand strong impact loads and shows its full performance capacity by resisting short-term temperatures of 130 °C. This covering, which can be applied with a squeegee, can also be placed on steeper gradients.

**Layer thickness:** approx. 9.0 mm



### Application areas

- Food production and metal processing
- Floors with very heavy mechanical, thermal and chemical loads
- Production areas with impact loads

	Construction	Product designation	Application rate
1	Anchorage cut		
2	Primer	Crete TF 60	approx. 0.40 kg/m <sup>2</sup>
3	Mortar	Crete RT 130	at least 18.00 kg/m <sup>2</sup>



# DETAIL SOLUTIONS

## PLINTH CONNECTIONS | Sealing Covets/Triangular Covets

In the food industry there are many areas where walls and floors are seamlessly and rigidly connected to each other. In wet rooms and hygiene areas, an easy to clean floor coating system is connected without a transition by means of a sealing cove / triangular cove. First the mortar is applied to the primer "wet-on-wet" and a sealing cove / triangular cove is then formed. After applying a filler to close pores, this detail is worked over with Remmers Crete System.



	Construction	Product designation
1	Anchorage layer	
2	Primer	Crete TF 60
3	Mortar	Consisting of Crete TF 60 and Selectmix 05
4	Coating system	Remmers Crete System

## PLINTH CONNECTIONS | Coating on Additional Ramming Protection

Lifting trucks and fork lifts that transport heavy goods often ram against walls. These impact loads can cause considerable damage to wall elements, e.g. sandwich panels.

That is why ramming protection systems are integrated into the coating construction. The ramming protection is placed over the primer. Following this, all further layers are executed.



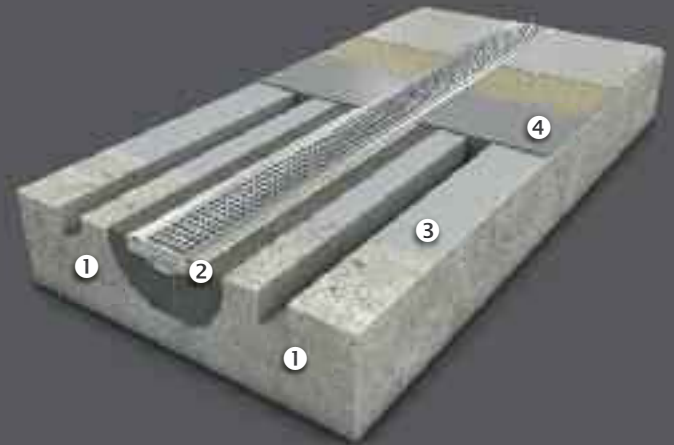
	Construction	Product designation
1	Anchorage cut	
2	Primer	Crete TF
3	Ramming protection system*	
4	Coating system	Remmers Crete System

\* Must be compatible with coatings; no stainless steel

## CONNECTION JOINTS | Coatings for Surfaces with Drainage Systems

Different chemicals used in food production such as acids but also hot water place very heavy loads on integrated drainage systems and the surrounding floor.

For ensure the best possible adhesion between the floor and the drain, a deep groove approx. 10.0 – 15.0 mm deep must be cut in the transition area which is filled with the coating material. Afterward, a sealant is applied all the way to the drain.



	Construction	Product designation
1	Anchorage cut	
2	Mortar	Remmers Grout HQ3
3	Primer	Crete TF 60
4	Coating system	Remmers Crete System

## FLOOR JOINTS | Coatings for Surfaces with Expansion Joints

Heavy roll containers, lifting trucks or pallets create heavy, dynamic, alternating loads that act on the floor. Especially in the food industry, damaged floors represent an enormous safety risk.

Expansion joint profiles that can be subjected to vehicle traffic are installed between building elements to relieve stress. Special attention should be paid here to ensure that the construction of the coating is executed flush with the joint profile.



	Construction	Product designation
1	Anchorage cut	
2	Mortar	Remmers Betofix R4
3	Primer	Crete TF 60
4	Coating system	Remmers Crete System



# SLIP RESISTANCE






Slip resistant floor coverings must be used in work rooms and areas with a risk of slipping. The method for determining slip resistance is governed by DIN 51130.

## Determination of slip resistance

The determined mean angle of inclination is decisive for classification in one of a total of five assessment groups. These assessment groups are named R9 to R13, of which R13 provides the highest slip resistance.

For certain application cases, e.g. in work areas where liquid substances contaminate flooring, the displacement space of a floor covering must also be determined for the assessment of slip resistance.

A displacement space is the cavity between the raised sections of the flooring beneath the tread level that is necessary to discharge substances that are conducive to slipping and is measured in  $\text{cm}^3/\text{dm}^2$ .

Slip Resistance Test on an "inclined plane"		
Rating group	Slope angle	Trade area
R9	> 6° – 10° low coefficient of static	
R10	> 10° – 19° normal coefficient of static	
R11	> 19° – 27° increased coefficient of	
R12	> 27° – 35° higher coefficient of static	
R13	> 35° very high coefficient of sta-	

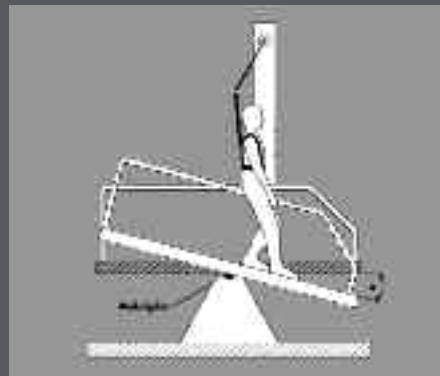
**Table 1:**  
Assessment groups of slip resistance

Minimum volume of the displacement space	Designation of the displacement space
4 $\text{cm}^3/\text{dm}^2$	V04
6 $\text{cm}^3/\text{dm}^2$	V06
8 $\text{cm}^3/\text{dm}^2$	V08
10 $\text{cm}^3/\text{dm}^2$	V10

**Table 2:**  
Assignment of the designation of displacement space to minimum volumes

## Test persons / test shoes

The equipment of test persons, such as, e.g. their safety shoes, is governed by DIN EN 345-1.



## Coefficient of friction $\mu$

In contrast to the type examination used in a walking method on a sloping plane and classification of a new floor covering material in a certain slip resistance rating group (R9 to R13), the coefficient of friction  $\mu$  can be determined on areas that are walked on with a specified state (through contamination with or direct application of a slip promoting substance) and assessed in regard to any additionally required measures to produce sufficient slip resistance. To calculate coefficients of friction, the force  $F$  that must be applied to make a body with a known mass  $m$  slip on a measuring surface is measured.

The assessment of the coefficient of friction  $\mu$  of a walkable floor covering can be classified according to Table 3:

Classification	Coefficient of friction $\mu$
I	> 0.45
II	0.3 – 0.44
III	< 0.3

### Explanation:

- I The walkable surface has sufficient slip resistance without further measures.
- II Slip resistant only with additional measures, depending on ambient parameters (climate, etc.).
- III The walkable surface does not provide sufficient protection against slipping and must thus be classified relevant to accidents.

**Table 3:**  
Assignment of classification coefficient of friction

## REQUIREMENTS ON SLIP RESISTANCE OF FLOORS | pursuant to ASR A1.5 / 1,2

Remmers systems can be produced with slip resistance ratings R 9 to R 13 and displacement spaces from V 4 to V 10.

Currently valid test certificates are available from Remmers Fachplanung.

No.	Working rooms, working areas and operational traffic routes	Slipping risk (R group)	Displacement space with minimum volume number	Remmers system solution
<b>0</b>	<b>General working rooms and areas <sup>1</sup></b>			
0.1	Entrance areas, indoors <sup>2</sup>	R 9		*
0.2	Entrance areas, outdoors	R 11 or R 10	V 4	*
0.3	Stairs, indoors <sup>3</sup>	R 9		*
0.4	Stairs, outdoors	R 11 or R 10	V 4	*
0.5	Sloping ramps, indoors <sup>3</sup> (e.g. wheelchair ramps, levelling slopes, transport routes)	One R group higher than required for the entrance covering	V value of the entrance covering, if applicable	*
0.6	Sanitary rooms			*
0.6.1	Toilets	R 9		*
0.6.2	Changing and washrooms	R 10		*
0.7	Break rooms (e.g. day rooms, canteens)	R 9		*
0.8	First aid rooms and comparable facilities (see ASR A4.3)	R 9		*
<b>1</b>	<b>Manufacture of margarine, edible fats and oils</b>			
1.1	Fat melting	R 13	V 6	page 15
1.2	Edible oil refinery	R 13	V 4	page 15
1.3	Manufacture and packaging of margarine	R 12		page 13
1.4	Manufacture and packaging of edible fat, bottling of edible oil	R 12		page 13
<b>2</b>	<b>Milk treatment and processing, cheese production</b>			
2.1	Fresh milk processing, including buttery	R 12		page 13
2.2	Cheese production, storage and packing	R 11		page 11
2.3	Ice cream manufacture	R 12		page 13
<b>3</b>	<b>Manufacture of chocolates and confectionery</b>			
3.1	Sugar boiling plant	R 12		page 14
3.2	Cocoa production	R 12		page 13
3.3	Preparation of raw mass	R 11		page 13
3.4	Production of slabs, hollow moulded forms and chocolates	R 11		page 11
<b>4</b>	<b>Manufacture of breads and pastries (bakeries, cake and biscuit manufacture)</b>			
4.1	Preparation of dough	R 11		page 13
4.2	Areas where fats and liquid mixtures are predominately processed	R 12		page 13
4.3	Washing-up rooms	R 12	V 4	page 13
<b>5</b>	<b>Slaughtering, meat handling, meat processing</b>			
5.1	Slaughterhouse	R 13	V 10	page 15
5.2	Abattoir, gut cleaning area	R 13	V 10	page 15
5.3	Meat jointing	R 13	V 8	page 15
5.4	Sausage and cold meats kitchen	R 13	V 8	page 15
5.5	Boiled sausage area	R 13	V 8	page 15
5.6	Preserved sausage area	R 13	V 6	page 15
5.7	Sausage drying room	R 12		page 13

\* Remmers system solution found in the brochure rcc Industries

Nr.	Working rooms, working areas and operational traffic routes	Slipping risk (R group)	Displacement space with minimum volume number	Remmers system solution
5.8	Gut storage	R 12		page 13
5.9	Curing, smoking room	R 12		page 13
5.10	Poultry processing	R 12	V 6	page 14
5.11	Slicing and packing area	R 12		page 13
5.12	Workshop with sale	R 12	V 8 <sup>4</sup>	page 14
<b>6</b>	<b>Handling and processing of fish, manufacture of delicatessen products</b>			
6.1	Handling and processing of fish	R 13	V 10	page 15
6.2	Manufacture of delicatessen products	R 13	V 6	page 15
6.3	Manufacture of mayonnaise	R 13	V 4	page 14
<b>7</b>	<b>Preparation and processing of vegetables</b>			
7.1	Manufacture of sauerkraut	R 13	V 6	page 15
7.2	Manufacture of canned vegetables	R 13	V 6	page 15
7.3	Sterilisation rooms	R 11		page 11
7.4	Rooms in which vegetables are prepared for procesing	R 12	V 4	page 13
<b>8</b>	<b>Wet areas in food and drink manufacture (unless mentioned separately)</b>			
8.1	Storage and fermenting cellar	R 10		page 13
8.2	Bottling, fruitjuice manufacture	R 11		page 13
<b>9</b>	<b>Kitchens, dining rooms</b>			
9.1	Gastronomic kitchens (restaurant and hotel kitchens)	R 12		page 13
9.2	Commercial kitchens in homes, schools, day nurseries, sanatoriums	R 11		page 13
9.3	Commercial kitchens in hospitals and clinics	R 12		page 13
9.4	Large-scale commercial kitchens in canteens, district kitchens	R 12	V 4	page 13
9.5	Fast food and snack bar kitchens	R 12		page 13
9.6	Defrosting and re-heating kitchens	R 10		*
9.7	Tea and coffee kitchens, B+B kitchens, ward kitchens	R 10		*
9.8	Washing-up areas			
9.8.1	Washing-up areas for 9.1, 9.4, 9.5	R 12	V 4	page 13
9.8.2	Washing-up areas for 9.2	R 11		page 13
9.8.3	Washing-up areas for 9.3	R 12		page 13
9.9	Dining rooms, guest rooms, canteens incl. serving areas	R 9		*
<b>10</b>	<b>Cold storage rooms, deep freeze rooms and depots</b>			
10.1	For non-packaged goods	R 12		*
10.2	For packaged goods	R 11		*
<b>11</b>	<b>Sales areas and shops</b>			
11.1	Receiving rooms for meat			
11.1.1	For non-packaged goods	R 11		*
11.1.2	For packaged goods	R 10		*

\* Remmers system solution found in the brochure rcc Industries

# REQUIREMENTS ON SLIP RESISTANCE OF FLOORS | pursuant to ASR A1.5 / 1,2

Nr.	Working rooms, working areas and operational traffic routes	Slipping risk (R group)	Displacement space with minimum volume number	Remmers system solution
11.2	Receiving room for fish	R 11		
11.3	Serving area for meats and cold cuts			*
11.3.1	For non-packaged goods	R 11		*
11.3.2	For packaged goods	R 10		*
11.4	Service areas for breads and pastries, non-packaged goods	R 10		*
11.5	Service areas for dairy and delicatessen products, non-packaged goods	R 10		*
11.6	Serving area for fish			*
11.6.1	For non-packaged goods	R 12		*
11.6.2	For packaged goods	R 11		*
11.7	Serving area other than No. 11.3 to 11.6	R 9		
11.8	Meat preparation room			
11.8.1	For meat preparation other than covered in 5	R 12	V 8	page 14
11.8.2	For meat processing other than covered in 5	R 11		page 13
11.9	Flower arranging rooms and areas	R 11		
11.10	Sales areas with fixed ovens			
11.10.1	For the production of breads and pastries	R 11		*
11.10.2	For the baking of prepared breads and pastries	R 10		*
11.11	Sales areas with fixed deep-fat fryers or grills	R 12	V 4	page 13
11.12	Sales areas, customer-frequented areas	R 9		*
11.13	Preparation areas for food for self-service sale	R 10		*
11.14	Cash till, packing areas	R 9		*
11.15	Sales areas outdoors	R 11 oder R 10	V 4	*
<b>12</b>	<b>Public health service rooms</b>			
12.1	Disinfection rooms (wet)	R 11		*
12.2	Sterilisation areas	R 10		*
12.3	Excrement areas, sink rooms, unclean nursing rooms	R 10		*
12.4	Pathology rooms	R 10		*
12.5	Rooms for medicinal baths, hydrotherapy, fango preparation	R 11		*
12.6	Washrooms for operating theatres, plaster casting rooms	R 10		*
12.7	Sanitary rooms, ward bathrooms	R 10		*
12.8	Rooms for medical diagnosis and therapy, massaging rooms	R 9		*
12.9	Operating theatres	R 9		*
12.10	Wards with hospital rooms and corridors	R 9		*
12.11	Medical practices, day clinics	R 9		*
12.12	Dispensing chemist's	R 9		*
12.13	Laboratories	R 9		*
12.14	Hairdresser's	R 9		*

\* Remmers system solution found in the brochure rcc Industries



No.	Working rooms, working areas and operational traffic routes	Slipping risk (R group)	Displacement space with minimum volume number	Remmers system solution
<b>13</b>	<b>Laundries</b>			
13.1	Rooms with continuous-run washing machines or centrifugal washing machines	R 9		*
13.2	Rooms in which laundry is removed from the machine dripping wet	R 11		*
13.3	Rooms for ironing and pressing	R 9		*
<b>14</b>	<b>Feed concentrate production</b>			
14.1	Dry feed production	R 11		page 13
14.2	Feed concentrate production using fat and water	R 11	V 4	page 13
<b>15</b>	<b>Manufacture of leather goods, textiles</b>			
15.1	Water workshops in tanneries	R 13		page 15
15.2	Areas with fleshing machines	R 13	V 10	page 15
15.3	Areas where glued leather occurs	R 13	V 10	page 15
15.4	Grease room for the manufacture of seals	R 12		page 13
15.5	Dye works for textiles	R 11		page 13
<b>16</b>	<b>Paint-shops</b>			
16.1	Wet rubbing down areas	R 12	V 10	*
16.2	Powder coating	R 11		*
16.3	Lacquering	R 10		*
<b>17</b>	<b>Ceramics industry</b>			
17.1	Wet-grinding (for ceramic material)	R 11		*
17.2	Mixers, working with materials such as tar, pitch, graphite, synthetic resins	R 11	V 6	*
17.3	Presses (forming), working with material such as tar, pitch, graphite, synthetic resin	R 11	V 6	*
17.4	Casting areas	R 12		*
17.5	Glazing areas	R 12		*
<b>18</b>	<b>Treatment and processing of glass and stone</b>			
18.1	Stone cutting, stone grinding areas	R 11		*
18.2	Glass moulding of hollow glass, container glass, structural glass	R 11		*
18.3	Grinding areas for hollow glass, sheet glass	R 11		*
18.4	Processing of insulating glass, working with dissiants	R 11	V 6	*
18.5	Packaging, dispath of sheet glass, working with anti-blocking agents	R 11	V 6	*
18.6	Etching and acid polishing units for glass	R 11		*
<b>19</b>	<b>Cement works</b>			
19.1	Cement washing area	R 11		*
<b>20</b>	<b>Storage rooms</b>			
20.1	Storage rooms for oils and fats	R 12	V 6	*
20.2	Storage rooms for packaged foods	R 10		*
20.3	Storage rooms outdoors	R 11 or R 10	V 4	*

\* Remmers system solution found in the brochure rcc Industries

# REQUIREMENTS ON SLIP RESISTANCE OF FLOORS | pursuant to ASR A1.5 / 1,2

No.	Working rooms, working areas and operational traffic routes	Slipping risk (R group)	Displacement space with minimum volume number	Remmers system solution
<b>21</b>	<b>Chemical and thermal treatment of iron and metal</b>			
21.1	Pickling shops	R 12		
21.2	Hardening shops	R 12		*
21.3	Laboratories	R 11		*
<b>22</b>	<b>Metal treatment and processing, metal workshops</b>			
22.1	Electroplating rooms	R 12		page 13
22.2	Grey iron processing	R 11	V 4	page 13
22.3	Mechanical processing areas (e.g. lathe shop, milling shop), punching department, press-room, drawing mill (pipes, wires) and areas with increased use of oils and lubricants	R 11	V 4	page 13
22.4	Part cleaning areas, steaming areas	R 12		page 13
<b>23</b>	<b>Vehicle maintenance workshops</b>			
23.1	Repair and maintenance shops	R 11		*
23.2	Repair and inspection pits	R 12	V 4	*
23.3	Car wash, washing areas	R 11	V 4	*
<b>24</b>	<b>Aircraft maintenance workshops</b>			
24.1	Hangars	R 11		*
24.2	Repair hangars	R 12		*
24.3	Washing areas	R 11	V 4	*
<b>25</b>	<b>Sewage works</b>			
25.1	Pumping rooms	R 12		*
25.2	Rooms for sludge de-watering facilities	R 12		*
25.3	Rooms for raking facilities	R 12		*
25.4	Standing areas of workplaces, working and maintenance platforms	R 12		*
<b>26</b>	<b>Fire stations</b>			
26.1	Vehicle standing areas	R 12		*
26.2	Rooms for hose servicing equipment	R 12		*
<b>27</b>	<b>Functional spaces in respiratory protection practice facilities</b>			
27.1	Preparation room	R 10		*
27.2	Physical fitness testing room	R 10		*
27.3	Practice room	R 11		*
27.4	Practice lock	R 10		*
27.5	Goal room	R 11		*
27.6	Room for acclimatising to heat	R 11		*
27.7	Control centre	R 9		*

\* Remmers system solution found in the brochure rcc Industries

No.	Working rooms, working areas and operational traffic routes	Slipping risk (R group)	Displacement space with minimum volume number	Remmers system solution
<b>28</b>	<b>Schools and kindergardens</b>			
28.1	Entrance areas, corridors, recreation halls	R 9		*
28.2	Class rooms, group rooms	R 9		*
28.3	Stairs	R 9		*
28.4	Toilets, wash rooms	R 10		*
28.5	Cookery rooms in schools (see also No. 9)	R 10		*
28.6	Kitchens in kindergardens (see also No. 9)	R 10		*
28.7	Machine rooms for woodwork	R 10		*
28.8	Special rooms for wood work	R 10		*
28.9	Playgrounds	R 11 or R 10	V 4	*
<b>29</b>	<b>Banks</b>			
29.1	Reception areas	R 9		*
<b>30</b>	<b>Outside traffic routes</b>			
30.1	Paths	R 11 or R 10	V 4	*
30.2	Loading ramps			*
30.2.1	Covered	R 11 or R 10	V 4	*
30.2.2	Not covered	R 12 or R 11	V 4	*
30.3	Sloped ramps (e.g. for wheelchairs, loading bridges)	R 12 or R 11	V 4	*
30.4	Refuelling areas			*
30.4.1	Covered	R 11		*
30.4.2	Not covered	R 12		*
<b>31</b>	<b>Parking areas</b>			
31.1	Garages, multi-storey and underground car parks not subjected to the effects of weather <sup>5</sup>	R 10		**
31.2	Garages, multi-storey and underground car parks subjected to the effects of weather	R 11 or R 10	V 4	**
31.3	Park areas outdoors	R 11 or R 10	V 4	**

\* Remmers system solution found in the brochure rcc Industries

\*\* Remmers system solution found in the brochure rcc Parking

1) For floors in wet barefoot areas, see GUV information "Bodenbeläge für nassbelastete Barfußbereiche" (GUV-I 5827)

2) Entrance areas in accordance with number 0.1 are areas accessed directly from outside and that may be wet if conditions are wet outside (see point 6 section 3, The use of mats to take up soil and moisture). For adjoining areas or other large area rooms, point 4 section 10 is to be observed.

3) Stairs, ramps in accordance with number 0.3 and 0.5 are those that may be wet if it is wet outside. For adjoining areas, point 4 section 10 is to be observed.

4) If a uniform floor covering has been installed everywhere, the displacement area can be reduced to V 4 based on a hazard analysis (taking into account the cleaning method, work flows and the amount of substances on the floor that are particularly conducive to slipping).

5) Those pedestrian areas that are not affected by the risk of slipping as a result of the effects of the weather, such as driving rain or water that has been brought in from outside.

# RESISTANCE TO CHEMICALS

In daily operations, industrial floors are subjected to the most different chemical substances. From sodium hydroxide to acetic acid all the way to citric acid, concentrated chemicals are used in the food industry. While some substances pose no risk, many other substances attack concrete floors and floor coating systems.

Conventional synthetic resin coatings are not able to withstand the “sustained attack” of aggressive mediums. Remmers Crete floors are distinguished by their enormous resistance to a number of chemicals. The most common chemicals with corresponding resistance have been compiled in the following table.



Medium / chemical	Concentration %	Temperature °C	Crete Systems
Acetone	100	20	Briefly resistant
Ammonium 0.880	–	20	Resistant
Benzene	100	20	Briefly resistant
Petrol (lead-free)	–	20	Resistant
Beer	–	20	Resistant
Blood	–	20	Resistant
Brake fluid	–	20	Resistant
Butanone (methyl ethyl ketone)	100	20	Briefly resistant
Hydrochloric acid	36	20	Resistant
	10	60	Resistant
	4	20	Resistant
Diesel oil	–	20	Resistant
Dichloromethane (methylenechloro-)	100	20	Not resistant
De-ionised water (deionate)	100	20	Resistant
Peanut oil	–	20	Resistant
Petroleum	100	20	Resistant
Acetic acid	30	20	Resistant
	99 (glacial acetic)	20	Briefly resistant
	10	60	Briefly resistant
Ethanol	100	20	Resistant
Ethylene glycol	100	20	Resistant
Iso-Propanol	100	20	Resistant
Potassium hydroxide	50	20	Resistant
Kerosine	100	20	Resistant
Pine oil	–	20	Resistant
Sodium chloride solution	saturated	20	Resistant
Coconut oil	–	20	Resistant
Copper sulphate solution	30	20	Resistant
Liver oil	–	20	Resistant
Linseed oil	–	20	Resistant
Methanol	100	20	Resistant
Methyl ethyl ketone	100	20	Briefly resistant
Methylene dichloride	100	20	Not resistant
Methyl isobutyl ketone	100	20	Briefly resistant
Milk	–	20	Resistant

Medium / chemical	Concentration %	Temperature °C	Crete Systems
Lactic acid	85	20	Resistant
	25	60	Resistant
Mineral oil	–	20	Resistant
Motor oil	–	20	Resistant
N-methylpyrrolidone	100	20	Not resistant
Sodium hydrogen carbonate	gestättigt	20	Resistant
Sodium hydroxide	50	20	Resistant
	50	60	Not resistant
Sodium hypochlorite	15	20	Resistant
Olive oil	–	20	Resistant
Vegetable oil	–	60	Resistant
Phosphoric acid	50	20	Resistant
Stone pine / pine oil	–	20	Resistant
Castor oil	–	20	Resistant
Nitric acid	30	20	Resistant
	69	20	Briefly resistant
Lard	–	20	Resistant
Skydrol 500B-4	–	20	Resistant
Sunflower oil	–	20	Resistant
Sulphuric acid	20	20	Resistant
	50	20	Briefly resistant
	98	20	Not resistant
Turpentine subst. / mineral spirit	100	20	Resistant
White spirit	100	20	Resistant
Toluene	100	20	Briefly resistant
Grape juice	–	20	Resistant
Trichloroethane	100	20	Briefly resistant
Hydrogen peroxide	30	20	Resistant
Wine	–	20	Resistant
Whiskey	–	20	Resistant
Xylene (isomer mixture)	100	20	Resistant
Sugar solution	30	20	Resistant
Citric acid	60	20	Resistant
Lemon juice	–	20	Resistant

This information applies to the given temperature and the tested individual medium. Higher temperatures but also a combination of the tested mediums/chemicals may result in highly different results. In individual cases, resistance must be tested on a test specimen on site or in a laboratory with a sufficient quantity of the medium/chemical.







## REMMERS FACHPLANUNG | Lönigen

The Remmers group is a successful, medium-sized, family-run company with headquarters in Lönigen which is located in the western part of Lower Saxony. After it was founded in the year 1949, its development from a one-man operation to an internationally active group of companies was not just an accidental by-product of the German economic miracle. It is marked by a planned, entrepreneurial business strategy with three essential keys to success: Innovation, continuity and expansion. Today Remmers is established world-wide in more than 40 countries and has become indispensable as a premium supplier in the fields of building protection, wood preservation and floor protection. The company group develops and sells chemical construction products and systems that are used from the basement to the roof. For the special segment of large refurbishment projects, Remmers Fachplanung has its own group of experienced experts. This department mainly deals with companies and planning offices for civil engineering, general construction and administration buildings.

## RCC MARKETS | Remmers Consulting Concept

Exact analysis, competent advice und high quality systems. Remmers Fachplanung is a reliable partner in many national and international markets. We work in numerous areas of the different branches in industry, trade and housing construction as well as our most prestigious discipline, the preservation of heritage buildings and monuments. Highly qualified experts from all over the world can assist you with your building projects. We know the individual requirements in your branch. Four decades of project business have made Remmers Fachplanung a reliable partner in all matters relating to refurbishment. Our services begin with the first analysis, e.g. in the form of taking samples, including all of the necessary laboratory examinations. At the heart of this is the development is a tailor-made concept, taking all economical, architectural and technical specifications into account.

 Industries

 Food

 Parking

 Shop & Trade **Shops & Trade**

 Heritage Buildings

 Wastewater **Waste Water**

 Home & Office

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