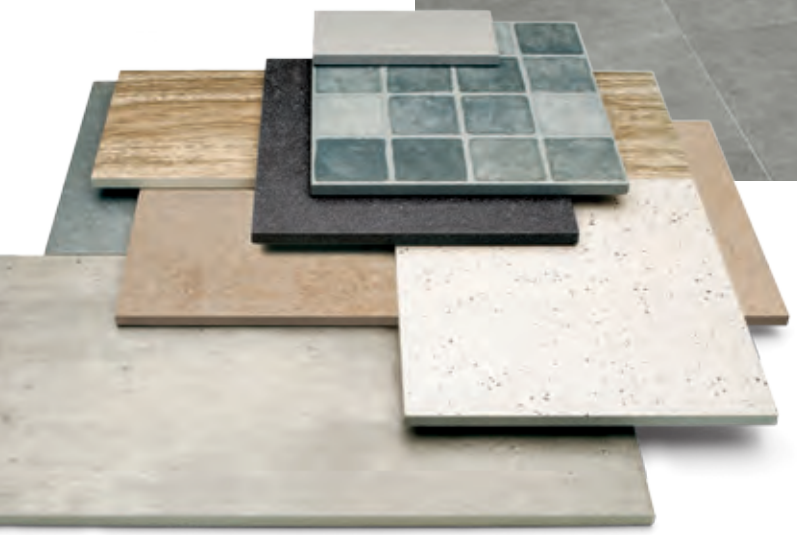
FINE STONEWARE

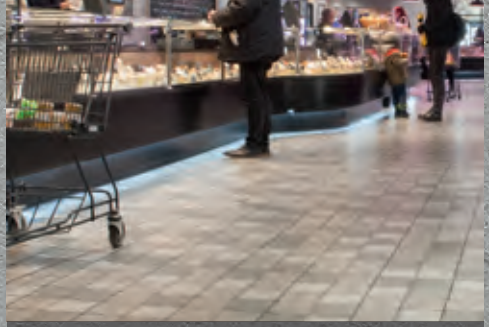


For durable commercial
and industrial flooring.

Röben

Precision and V-Spacer®

Thanks to the unique Röben V-Spacer®, tiles are laid quickly and precisely. Furthermore, it also prevents the upper edges of the tiles from being damaged during the mechanical vibration process. Uniform spacing, absolute dimensional precision and clean edges are the best possible way to obtain a perfect joint pattern.



Abrasion resistant

Simply made for heavy duty public use. The surfaces stay like new, even when subject to extreme loads. No visible abrasion, no unsightly streaks, no adverse effects on the natural aesthetic appeal.

Fire sealed

The surfaces of VIGRANIT® fine stoneware are fire-sealed, which means they have undergone a special process to ensure they are particularly impervious to dirt and wear and tear.

Floors should naturally always look good, no matter what takes place on them. They should be easy to clean, durable, resilient and safe. Röben fine stoneware floors do all that, as already proven in many supermarkets, car showrooms, shopping centres, industrial bakeries, dairies, breweries . . . in other words, wherever high demands are made of floors.

BEST FL

Economically and swiftly laid

The rational vibration method using machines has proven to be effective with larger ceramic floor surfaces. As the edges of the Röben fine stoneware are perfectly straight, the tiles can be laid almost without joints. And the V-Spacer® prevents the tiles from being damaged by the vibration machine.

Antistatic

Electrostatic discharges can have a negative influence on sensitive electronic devices and even destroy them. Röben fine stoneware is anti-electrostatic – it cannot become electrostatically charged.

Acid-resistant

Röben fine stoneware is fired so hard that not even those acids found in workshops and laboratories leave any lasting stains behind.

Glossy polished

On request, the surfaces of the VIGRANIT® fine stoneware can be finished with a new polishing technique, giving a fine gloss that is extremely abrasion-resistant – unlike a glaze. At the same time, slip resistance R9 is guaranteed – which is not always a matter of course with glossy floor tiles.

Colourfast

Beautiful colours, genuine colours. Not painted on but produced exclusively during the firing process. This is the only way to ensure that they preserve their natural beauty for many, many years.

Resilient to heavy loads

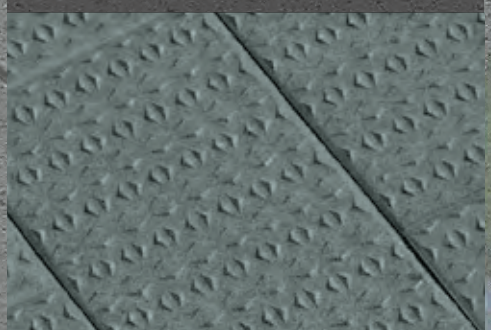
Every Röben floor tile is hard-fired at approximately 1,000 °C from naturally pure, dry pressed clay. Although this process is time-consuming, the advantages are well worth the effort, particularly such qualities as its extraordinary durability and load resilience.

OORING

According to a recent test, ceramic tiles are by far the most economical floor covering. They need no maintenance or refurbishment during their presumed service life of at least 40 years.

Surefooted grip

Things don't tend to slide on this surface. Röben fine stoneware has a surefooted grip and is slip-resistant (min. R9) – also for surfaces with a high-gloss, polished finish. Special anti-skid surfaces are available for workrooms with an increased risk of skidding.



Frost-proof

Röben fine stoneware is absolutely frost-proof, thus also making them ideal for creating beautiful outdoor areas.

CONTENTS

THE RIGHT FLOORING

Röben fine stoneware cannot become electrostatically charged.

FOR GOOD BUSINESS

The right flooring in both aesthetic and functional terms plays an important role in making the supermarket attractive for customers and ensuring they'll want to come again. The floor makes a major contribution to the atmosphere for a positive shopping experience.

Röben fine stoneware BASE smoky

THE FLOORING WITH THAT

Cosy seating in the corner of a super-market café. The floor: no it's not wood, instead: Röben fine stoneware PLANK whisky, 600 x 200 mm.

Small picture: neat, smooth transition to the self-service area. Röben fine stoneware BASE smoky, 600 x 300 mm.

Röben fine stoneware cannot become electrostatically charged.

FEEL-GOOD EFFECT

PLANK FINE STONEWARE

600 x 200 mm x 15 mm

PLAZA FINE STONEWARE

600 x 300 mm x 15 mm

straight,
slate finish

BASE FINE STONEWARE

600 x 300 mm x 15 mm

smoky

COURT FINE STONEWARE

300 x 300 mm x 15 mm

rustic

stone

Technical details from page 51

MALL FINE STONEWARE

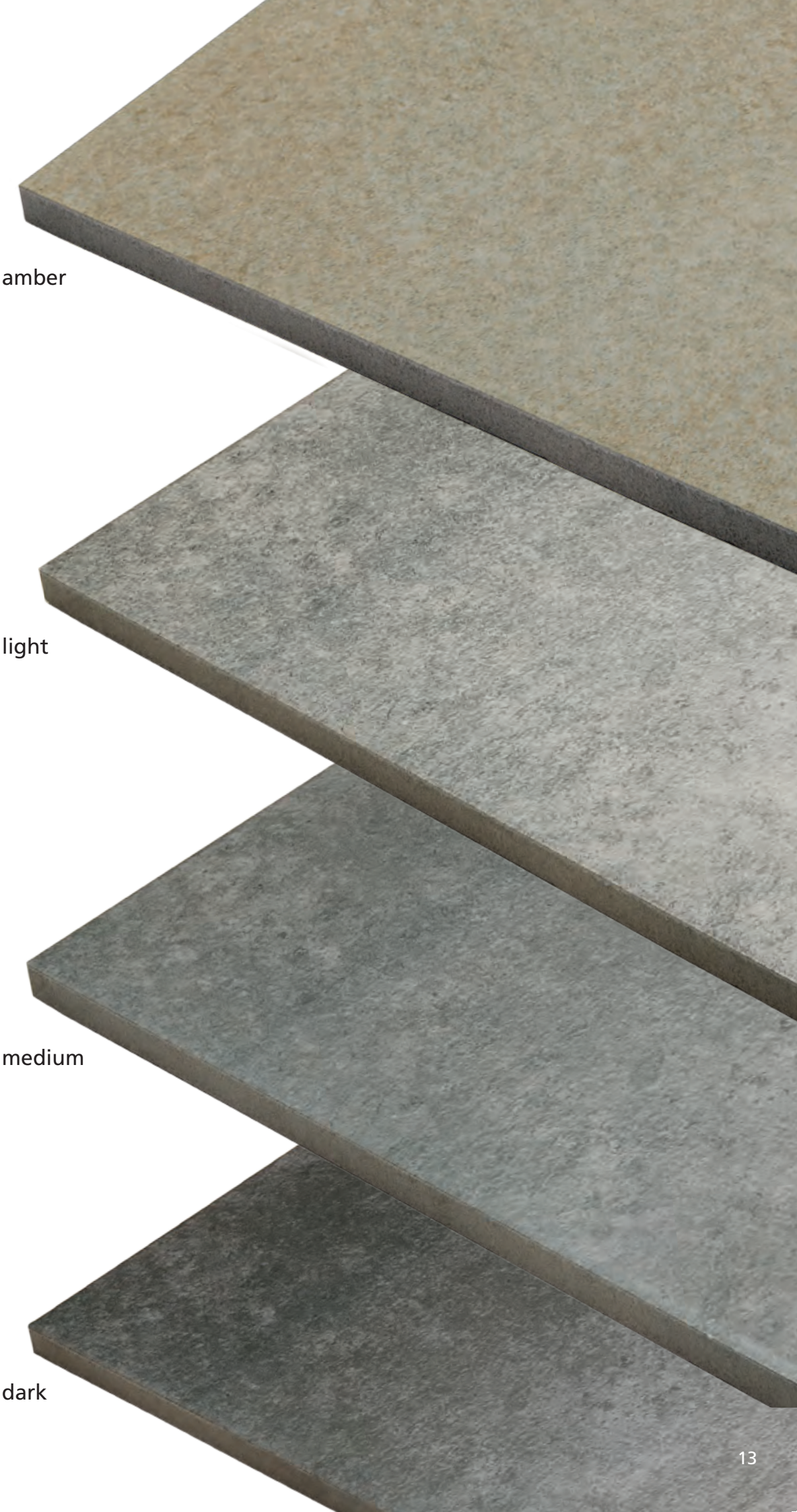
600 x 300 mm x 15 mm

moon,
slate finish

copper

hazel

Technical details from page 51

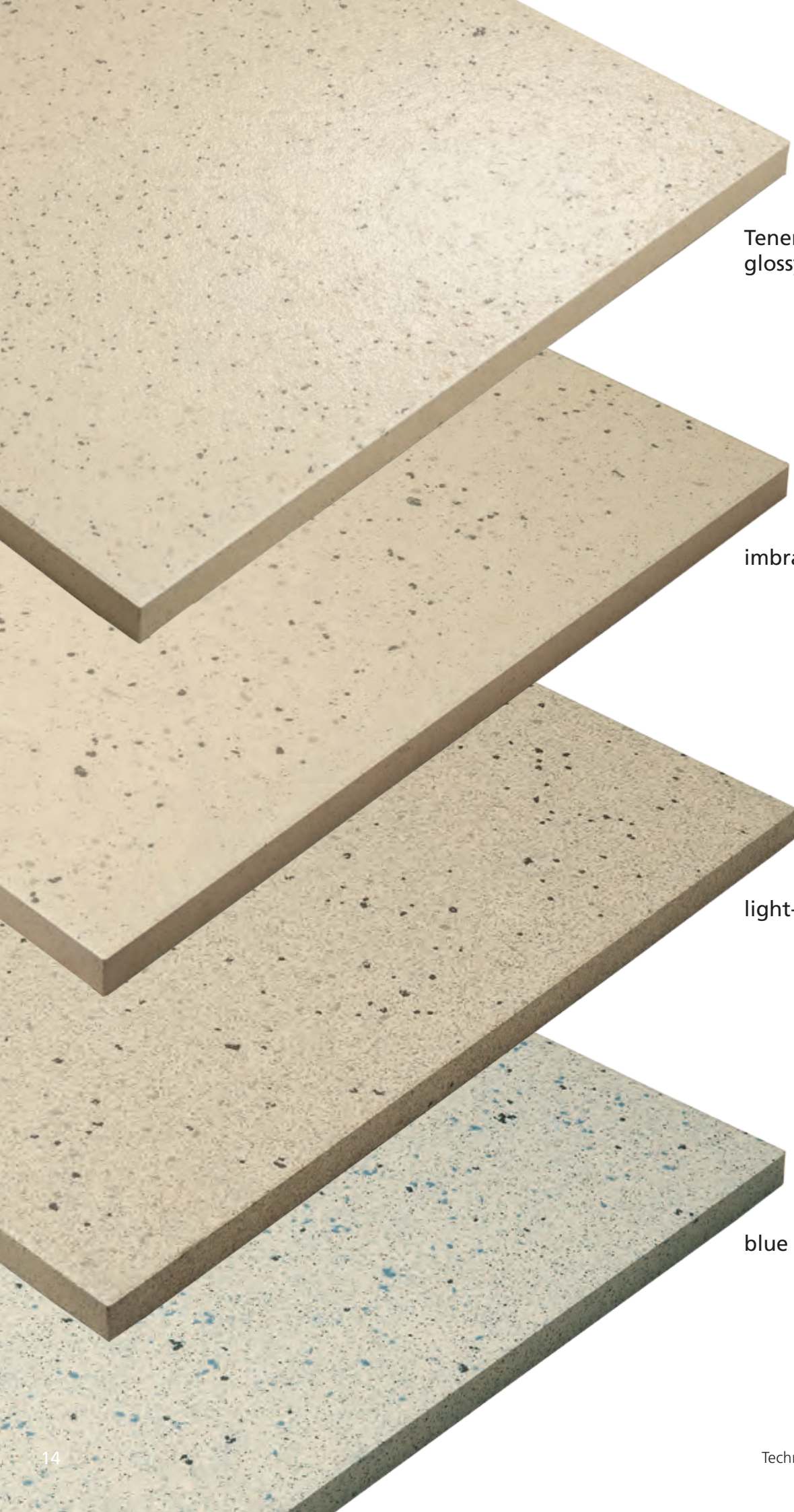


amber

light

medium

dark



Teneriffa,
glossy polished

imbra

light-grey

blue

Technical details from page 51

VIGRANIT® ROUGH GRAIN

200 x 200 mm, 300 x 300 mm, 400 x 400 mm,
400 x 200 mm, 600 x 200 mm, 600 x 300 mm / 15 mm

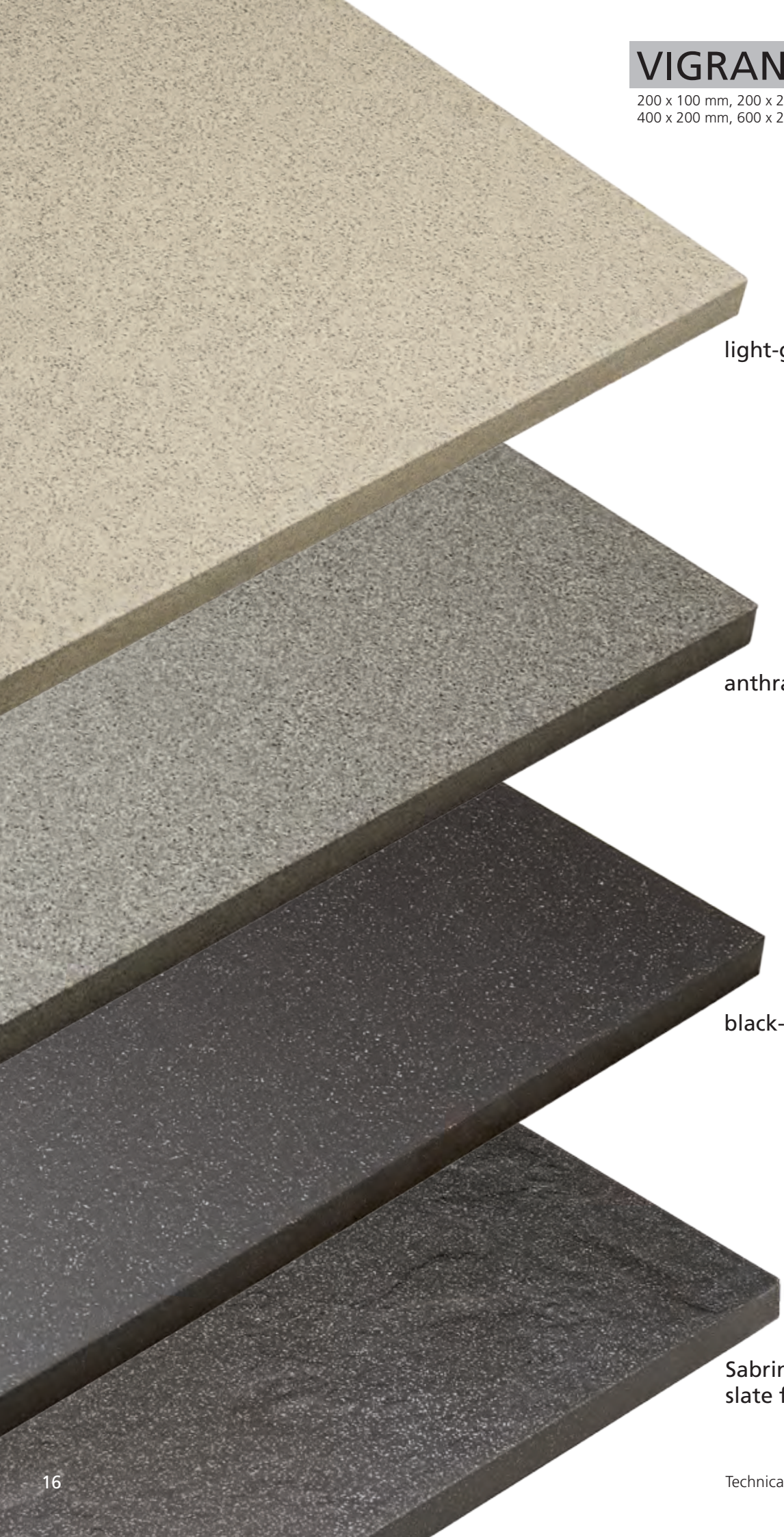
Sylt,
glossy polished

anthracite

Föhr

VIGRANIT® FINE GRAIN

200 x 100 mm, 200 x 200 mm, 300 x 300 mm, 400 x 400 mm,
400 x 200 mm, 600 x 200 mm, 600 x 300 mm / 15 mm



light-grey

anthracite

black-grey

Sabrina,
slate finish

Technical details from page 51

JUST FOR YOU: YOUR BESPOKE FLOORING

That is FLOOR-DESIGN by Röben.

Flooring in areas used by customers is increasingly the focus of attention today. While in the past it was just a floor, today it is perceived as a design factor, particularly in representative rooms. There is a demand for modern, individual colours and structures, integrated in an overall concept – colours and structures that were previously not available in combination with top quality fine stoneware.

You have the ideas – we have the know-how, the fine clay, the technology and the aspiration to develop your bespoke floor in cooperation with you using FLOOR-DESIGN by Röben.

Colour: MALL medium

INTERIOR DESIGN BEGINS

Designing sales areas to reflect the anticipated experience enhances the appeal of merchandise presentations, and optimises the interface to the customer.

Röben fine stoneware COURT rustic

Röben fine stoneware cannot become electrostatically charged.

Reminiscent of old market paving: Röben fine stoneware COURT rustic, 300 x 300 mm.

WITH THE FLOOR

AESTHETIC

Röben fine stoneware cannot become electrostatically charged.

AND FUNCTIONAL

Most customers take it for granted that supermarket floors will be aesthetic in appearance and hygienically clean. Whoever thinks about the point-loading the floor has to withstand when a fully loaded platform truck rolls over it? Or how much wear-and-tear the tiles are subject to with several thousands of customers every day? Röben ceramic floor tiling always shows itself to its best advantage. Fire-sealed surfaces make it extremely resilient (water absorption ≤ 0.1 % !). No unsightly footmarks are left behind, no matter how many feet walk across it. No dirt that can't be easily removed. And yet the tiles retain their surefooted grip. With a perfect joint pattern thanks to high-precision production and the Röben V-Spacers®.

An elegant, black ceramic floor with a slate-finish and a fine glossy surface.
Röben VIGRANIT® fine stoneware SABRINA 300 x 300 mm.

"FRESHLY MOPPED"

FINE GLOSS FINISH

Röben fine stoneware cannot become electrostatically charged.

Clean, glossy floors make a supermarket particularly attractive for customers, enhancing their sense of well-being while making them more willing to actually buy something. Here Röben has developed the VIGRANIT® fine stoneware with glossy polished finish. These surfaces are highly polished, not glazed. Here too there are no signs of abrasion or unsightly streaks, which easily happens with glazed material or polished concrete flooring. Slip resistance (R9) is also guaranteed – not always a foregone conclusion with glossy surfaces.

Flawless, fine gloss surface:
Röben VIGRANIT® fine stoneware, anthracite, fire-sealed,
glossy polished, rough grain 600 x 300 mm

.

RÖBEN FINE STONEWARE SAFE AND ANTISTATIC

Röben fine stoneware cannot become electrostatically charged.

The directives issued by the German Occupational Health and Safety Agency (BGR 132 Prevention of Ignition Risks as a Result of Electrostatic Charges) state quite clearly that acid-resistant ceramic floor tiles may not become charged with static electricity. Röben ceramic floor tiles comply fully with this requirement, as repeatedly confirmed by the PTB (National Metrology Institute of Germany) in Braunschweig. Flooring that does not become charged with static electricity prevents any flying sparks when coming into contact with conductive objects (such as metal shelving). This can also play a particularly significant role when dealing with credit cards.

Electrically conductive ceramic flooring must be seen as a structural system, with Röben fine stoneware as the answer. This kind of system also needs the right chemical building materials. The user's specifications and demands have to be taken into account when stipulating the specific flooring construction. Please therefore contact us when confronted with such requirements: we will be glad to give you detailed advice.

Röben fine stoneware VIGRANIT® Sylt, 300 x 300 mm, glossy polished

IDEAL FOR WORKSHOPS, VEHICLE HALLS AND CAR WASH STATIONS

Röben fine stoneware cannot become electrostatically charged.

A tram depot with an easily cleaned flooring that also creates a pleasant working environment: Röben VIGRANIT® fine stoneware, anthracite, fire-sealed, 200 x 100 mm, surface R12. Capable of withstanding very high loads, resistant to oil and acids.

Röben fine stoneware cannot become electrostatically charged.

A fire station with reliable, high-load flooring: Röben VIGRANIT® fine stoneware, anthracite, fire-sealed, 200 x 100 mm, surface R12.

Perfect for industrial bakeries: hard-wearing, surefooted grip and cleanness as well as outstanding appearance – simply ideal! Röben VIGRANIT® fine stoneware light-grey, fire-sealed, 200 x 100 mm.

Röben fine stoneware cannot become electrostatically charged.

HYGIENICALLY PERFECT AND HIGHLY RESILIENT

A ceramic vibrated floor cladding with high point load application and easy-to-clean hygienic surface, for example in a brewery: Röben VIGRANIT® fine stoneware, fire-sealed, 200 x 100 mm, R11, special colour.

There are a great many laws, ordinances and directives which precisely regulate the requirements made of the floor cladding in bakeries, dairies, industrial kitchens, canning firms for fruit, vegetables, fish and meat, in breweries, soft drink filling plants and similar facilities. For example, the Food Hygiene Directive demands among others extreme hardness for protection from splintering or flaking when driving platform trucks and fork lift trucks over the surface, which also has to be easy to clean. Röben floor ceramics are always the first choice for such applications. They are hard-fired and densely sintered so that practically no water can penetrate the ceramic material. The same also applies to acids, alkaline solutions and grease. No bacteria can gain a foothold and multiply here. Ideal prerequisites for a spotlessly clean, flawlessly hygienic floor. The special stability of Röben tiles, laid with the economic vibration method, permits high point load application so that heavy equipment can be installed and operated without any problems.

METHODS OF LAYING FLOOR TILING

"TILE ON TILE"
For renovation and refurbishment

Remember the effort it used to take to replace a ceramic floor cladding? Each individual tile had to be chiselled off and disposed of and the surface then had to be levelled and cleaned. And that always meant a lot of time, effort and expense.

Nowadays, it is much simpler and above all faster. Röben fine stoneware can be laid directly on the old tiles. This is relatively quick and the new surface can be used again in no time.

The important thing for the „tile on tile process" is to ensure the stability of the old surface. Large, continuous cracks must be cut open and filled with resin. Thorough cleaning of the old tile layer must be carried out with special care. As laying adhesive, we recommend the two-component high-performance instant adhesive Sopro MegaFlex S2 turbo (manufacturer: Sopro Bauchemie GmbH, Wiesbaden) to lay Röben fine stoneware safely without needing an additional bonding course.

CONVENTIONAL
For small and medium-sized surfaces

Clean the concrete base well before laying, apply laying mortar, smooth over and dust with powdered cement just before applying the tiles, or apply a modified slurry and moisten. When sealing the joints with grout, take special care to leave behind as little cement residues as possible on the tiles.

We recommend the following steps for sealing the joints:

1. After laying the tiles, wait until it is possible to walk on the surface.
2. Use a commercially available grout to seal the joints. Comply with the manufacturer's instructions. Tools: grouting board or rubber squeegee.
3. As soon as the mortar has started to set and can be washed, the tiles should be pre-washed to remove any coarse dirt.
4. Then sponge over the tiles to remove all grout residues. Taking care not to damage the fresh joints. Grey smears left on the tiles are always the result of errors made when laying the tiles or during final cleaning. Röben fine stoneware contains no efflorescent substances.

THE VIBRATION METHOD
Large surfaces in next-to-no time

The vibration method of laying tiles is based on densely packed mechanical vibration of the Röben fine stoneware in a mortar bed, resulting in a compact unit of cladding and bedding. The flooring stands out with an absolutely smooth surface, together with maximum stability and maximum durability. The special laying system – laying with narrow joints and mechanical tapping in a single operation – is capable of treating large surfaces in a relatively short period of time.

The advantages

High laying capacity reduces the working costs. A short laying time means rapid commissioning of the surface, short downtimes for conversion projects, short financing phases for new-builds. It takes just one single operation to produce a compact floor cladding with extremely high stability and a small number of joints. In terms of utilisation, this means: High durability with long service life, low wear and easy mechanical cleaning of the surface.

Apart from the time factor, laying by the vibration process has also another advantage: the extra quality. Röben fine stoneware is dimensionally precise and ideal for „dry" installation with narrow joints. Use of the Röben V-Spacer® (details see page 34) results in a uniform joint pattern – without overhanging tiles or so-called "indentation gaps" in the area of the tile corners and edges. As a result, no damage is caused by loads rolling over the tiled floor surface.

The process

The excellent properties of Röben fine stoneware mean that there are no restrictions of any kind on the laying process, which can be chosen freely according to local circumstances. The rational vibration process has proven ideal for producing large ceramic floor coverings. It is no longer necessary to align every single row of tiles, so that this is an extraordinarily fast method. A professional 3 – 4 man team can lay up to 150 m² per day. The requirements specified for the laying base largely correspond to those for conventional tile laying. The bedding mortar is pre-compacted and smoothed over to produce a smooth surface that

is horizontal or has a defined slope. The thickness of the bedding course should be no less than 40 mm laid in bond, 65 mm for floor cladding with a separation layer and 85 mm when laid on an insulation layer. A cement-enriched contact course is applied to the surface; this course has to be moistened before the Röben ceramic tiles are laid on it „dry“ (with narrow joints). The actual vibration process then begins. This is carried out with roller vibrators working with a vibration frequency of up to 10,000 oscillations per minute while repeatedly moving crosswise over the freshly laid floor surface, ensuring that the tiles are evenly tapped in position. The mortar bed is compacted at the same time. The high vibration frequency of the vibrator causes the contact slurry to rise in the „dry“ joint.

Once the fine stoneware tiles have been completely and firmly vibrated in, they are immediately grouted and cleaned. Load should not be applied to the finished floor until the bedding mortar and grout have been given sufficient time to set. Generally, the floor can be walked on after 7 days and can take full loads after 28 days.

Quality guarantee: the Quality Mark

Röben fine stoneware and the rational laying techniques used by specialist firms ensure that vibrated tile claddings produce robust, aesthetic flooring with the quality mark „Working Group Quality Assurance Vibrated Floor Claddings (AK-QR)“. This quality mark is only conferred after annual quality audits of the various building projects by tile laying firms and manufacturers.

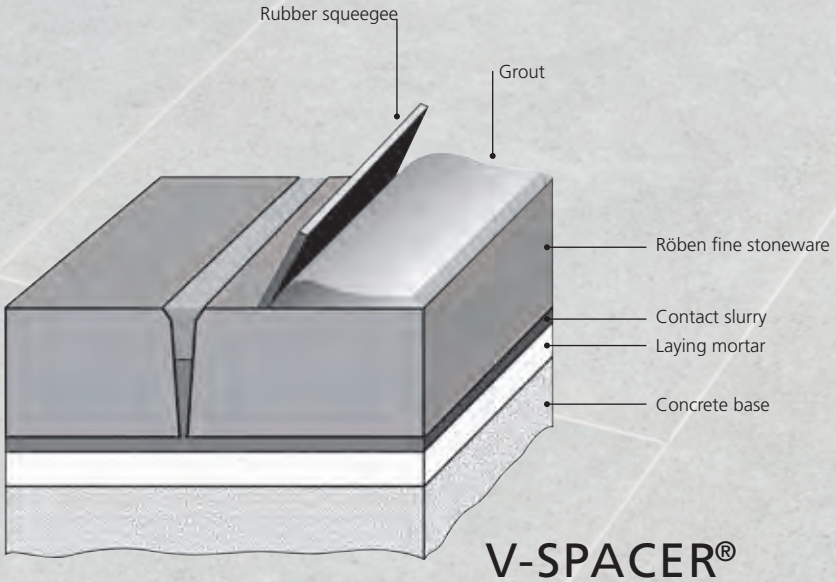
Röben is a member of the Working Group Quality Assurance Vibrated Floor Claddings (AK-QR) and is involved in further development of quality assurance for vibrated floor claddings.

V-SPACER®
– better by far

Fine stoneware tiles laid with the Röben V-Spacer® are only in contact at the lower edges which are no longer visible (see diagram). The spacer keeps the upper edges apart with just enough spacing to rule out any damage from the vibration machine. The visible joint is not enlarged at all, thus fully maintaining the desired „dry joint „effect.

The contact slurry rising from below during the vibration process is supplemented by the uniform filling of the V-shaped joint (funnel effect) from top to bottom. The grout penetrates in the smallest gaps and bonds firmly with the sides of the fine stoneware. The optimum bonding to the sides ensures that even when the freshly laid floor is cleaned, the "full flush" joints are not washed out or damaged.

Customers in the supermarket for example sense the small number of joints in the Röben fine stoneware as their shopping trolleys move over the floor. The rolling noise of the trolley is reduced to a minimum, with a favourable effect on the overall noise level in the supermarket. Heavily loaded fork lift trucks move easily over the smooth, narrowly jointed floor surface.



V-SPACER®

Perfectly straight, neat joints with absolutely uniform spacing: that's what a well laid ceramic floor should look like; and when it is also highly resilient and durable, then it must be Röben fine stoneware.

Röben fine stoneware BASE smoky.

TECHNICAL DETAILS OF THE VIBRATION METHOD

The floor structure

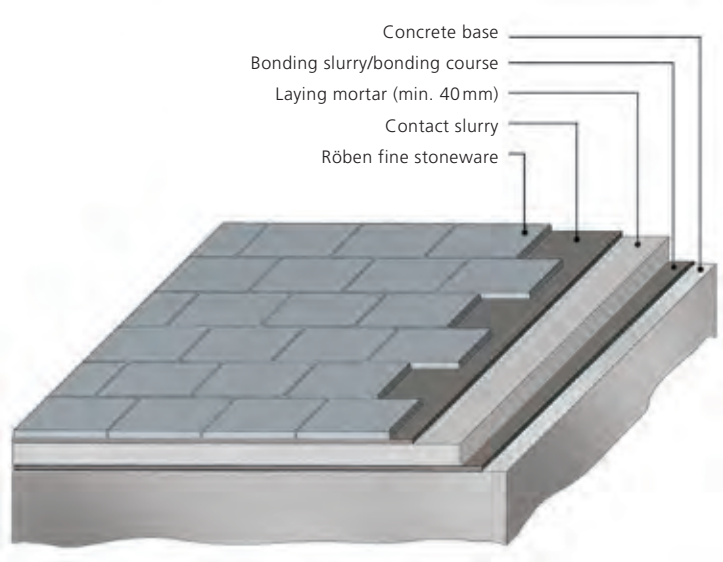
The sub-base must be sturdy and resilient with smoothness as per DIN 18202. The screed consists of a relatively dry bedding mortar which is precompacted and smoothed out generously in the horizontal plane. The strength should correspond at least to a C16 cement screed according to EN 13813 when laid in bond. This generally requires a cement admixture of 240 kg per 1 m³ sand. Larger cement admixtures are necessary for bedding mortars with higher strength classes.

A cementitious contact layer is applied to the mortar course, consisting of powder or mortar slurry. The powder coating should be moistened with water afterwards. The Röben fine stoneware is laid in the fresh bed and „tapped" with the vibration machine. With this method, the bedding mortar is compacted to a far higher degree than possible in the conventional adhering process.

Example for a floor structure in bond.

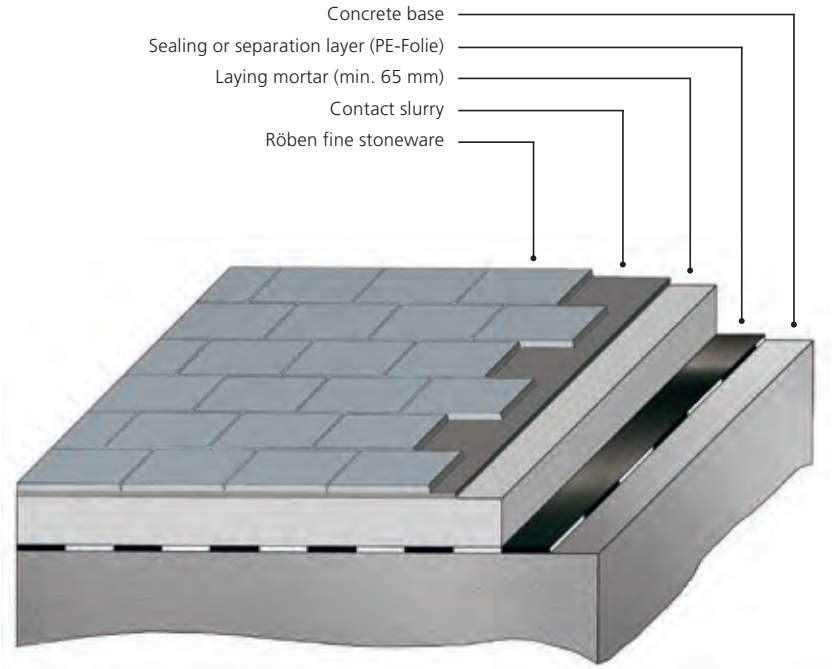
Vibration cladding in bond

The sub-base must be firm enough when laying the fine stoneware in bond. Before applying the bedding mortar, any accumulations of binder must be removed in a dust-free process. The sub-base is then pre-wetted and a bonding course is applied. Any creepage and shrinkage deformation in the load-bearing sub-base must have been concluded before this process. The bedding course should be at least 40 mm thick.



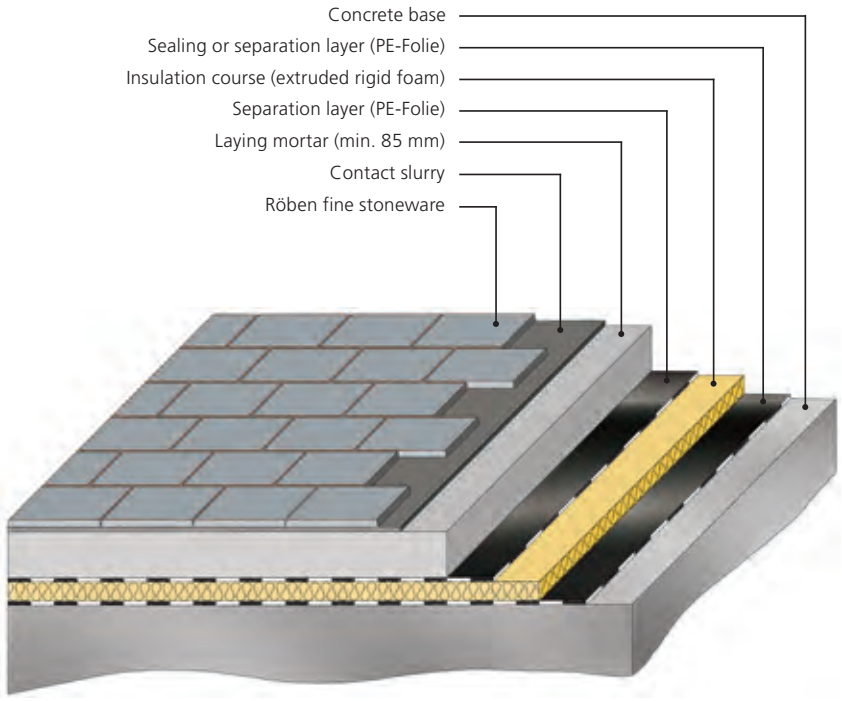
Vibration cladding with separation layer

A floor construction with a separating layer is required when movement must be expected in the concrete sub-base. For example, in floor structures that may sag as a result of loads, or freshly laid concrete slabs where creepage and shrinkage is still possible. The bedding course should be at least 65 mm thick and correspond to pressure and bending strength class C16/F3. The separation layer consists of a PE film which acts as anti-friction layer to adsorb shear stresses between the cladding sub-base and the support structure.



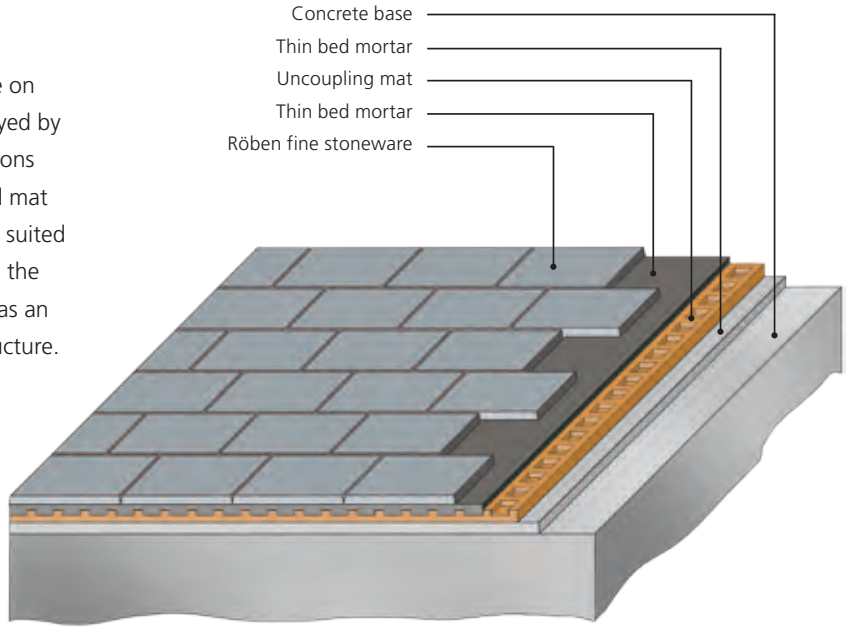
Vibration cladding with insulation course

The floor structure can include special courses for heat insulation and footfall sound insulation. When laying tiles on an insulation course, and also on separation layers, a reinforcement of structural steel mesh or non-static reinforcing steel matting should be inserted in the bedding course. The reinforcement matting should be laid with adequate overlapping at the butt joints, and must be interrupted at movement joints. In accordance with EN 14813, the strength of the bedding mortar on the insulation course should correspond to pressure and bending strength class C25/F4.



Vibration cladding with thin layered structure

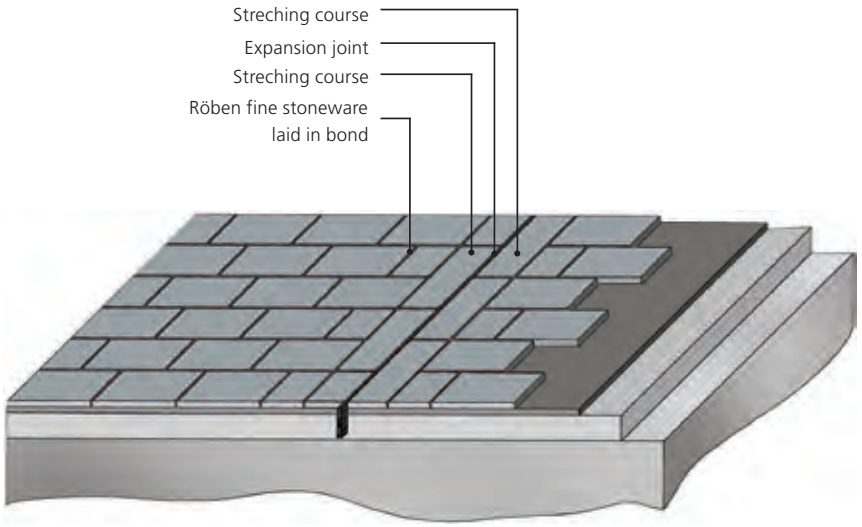
Röben fine stoneware can also be laid in a thin layered structure on fresh concrete sub-bases. The key role in this construction is played by a so-called uncoupling mat, which prevents the transfer of tensions and deformation from the sub-base to the top layer. This special mat is caulked across the whole surface using a thin bedding mortar suited to the sub-base. The Röben ceramic tiles are then laid directly in the thin bed and compacted with the vibration process. This floor has an extremely high load bearing capacity despite its thin layered structure.



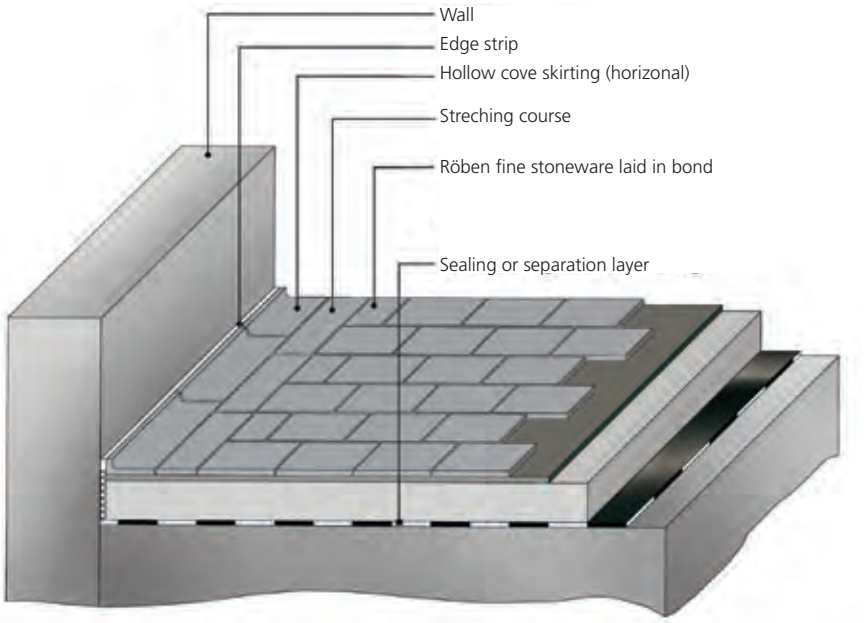
The uncoupling mat is laid in the thin bed mortar and firmly caulked in position. Then a thin layer of adhesive mortar is applied to take the Röben fine stoneware. Once the surface is finished, it's time for the roller vibrator. Finally the grout is applied generously and then neatly smoothed over.

Movement joints (expansion joints)

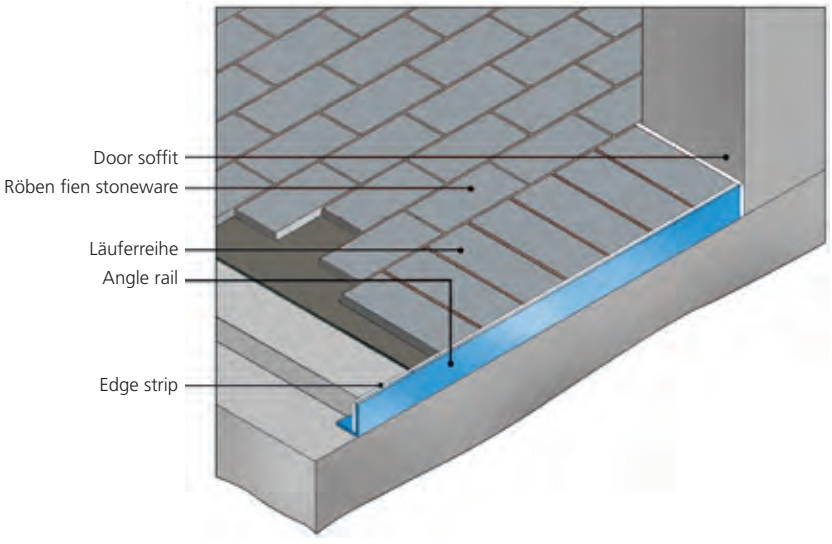
Movement joints must be provided at wall connections, pillars and supports as well as fixed components, at door openings and marked offsets in the floor plan. In areas with high public use, expansion joints must be protected at the sides of the joints with metal and plastic profiles installed flush with the surface. They absorb the tensions from expansion or contraction, without cracking like rigid joint mortar.



Integration of hollow cove skirting tiles



Connecting with a door opening



MARKING STRIPS

VIGRANIT® Signal

Up to now, it was only possible to produce yellow-and-black marking strips on the floor by using foil strips or paint, which had to be replaced from time to time depending on load and wear, in the interests of safety.

The better solution: Röben offers specially shaped marking strips for ceramic floors in garages and workshops. They are made of solid-coloured diagonal floor tiles 200 x 200 mm that are integrated seamlessly in the ceramic floor cladding. A proper, neat solution that completely fulfils its task as safety marking (details see page 50).

VIGRANIT® Signal width 28,5 cm

VIGRANIT® Signal width 14,0 cm

SUREFOOTED GRIP ON FLOORS WITH SKIDDING HAZARD

Tripping, skidding and falling accidents are the main source of injury, especially in workrooms and barefoot areas. Regardless of legal regulations and provisions, reason already demands responsible selection and professional laying of flooring to counteract these hazards.

Here is an excerpt from the Trade Association Regulations for Health and Safety at Work (BGR 181), dated October 2003:

BGR 181
Floors in workrooms and work areas with skidding hazards

1 Scope of application

1.1 This BG regulation applies to
- the selection of suitable floor claddings,
- the design of floors and
- the execution of organisational measures.

It is restricted to such working rooms, work areas and operational access paths whose floors come into contact with slide-conducive materials representing a slipping hazard due to the type of use or operation. The BG regulation requirements for floor coverings apply to the surfaces of stairs. Please refer to the GUV information for "Floor coverings for wet-room barefoot areas" (GUV- I 852) for wet-room floors that are accessed on bare feet.

1.2 This BG regulation does not apply to floors in working rooms, work areas and operational access paths that are used in dry condition and that do not carry the risk of slipping due to slide-conducive materials.

2 Antislip floors and skidding hazard assessment

2.1 Antislip floors

The general requirement of the workplace regulation for antislip execution of floors must be specified for the application to individual cases according to actual practice. Specific working rooms and work areas where slipping accidents frequently occur on the flooring are indicated in the operational and accident reports of the accident insurance companies. The working areas are listed in an overview. The use of slide-conducive materials in specific working rooms and work areas results in an increased skidding hazard. Such materials are, for instance, grease, oil, water, food, leftover food, dust, flour, plant remains. They end up on the floor either production- or job- related and increase the skidding hazard. Certain working rooms or work areas require cavities below the walking level due to the build-up of especially slide-conducive materials on the floor claddings. They are labelled with the letter "V" in conjunction with the index for the minimum volume of the cavity; see DIN 51130 "Testing of floor coverings - Determination of the anti-slip property - Workrooms and fields of activities with slip danger - Walking method - Ramp test".

2.2 Assessment of the skidding hazard

The skidding hazard assessment groups in the individual working rooms and work areas comply with the assessment groups for the skid resistance of the floor cladding in table 1 of this BG regulation.

The pertaining assessment group for the skidding hazard in the individual working rooms and work areas constitutes an indicative value, with deviations permitted in individual cases in accordance with existing or expected operational circumstances.

The skidding hazard assessment is based on the following criteria:

1. Frequency of occurrence of slide-conducive materials on the floor and their spread
2. Type and quality of the slide-conducive materials
3. The average level e.g. quantity of the material, contamination of the floor with these materials
4. Other structural, procedural and organisational conditions.

Cavity designation	Minimum cavity volume (cm^3/dm^2)
V 4	4
V 6	6
V 8	8
V 10	10

Table 1
Allocation of the cavity designation to the minimum volumes for grids, the cavity is always V10.

Slipping at the workplace may have serious consequences. Röben has developed antislip surfaces and safety profiles for its clinker pavers so you don't break your neck or limbs.

Antislip surface R11

Antislip surface R12

Antislip surface R12/V06

Walking safely on a floor requires specific friction values between a person's shoes and the flooring. Slide-conducive materials have a negative influence on these friction conditions, reducing the antislip forces transferred from shoe to floor. The amount by which the transferable forces decrease depends especially on the consistency and quantity of the pertaining slide-conducive material landing on the floor. Water and moisture can already considerably decrease the friction values on floor claddings with an even, smooth surface as opposed to the same floors in dry condition.

In working rooms and work areas with direct access from the outside, rain or snow for example and the associated coarse grit influence the soles of the shoes accordingly. In working rooms and work areas with direct access from the outside, the skidding hazard depends among others on the type and size of the existing floor mats used to take up dirt and moisture.

ANTISLIP SURFACES

Pasty or stringy slide-conducive materials on the floor, e.g. grease or meat, may result in insufficient ground contact of the shoes when walking, as the slide-conducive material may cohesively cover the floor at this point. The combination of different slide-conducive materials, e.g. grease and water, may increase the skidding hazard. Other important aspects for the skidding hazard assessment include the size of the working room or work area, type and number of devices, equipment and machines, arrangement of the workplaces, layout of the access paths, number of employees in the working room or work area, quantity of slide-conducive material landing on the floor, type of handling or processing as well as transport of slide-conducive materials.

3 Antislip floor claddings

3.1 Type of floor claddings

Antislip floor claddings must be used for working rooms and work areas with skidding hazards. Depending on specific requirements, these may be fine, coarse or profiled floor claddings, e.g. ceramic tiles and slabs, natural stone or concrete slabs, timber floor claddings, screeds made of mineral components with concrete binder and artificial resin additives, artificial resin coatings, artificial resin screeds, plastic grids, panes of glass, metal grids and sheets, elastic floor claddings and secured mats.

3.2 Examination and assessment of skid resistance

The procedure for skid resistance inspection is stipulated in DIN 51130 "Testing of floor coverings - Determination of the anti-slip property - Workrooms and fields of activities with slip danger - Walking method - Ramp test". Attention is drawn to the fact that the intermediate medium oil used in the inspection procedure as per DIN 51130 is not intended to transfer an especially adverse operational status to the test. The use of a certain, defined oil serves as a uniform testing parameter which has been proven to be capable of allowing greater differentiation between the test results. The procedure is based on test persons walking down a ramp of the floor cladding to be tested. This makes it easier to decide whether the pertaining floor cladding is suitable for laying in specific working rooms and work areas. The average inclination determined from the series of measured values is decisive for the classification of the floor cladding in one of five assessment groups. The assessment group acts as a benchmark for the degree of skid resistance. Floor claddings in assessment group R9 meet the lowest requirements and those in assessment group R 13 meet the highest requirements for skid resistance. Table 2 shows the allocation of assessment groups to angle range.

Overall average values	Assessment group
from 6° bis 10°	R 9
more than 10° bis 19°	R 10
more than 19° bis 27°	R 11
more than 27° bis 35°	R 12
more than 35°	R 13

Table 2
Allocating the overall average inclination values to skid resistance assessment groups

The skid resistance assessment of floor claddings with directional surface profiling, e.g. grooved tiles or grids with serrated surfaces, is based on the smallest average values that are determined depending on direction.

3.3 Cavity inspection

The cavity of a floor cladding is the hollow space below the walking level, which is open to the walking level. The cavity volume is determined using the procedure specified in DIN 51130 "Testing of floor coverings - Determination of the anti-slip property - Workrooms and fields of activities with slip danger - Walking method - Ramp test". In the context of this procedure, determining the cavity is only practical for a maximum profile clearance of 40 mm. The procedure makes it easier to decide whether the pertaining floor cladding is suitable for laying in specific working rooms and work areas.

A floor cladding may only be labelled "V" for cavity if the cavity volume is larger than 4 cm^3/dm^2. As a rule, floor claddings in working rooms and work areas with a skidding hazard also require larger cavities on account of the large quantities of slide-conducive materials. The minimum cavity volumes are stated in Table 1.

3.4 Selection of suitable floor claddings

The question of selecting suitable floor claddings often comes up while planning new working rooms or converting, modifying or renovating existing ones. When making the selection, it is important to be aware of all the requirements to be met by the future floor cladding. This includes not only checking whether the intended floor cladding has sufficient skid resistance for the specific use, but also ensuring that the mechanical stability of the floor cladding, the resistance to chemical and physical effects as well as its adhesion to the surface will be able to withstand the expected loads.

In certain working areas, the floor cladding must be able to withstand the wheel pressure of industrial trucks or permit vibration-free use with transportation vehicles such serving trolleys for food. Damaged floors will reduce the skid resistance, increase the stumbling hazard, hinder transportation and also be detrimental to hygiene. The type of cleaning procedure intended in future must also be considered when selecting a floor cladding. Experience shows that falls occur at transition points between different working rooms or work areas with floor claddings of very different skid resistance, because the walking behaviour is influenced by the different friction conditions between shoes and floors during the transition from one type of floor cladding to another. If floor claddings with differing skid resistance are used in neighbouring working rooms or work areas, it is important to ensure that the floor claddings are assigned to two adjacent assessment groups, e.g. assessment groups R 10 and R 11 or R 11 and R 12. This also applies to floors and stairs adjoining wet-room areas such as sanitary rooms.

Adjacent working rooms with differing skidding hazards, which are alternately used by employees, should all have the same floor cladding in the higher assessment group in each case. This must be observed particularly in skilled manual labour companies where staff frequently change between workplaces that are often very different in nature, e.g. sales and production.

Floor claddings with cavities offer the advantage of collecting slide-conducive materials in the hollow space below the walking area. They will preserve the antislip property of the floor where slide-conducive materials have accumulated for a longer period of time than is the case for floor claddings without cavity. But greater cleaning effort may be needed for floor claddings with cavity. The surfaces available for antislip floor claddings range from fine to coarse or profiled to very coarse and strongly profiled. The selection will often compromise between the different requirements that must be met by the floor cladding. What matters is that sufficient consideration is given to the safety related requirements. The BG Institute for Occupational Safety and Health (BGIA) regularly publishes the safety information and specification 560210 "Positive List of Tested Floor Claddings" as part of the BGIA manual. The positive list includes tested floor claddings which are assigned to skid resistance assessment groups also in terms of the cavity where applicable.

3.5 Subsequent improvement of floor cladding skid resistance

Floor claddings in working rooms and work areas with skidding hazards which do not meet the requirement for skid resistance can be subsequently improved with regard to skid resistance. Suitable procedures include surface treatment, such as surface finish, mechanical or chemical after-treatment.

ASSESSMENT GROUPS FOR WORK ROOMS AND AREAS WITH SKIDDING HAZARDS

The allocation of work rooms and areas to assessment groups made in the following table does not claim to be complete. Work rooms and areas that are not listed are to be allocated in similar fashion to an assessment group in accordance with the expected skidding hazards (e.g. depending on frequency, quantity and type of the occurring slippery substances).

0	**General work rooms and areas*)**		
0.1	Entrance areas, inside**)	R9	
0.2	Entrance areas, outside	R11 or R10	V4
0.3	Stairs, inside***)	R9	
0.4	Outside stairs	R11 or R10	V4
0.5	Sanitary facilities (e.g. toilets, changing rooms and washrooms)	R10	
	Break rooms (e.g. common rooms, company canteens)	R9	
	First-aid rooms	R9	
1	**Production of margarine, cooking fat, cooking oil**		
1.1	Fat rendering plant	R13	V6
1.2	Cooking oil refinery	R13	V4
1.3	Production and packaging of margarine	R12	
1.4	Production and packaging of cooking fat, edible oil filling facility	R12	
2	**Milk processing, cheese production**		
2.1	Processing of fresh milk including creamery	R12	
2.2	Production, storage and packaging of cheese	R11	
2.3	Production of ice cream	R12	
3	**Production of chocolate and confectionery**		
3.1	Sugar processing	R12	
3.2	Cocoa production	R12	
3.3	Raw mixture production	R11	
3.4	Moulding and shell production, making chocolates	R11	
4.	**Producing baked products (bakeries, cake shops, making long-life baked products)**		
4.1	Dough processing	R11	
4.2	Rooms for processing mainly fats or liquid masses	R12	
4.3	Sculleries	R12	V4
5	**Slaughtering, meat processing**		
5.1	Slaughterhouse	R13	V10
5.2	Tripe room, gut room abattoir	R13	V10
5.3	Meat dismembering	R13	V8
5.4	Sausage kitchen	R13	V8
5.5	Cooked sausage department	R13	V8
5.6	Raw sausage department	R13	V6
5.7	Sausage drying room	R12	
5.8	Gut store	R12	
5.9	Curing house, smokehouse	R12	
5.10	Poultry processing	R12	V6
5.11	Cold cuts and packaging department	R12	
5.12	Craft butchers with salesroom	R12	V8***)
6	**Processing of fish, producing delicatessen**		
6.1	Processing of fish	R13	V10
6.2	Producing delicatessen	R13	V6
6.3	Producing mayonnaise	R13	V4
7	**Processing vegetables**		
7.1	Making sauerkraut	R13	V6
7.2	Making vegetable preserves	R13	V6
7.3	Sterilising rooms	R11	
7.4	Rooms where vegetables are prepared for processing	R12	V4
8	**Wet zones for food and beverage production (if not mentioned separately)**		
8.1	Storage cellar, fermenting cellar	R10	
8.2	Bottling and filling beverages, making fruit juice	R11	
9	**Kitchens, dining rooms**		
9.1	Catering kitchens (restaurant kitchens, hotel kitchens)		
9.1.1	up to 100 place settings per day	R11	V4
9.1.2	more than 100 place settings per day	R12	V4
9.2	Kitchens for communal catering in homes, schools, child day care centres, sanatoriums	R11	
9.3	Kitchens for communal catering in hospitals, clinics	R12	
9.4	Large-scale kitchens for communal catering in refectories, canteens, contract catering	R12	
9.5	Preparation kitchens (fast-food kitchens, snack bars)	R12	V4
9.6	Defrosting and heating-up kitchens	R10	
9.7	Small kitchens for making tea and coffee, kitchenettes in bed-and-breakfast establishments, ward kitchens	R10	
9.8	Sculleries		
9.8.1	Sculleries for 9.1, 9.4, 9.5	R12	V4
9.8.2	Sculleries for 9.2	R11	
9.8.3	Sculleries for 9.3	R12	
9.9	Dining rooms, restaurants, canteens including service and serving aisles	R9	
10	**Chilling rooms, refrigerating rooms, cold storage, deep-freeze facility**		
10.1	for unpacked goods	R12	
10.2	for packed goods	R11	
11	**Sales outlets, salesrooms**		
11.1	Goods receipt, meat	R11	
11.1.1	for unpacked goods	R11	
11.1.2	for packed goods	R10	
11.2	Goods receipt, fish	R11	
11.3	Service aisle for meat and sausage		
11.3.1	for unpacked goods	R11	
11.3.2	for packed goods	R10	
11.4	Service aisle for bread and baked products, unpacked goods	R10	
11.5	Service aisle for dairy products and delicatessen, unpacked goods	R10	
11.6	Service aisle for fish		
11.6.1	for unpacked goods	R12	
11.6.2	for packed goods	R11	
11.7	Service aisles, apart from No. 11.3 to 11.6	R9	
11.8	Meat preparation room		
11.8.1	Meat processing, apart from No. 5	R12	V8
11.8.2	Meat processing, apart from No. 5	R11	
11.9	Floristry rooms and areas	R11	
11.10	Sales areas with stationary ovens		
11.10.1	for making baked products	R11	
11.10.2	for defrosting prefabricated baked products	R10	
11.11	Sales areas with stationary deep-fat fryers or stationary grill facility	R12	V4
11.12	Sales areas, customer areas	R9	
11.13	Preparation areas for food products for self-service sales	R10	
11.14	Check-out areas, packing areas	R9	
11.15	Outside sales areas	R11 or R10	V4
12	**Rooms for the health service/healthcare**		
12.1	Disinfection rooms (wet)	R11	
12.2	Pre-cleaning areas for sterilisation	R10	
12.3	Faecal matter rooms, sink rooms, unclean nursing rooms	R10	
12.3	Dissection rooms	R10	
12.5	Rooms for medical baths, hydrotherapy, fango preparation	R11	
12.6	Washrooms for operations, plaster cast rooms	R10	
12.7	Sanitary rooms, ward baths	R10	

12.8	Rooms for medical diagnosis and therapy massage rooms	R9	
12.9	Operating rooms	R9	
12.10	Wards with patient rooms and corridors	R9	
12.11	Medical practice rooms, day clinics	R9	
12.12	Pharmacies	R9	
12.13	Laboratory rooms	R9	
12.14	Hairdressing salons	R9	
13	**Laundry**		
13.1	Rooms with continuous flow washing machines (tunnel washers) or washer extractors	R9	
13.2	Rooms with washing machines at which the laundry is removed dripping wet	R11	
13.3	Ironing and mangle room	R9	
14	**Concentrated fodder production**		
14.1	Dried fodder production	R11	
14.2	Concentrated fodder production using fat and water	R11	V4
15	**Leather production, textiles**		
15.1	Water workshop in tanneries	R13	
15.2	Rooms with fleshing machines	R13	V10
15.3	Areas with accumulation of glue stock	R13	V10
15.4	Grease rooms for making leather impermeable	R12	
15.5	Dyeworks for textiles	R11	
16	**Paint shops**		
16.1	Wet grinding areas	R12	V10
17	**Ceramics industry**		
17.1	Wet grinding mills (processing of ceramic raw materials)	R11	
17.2	Mixers; Handling of materials such as tar, pitch, graphite, synthetic resin	R11	V6
17.3	Presses (shaping) Handling of materials such as tar, pitch, graphite, synthetic resin	R11	V6
17.4	Moulding areas	R12	
17.5	Glazing areas	R12	
18	**Glass and stone processing**		
18.1	Stone cutting, stone grinding	R11	
18.2	Glass shaping of hollow glass ware, container ware, construction glass	R11	V4
18.3	Grinding areas for hollow glass ware, flat glass	R11	
18.4	Production of insulating glass Handling of drying agents	R11	V6
18.5	Packaging, shipping of flat glass Handling of anti-adhesive agents	R11	V6
18.6	Etching and acid polishing facilities for glass	R11	
19	**Concrete factories**		
19.1	Concrete washing areas	R11	
20	**Storage areas**		
20.1	Storage areas for oils and fats	R12	V6
20.2	Storage areas for packed food	R10	
20.3	Outdoor storage areas	R11 or R10	V4
21	**Chemical and thermal treatment of iron and metal**		
21.1	Pickling plants	R12	
21.2	Hardening shops	R12	
21.3	Laboratory rooms	R11	
22	**Metal processing, metal workshops**		
22.1	Galvanising shops	R12	
22.2	Grey cast iron processing	R11	V4
22.3	Mechanical processing areas (turnery, milling shop, etc.), punching room, press room, drawing shop (pipes, wires) and areas with increased exposure to oil and lubricants	R11	
22.4	Parts cleaning areas, exhaust steam areas	R12	
23	**Vehicle repair workshops**		
23.1	Repair and servicing bays	R11	
23.2	Working and inspection pits	R12	V4
23.3	Car wash facilities	R12	V4
24	**Aircraft repair hangars**		
24.1	Aircraft hangars	R11	
24.2	Repair hangars	R12	
24.3	Washing facilities	R12	V4
25	**Sewage treatment plants**		
25.1	Pump rooms	R12	
25.2	Rooms for sludge draining systems	R12	
25.3	Rooms for screening equipment	R12	
25.4	Stands for workplaces, scaffolds and maintenance platforms	R12	
26	**Fire stations**		
26.1	Vehicle parking places	R12	
26.2	Hose cleaning rooms	R12	
27	**Banks**		
27.1	Counter areas	R9	
28	**Parking areas**		
28.1	Garages, multi-storey and underground car parks not exposed to the weather*****)	R10	
28.2	Garages, multi-storey and underground car parks exposed to the weather	R11 or R10	V4
28.3	Open-air car parks	R11 or R10	V4
29	**Schools and child day care centres**		
29.1	Entrance areas, corridors, assembly halls	R9	
29.2	Class rooms, group rooms	R9	
29.3	Stairs	R9	
29.4	Toilets, washrooms	R10	
29.5	Instructional kitchens in schools (see also no. 9)	R10	
29.6	Kitchens in child day care centres (also see no. 9)	R10	
29.7	Woodworking rooms	R10	
29.8	Handicraft rooms	R10	
29.9	School playgrounds	R11 or R10	V4
30	**Company infrastructure facilities, outside**		
30.1	Footpaths	R11 or R10	V4
30.2	Loading bays		
30.2.1	covered	R11 or R10	V4
30.2.2	not covered	R12	V4
30.3	Sloping ramps (e.g. for wheelchairs, loading ramps)	R12	
30.4	Refuelling areas	R12	
30.5	Refuelling areas, covered	R11	

*) For floors in wet areas walked on barefoot, see the GUV information „Floor coverings in wet barefoot areas“ (GUV-I 8527, previous GUV 26.17).
**) Entrance areas as per 0.1 are all areas with direct access from outside with possible entrainment of moisture from outside. For adjoining areas or other rooms with large surfaces, see section 3.4 of this regulation.
***) Stairs as per 0.3 refer to those possibly exposed to entrainment of moisture from outside. For adjoining areas or other rooms with large surfaces, see section 3.4 of this regulation.
****) If the same floor covering has been laid in all areas, the displacement space can be reduced to V4 after a risk assessment (taking into consideration the cleaning method, the working processes and the quantity of slippery substances on the floor).
*****) Pedestrian areas not subject to a risk of slipping because of weather influences such as driving rain or entrained moisture.

CLEANING AND CARE INSTRUCTIONS FOR RÖBEN FINE STONEWARE

Röben fine stoneware is extremely easy to clean, thus reducing expensive maintenance costs. The surface finish on the working side prevents dirt and moisture from penetrating the material and leaving permanent stains. A few basic instructions must be heeded to ensure this valuable characteristic remains effective in the long term.

Basic cleaning

The dried floor cladding must be cleaned (treated with acid) to remove any remaining cement residues. In addition to commercially available cement residue removing agents, here we also recommend the cleaning powder „INOLIT" by Chema Chemie, Dr Schulz GmbH, Bonn/Germany, the acid treatment agent „Absäuerungsmittel Spezial" and the alkaline basic cleaner „Grundreiniger Spezial" by Patina-Fala Beizmittel GmbH. Sweep the floor dry, then soak it with sufficient water for the joints to become saturated. Apply the cement residue removing agent according to the manufacturer's instructions. Leave the cleaning agent to act for an adequate length of time before removing it with a scrubbing brush or vacuum scouring machine. Then rinse the treated floor thoroughly with clean water, changing the water repeatedly. The more thorough these operations are, the less care and cleaning will be required in future! Fine stoneware tiles in the Röben VIBRANIT® series (including the high-gloss finish) are fire-sealed and therefore do not require subsequent impregnation.

Regular care

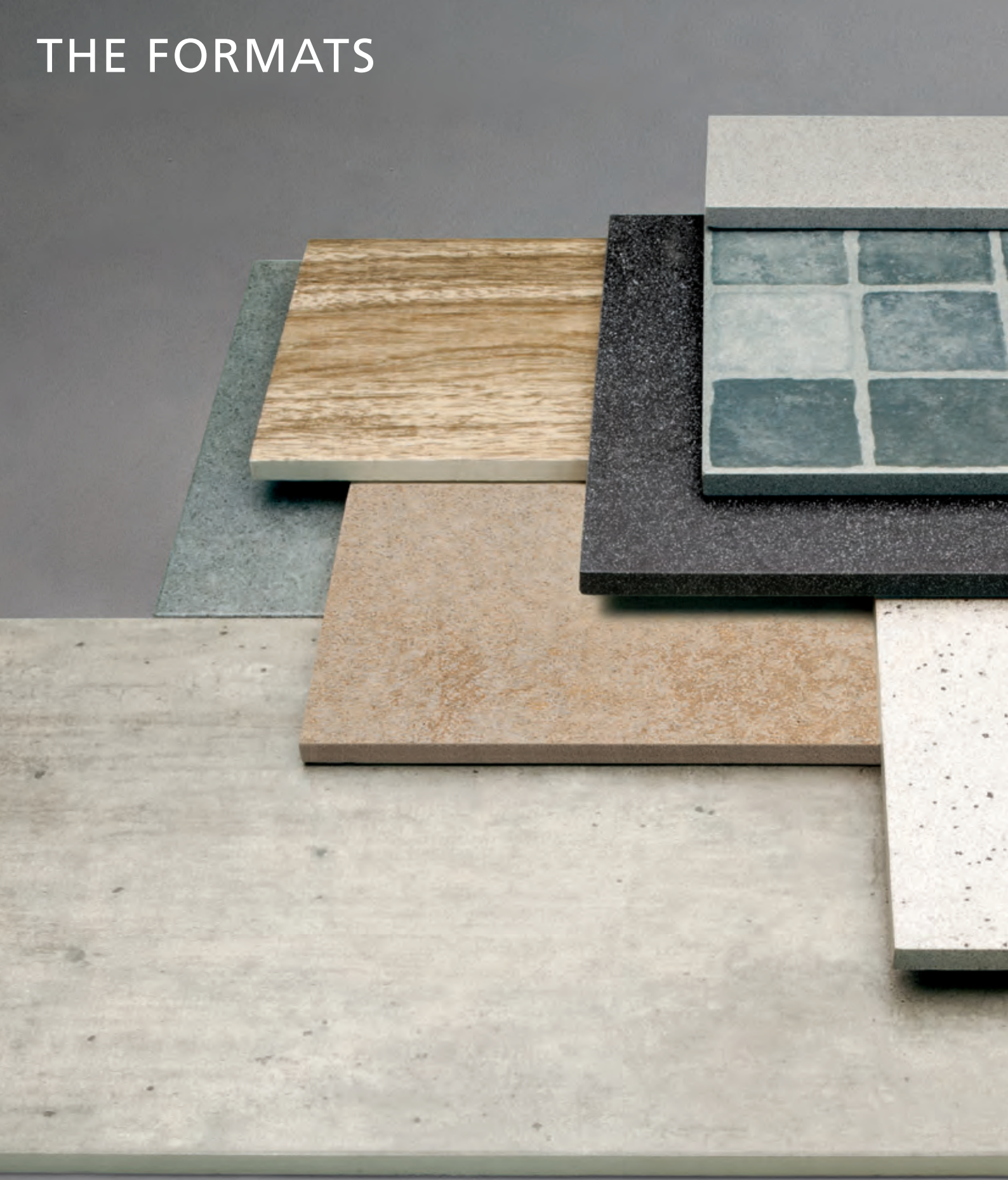
We urgently recommend non-greasing agents for regular cleaning and care , such as „SUPER PUR" by Dr. Schnell Chemie GmbH, Munich/Germany and the fine stoneware cleaner „Feinsteinzeugreiniger" by Patina-Fala Beizmittel GmbH. You are urgently advised not to use any household agents such as soft soap or floor polish because they create a coating that acts as a soft film and remains visible as smears on the floor cladding. The same applies to brighteners. The success of any cleaning and care processes depends on the cleaning intensity. By the way, Röben fine stoneware and ceramic tiles are absolutely impervious and, with regular cleaning, continue to look as spotless as on the first day.

Do not use any cleaning agents containing hydrofluoric acid as this destroys the tile surface!

Please do not use care products containing wax or similar as these are also detrimental to the surefooted grip!

Even the loveliest floor covering needs regular care and should be absolutely easy to clean: Röben fine stoneware BASE smoky

THE FORMATS



Röben fine stoneware is available in 7 different formats and 2 thicknesses (15 and 20 mm). All tiles are made of only the best, pure clay as prerequisite for premium high-quality products.

200 x 100 mm

200 x 200 mm

300 x 300 mm

400 x 200 mm

400 x 400 mm

600 x 200 mm

600 x 300 mm

FUNCTIONAL
CERAMIC FLOOR CLADDING

VIGRANIT® SIGNAL marking strips

VIGRANIT® SIGNAL marking strips, e.g. for garages and workshops, are made of solid coloured floor tiles (whole and half tiles), 200 x 200 mm, cut on the diagonal.

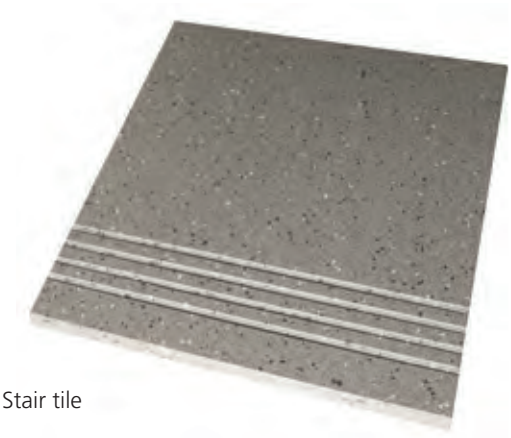
VIGRANIT® Signal width 28,5 cm

VIGRANIT® Signal width 14,0 cm

VIGRANIT® SIGNAL Marking strips				
Floor tile R9 yellow and black 15 mm thick, suitable for vibration laying	approx. ea/ m^2	ea/package	ea needs per linear m with a width of 14,0 cm	ea needs per linear m with a width of 28,5 cm
Whole tile 200 x 200 x 15 mm	24	18	-	3,5 und 7
Half tile diagonally cut	48	14 /R11) 40 (R9/R10)	7	

SHAPED PIECES

Profiled stair tiles are the perfect addition to ceramic floor cladding for an enhanced surefooted grip on the steps. Closing tiles and hollow coved skirting tiles are also available for a professional finish at walls.



Stair tile

Closing tile

Hollow coved skirting

RÖBEN FINE STONEWARE
TEST RESULTS

Test results	FINE STONEWARE						
Formats	200 x 100 mm	200 x 200 mm	300 x 300 mm	400 x 200 mm	400 x 400 mm	600 x 200 mm	600 x 300 mm
Test criteria	required/fulfilled as per EN 14.411 App. G						
Water absorption	≤ 0,50 % / **0,20 %**	≤ 0,50 % / **0,20 %**	≤ 0,50 % / **0,18 %**	≤ 0,50 % / **0,17 %**	≤ 0,50 % / **0,10 %**	≤ 0,50 % / **0,14 %**	≤ 0,50 % / **0,14 %**
Resistance to deep abrasion	≤ 175 mm^3 / **130 mm^3**	≤ 175 mm^3 / **124 mm^3**	≤ 175 mm^3 / **126 mm^3**	≤ 175 mm^3 / **123 mm^3**	≤ 175 mm^3 / **125 mm^3**	≤ 175 mm^3 / **109 mm^3**	≤ 175 mm^3 / **109 mm^3**
Scratch resistance of surface as per Mohs	6 / **6**	6 / **6**	6 / **6**	6 / **6**	6 / **6**	6 / **6**	6 / **6**
Bending strenghth	≥ 35 N/mm^2 / **39,8 N/mm^2**	–*	–*	–*	–*	–*	–*
Compressive strength	≥ 150 N/mm^2 / **257 N/mm^2**	≥ 150 N/mm^2 / **268 N/mm^2**	≥ 150 N/mm^2 / **280 N/mm^2**	≥ 150 N/mm^2 / **231 N/mm^2**	≥ 150 N/mm^2 / **276 N/mm^2**	≥ 150 N/mm^2 / **232 N/mm^2**	≥ 150 N/mm^2 / **232 N/mm^2**
Frost resistance	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**
Chem. resistance as per EN ISO 10545-13(except hydrofluoric acid and its compounds)	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**	**fulfilled**

* not applicable as breaking load **≥** 3000 N

02.2018

	approx. ea/m²	ea/package	kg/ea	FINE GRAIN light-grey	FINE GRAIN anthracite	FINE GRAIN blck-grey	ROUGH GRAIN light-grey	ROUGH GRAIN imbra	ROUGH GRAIN anthracite	ROUGH GRAIN blue
BASE 600 x 300 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	5,5	4	6,30							
PLAZA 600 x 300 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	5,5	4	6,30							
MALL 600 x 300 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	5,5	4	6,30							
PLANK 600 x 200 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	8,33	4	4,15							
COURT 300 x 300 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	11	8	3,15							
VIGRANIT®										
200 x 100 mm x 15 bzw. 20 mm										
Floor tile R 11 and R 12, suitable for vibration laying, **20 mm**	50	18	0,82	○	○	○				
R 10, R 11, R 12, suitable for vibration laying, **15 mm**	50	25	0,65	●	●	●				
R 12 / V 06, suitable for vibration laying, **15 mm**	50	25	0,65	●	●	●				
Closing tile 240 x 71 x 10 mm	4/rm	32	0,40	●	●	●				
Hollow coved skirting 240 x 110 x 10 mm	4/rm	13	0,63	●	●	●				
200 x 200 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	24	18	1,40	●	●	●	●*	●*	●*	●**
R 10, R 11, R 12, suitable for vibration laying	24	18	1,40	●	●	●	●	●	●	
R 12 / V 08, suitable for vibration laying	24	18	1,40	●	●	●	●	●	●	
Closing tile 240 x 71 x 10 mm	4/rm	32	0,40	●	●	●	●	●	●	●
Hollow coved skirting 240 x 110 x 10 mm	4/rm	13	0,63	●	●	●	●	●	●	●
300 x 300 mm x 15 mm										
Floor tile R 9 and R 10, suitable for vibration laying	11	8	3,15	●*	●*	●	●*	●	●*	●
Stair tile 300 x 300 x 15 mm	3,3/rm	8	3,15	●	●	●	●	●	●	●
Closing tile 240 x 71 x 10 mm	4/rm	32	0,40	●	●	●	●	●	●	●
400 x 200 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	12,5	8	2,75	○	○	○	○	○	○	○
400 x 400 mm x 15 mm										
Floor tile R 9, suitable for vibration laying	6,25	4	5,75	●	●	●	●	●	●	
600 x 200 mm x 15 mm										
Floor tile R 9 and R 10, suitable for vibration laying	8,33	4	4,15	○	○	○	○	○	○	
600 x 300 mm x 15 mm										
Floor tile R 9 and R 10, suitable for vibration laying	5,5	4	6,30	○	○	○	○	○	○*	

* also available glossy polished (R 9) ** only available glossy polished (R 9) *** COURT also available with 2x2 and 3x3 stones on request ○ on request
Other project-related colours on request.

	SLATE FINISH																				
	Föhr	Teneriffa glossy polished	Sylt glossy polished	Sabrina	straight	moon	smoky	amber	copper	hazel	light	medium	dark	oyster	whisky	pearl	pepper	rustic	stone
							●												
					●														
						●		●	●	●	●	●	●						
														●	●	●	●		
																		●***	●***
	●	●**	●**	●															
	●	●	●																
	●	●	●																
	●																		
	●																		
				○															
				●															

THE RÖBEN-GROUP
STRONG

Clinker facade bricks, clay roof tiles, fine stoneware for the floor, paving clinkers for the garden: made in 14 factories in Germany, Poland and the USA: Röben is thus Germany's largest private brick manufacturer; a medium-sized, flexible and innovative company with a fine feeling for the demands of modern construction. Our personal commitment to bricks, this thoroughly honest construction material, is always at the heart of all we do.

It all began with August Lauw, respectfully called the „Brick King". Originally a passionate mariner with his own sailing vessel trading on the route between Brake/Unterweser and New York, he eventually succumbed to gentle pressure from his future wife and settled down, working initially as a farmer, starting off with just 2 cows and 2 horses. But he soon had other ideas. In 1855 he set up the first of 8 brickworks near Zetel in Frisia. It was thanks to his vision and dedication that the brickworks soon boomed throughout the region. In 1900 his son-in-law Bernhard Friedrich Röben took over the brickworks in Zetel-Schweinebrück. These are still the family company's headquarters.

IN CLAY

Röben's activities continue to focus on the German market, investing large sums of money in renewing and expanding the six brickworks. This ensures that builders are always supplied with absolutely top quality products for their construction projects, for sustainable, solid brick buildings.

THE **RÖBEN SALES MANAGERS** FOR CERAMIC FLOOR TILES

Many factors are involved in choosing the right ceramic floor cladding, depending on the particular room situation and its future use. The Röben sales managers for ceramic floor tiles are specialists in this field and will provide you with detailed information to answer all your questions.

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as of: March 2018

Our products comply with the German Construction Productions Regulation „BauPVO" (as of 1 July 2013).

Röben ceramic tiles easily fulfil the requirements of DIN EN 14.411 respectively DIN 18158.
CE declarations are sent on request.

Röben quality products are made of natural raw materials. Deviations from the illustrated photographs are possible for production or printing reasons. The visual appearance can also alter as a result of changes in the incidence of daylight.

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