

ColoRex[®]plus

A Unique Flooring Solution

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The instructions and information contained in the present manual are based on experiences gathered during extensive test installations in actual industrial and commercial environments and product performance assessments carried out under actual conditions of use. May we suggest that the manual is carefully read. ColoRex® plus is one of the first truly loose laid flooring systems available for industrial and commercial use. Discrepancies may arise as a result of specific local conditions. ColoRex® plus should be installed by skilled manpower!

The product comprises the complete flooring system:

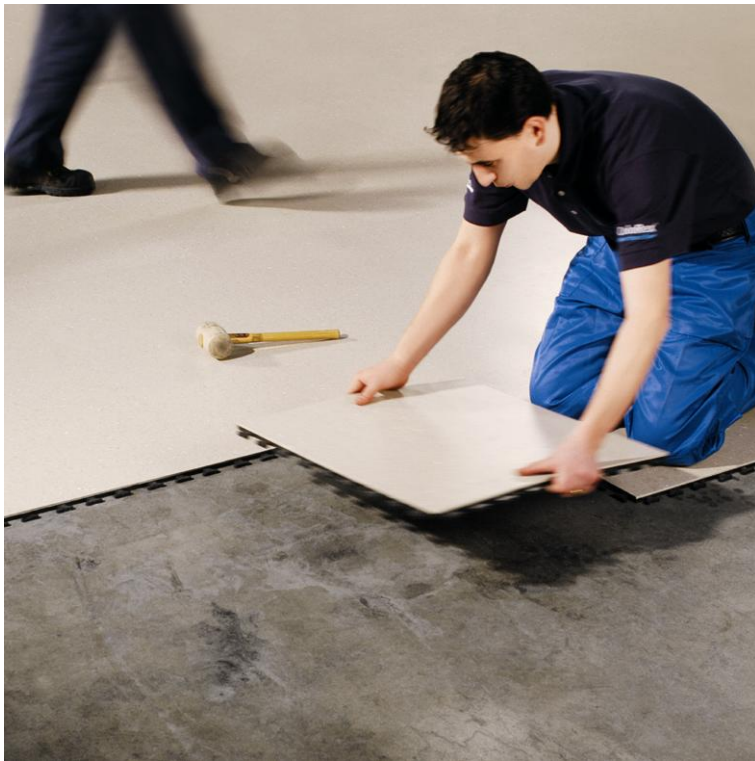
- a homogeneous block with special back ventilation, thickness 9.7 mm, with a smooth or studded surface
- a special dove tails connection system on all four sides.

ColoRex® plus, a homogeneous, complete flooring system

The ColoRex® plus system has been designed for restorations and as a solution to flooring problems. It was designed and developed with the following goals:

- no interruptions or major disturbance to current activities
- minimum subfloor preparation
- high installation speed
- dust-free and odourless installation
- possibility of direct change of use
- electrical resistance to ground $<10^6$ Ohm (ColoRex® plus EC)

Basic idea of the product



After the installation – and partly even during application – ColoRex® plus meets the highest requirements and expectations in industrial and commercial areas with regard to:

- trafficability
- resistance to heavy loads traffic
- underfoot comfort
- impact sound reduction
- ergonomics
- easy heavy duty cleaning procedures

Performance features of ColoRex® plus

With ColoRex® plus, subfloor preparation is reduced to a minimum. ColoRex® plus can be installed "as delivered" to the building site, without considerable need for special tools or auxiliary products. Hollows in the subfloor or screed, which may cause local breaks of the tiles in case of intensive use, can be simply and easily repaired prior to or even after the installation of ColoRex® plus.

Subfloor
preparation
(restorations)

High humidity levels as well as industrial soiling of the subfloor, including paint, oil, grease and chemicals, can generally be ignored. Damages such as holes, wear, sandy concrete subfloors or brittle cement screeds can be repaired with simple methods appropriate to the location (e.g. repair mortars) prior to the installation of ColoRex® plus.

Thanks to the loose laying of ColoRex® plus and its function as pressure distribution tiles, the corresponding subfloor standards and installation provisions need not always to be met.

In view of the above mentioned facts, restorations with ColoRex® plus lead to considerable savings.

In the case of new buildings, ColoRex® plus can be installed directly on even, levelled concrete without any subfloor at all.

New buildings

ColoRex® plus **cannot** assume any **static functions**. Although it will bridge small holes ($\varnothing < 5$ cm) and small-size damages, the product cannot perform extensive levelling or even supporting functions. After a short period of time (depending on the temperature), ColoRex® plus will self-adjust to the subfloor.

Limits of the system
with regard to
bridging and
subfloor evenness

Prior to the installation, ColoRex® plus must be acclimatised by storing it for 48 hours at a temperature of at least 18° C directly into the room that is to receive flooring. Packaging must be open to ensure proper acclimatisation.

Acclimatisation

Basically it can be said that installation speed increases with higher room temperature and longer acclimatisation time. In any case, ColoRex® plus must have a temperature of at least 15° C at installation start.

Due to its thermal insulation properties, ColoRex® plus can change the heat conditions and dew point of a floor or ceiling construction. It is thus possible that a dew point shift occurs (depending on temperature conditions, e.g. winter/summer), resulting in the formation of condensation water under the installed tiles. The back ventilation ensures quicker drying.

Dew point shift

If the area to receive flooring is also the ceiling of a room, it is strongly recommended to install an appropriate moisture barrier.

During the preparation for the installation of ColoRex® plus, logistics requirements must be taken into account as well. ColoRex® plus, with a weight per unit area of 11.5 kg/m² (AS/EC) or 10.8 kg/m² (ST) and a tile weight of 4.3 kg, respectively 4.0 kg, generally requires industrial means of transport, as pallets must be moved along also during installation (hand pallet trucks).

Logistics, local
transports on the
building site

In particular, it must be pointed out that during transport, dovetails may be deformed due to temperature influence. This deformation effect must be reversed by adequate acclimatisation with tiles unpacked.

Deformation of
dovetails during
transport

Practice has shown that the highest installation performance can be obtained by picking up the tiles directly from the pallet truck. An installation team organised in such a way should consist of 2–3 persons.

Installation team

It is clear that the installation performance depends on the number of adjustments and cuts to be made. For simple tiling of free surfaces, a daily installation performance of at least 300 m² can be expected from a 3-men crew.

Installation
performance

If installation instructions are observed, the room temperature is of relative importance. Of much more significance is the temperature of the ColoRex® plus tiles themselves (see page 4, acclimatisation). There is an actual risk of damage to the tiles, if the **temperature of the material** is below 15°C.

Installation
temperature

The tiles are installed in a **chessboard pattern** (standard) or in an **English bond pattern** (half offset).

Installation
method

With heavy traffic, it is recommended to install the tiles either in the English bond pattern and across the driving direction, or in the chessboard pattern and welded. Please note that an installation according to the English bond pattern implies considerably higher labour for heat welding.

Check list for ColoRex® plus installations

- Old, vapour-tight coverings are to be removed, if they present or cannot exclude humidity problems.
- The area to be laid must have a temperature of at least 15° Celsius; it must be clean swept and dust-free if tiles will be glued.
- Subfloors (screeds) must be levelled, so as to avoid ridges or peaks. Possibly disturbing hollows should be filled with an appropriate filling mass or mortar.
- Doors must be removed. Building owners must be informed of possible adjustments to the doors.
- Access must be granted to the place of unloading.
- If ColoRex® plus is installed across several floors or on a higher floor, the transport of palettes will have to be guaranteed by hoists or cranes: 1 tile = approx. 4.3 kg / 1 pallet of 160 pieces = approx. 700 kg.
- Electricity supply must be ensured (220/380 V, 15 A).
- Prior to the installation, a storage location for waste material must be determined (packaging material and cut offs).

**Beginning of
installation**



An optimum optical result is achieved when all border tiles are, wherever possible, the same size.

In order to achieve this, the first row of tiles is measured from the centre of the room and marked by a chalk line. Squareness deviations in the building structure may lead to considerable extra work and loss of material, unless they are identified and taken into account before the beginning of installation.

When measuring and planning the border tiles, it is important to ensure that they are at least 10 cm.

**Standard
chessboard pattern
installation**



The installation of ColoRex plus starts with the second row of tiles from the wall.



It is important that the second row is installed exactly along the chalk line.



Once the second row is complete, the first row is measured and fitted.



A rubber mallet can be used for engaging the connection system.



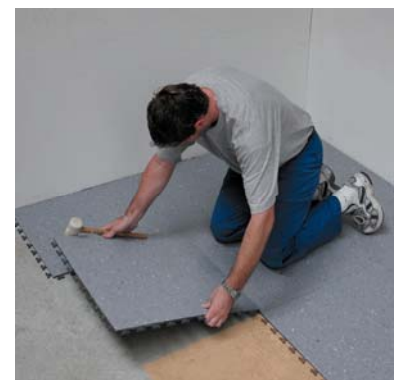
When measuring the border tiles, sufficient distance from the wall (gap) shall be allowed.



Mark out the cutting edge and cut with circular saw or jigsaw.



When inserting the border tiles, the second row must be slightly lifted.



Once the first two rows are complete, the entire area can be gradually laid.

English bond
pattern installation



Also with the English bond pattern, the installation of ColoRex® plus starts with the second row of tiles from the wall.



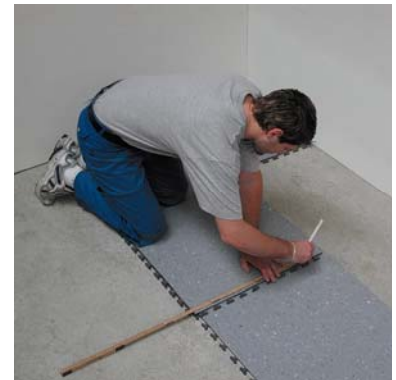
It is important that the second row is installed exactly along the chalk line.



Once the second row is complete, the first row is laid. By lifting the second row, the border tiles can be inserted.



Also with the English bond pattern, the first row is started with the neatly fitted corner tile.



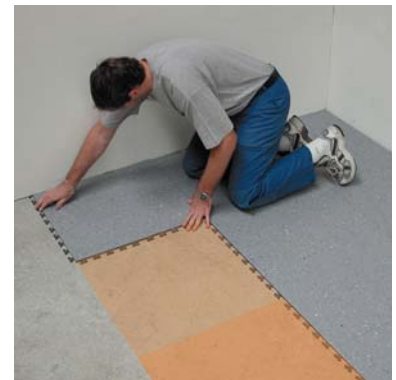
When measuring the border tiles, sufficient distance from the wall (gap) shall be allowed.



Mark out the cutting edge and cut with circular saw or jigsaw.



A rubber mallet can be used for engaging the connection system.



Once the first two rows are complete, the entire area can be gradually laid.

Installation on cold ground: Allow sufficient distance from the wall! (refer to page 9)

Even during installation, the working areas are trafficable. **Attention! With intensive traffic already during the installation process, attention must be paid that no dirt arrives underneath the installed tiles.**

Trafficability
during installation

In the case of immediate traffic on the tiles during installation, it is vital to protect the exposed dove tails by means of tile stripes of adequate length, planed to form an access ramp.

The installation direction must be adjusted to future traffic (weight, speed, driving direction, wheel types).

Installation direction



In most cases, it will be advantageous to consider an English bond pattern installation, across the direction of the main traffic paths.

Where there will be powered vehicle traffic (e.g. forklifts, towing vehicles for mail vans, etc.), the installation direction is to be determined based on the most frequently used driving direction. Please note that the mechanical stress applied on the floor is not only influenced by the weight of the vehicles, but most of all by their acceleration, brake effect and driving direction changes.

Installation direction with powered traffic

A further recommendation for floorings that are driven on by vehicles, is to provide a fixing of the border tiles. Where there is no appropriate stop available (e.g. doors and passages), this can best be achieved by gluing the border tiles to the subfloor, e.g. with a 2-K adhesive.

Fixing of border areas

Basically, ColoRex® plus can be processed with any woodworking tool. In particular, the following machines can be employed:

Tools



- circular saw
- jigsaw
- moulding machine
- router
- drilling machine
- planer

Attention must be paid to the fact that ColoRex® plus – as a high density, mineral filled plastic tile – is abrasive. For reasons of service life, the use of carbide cutting devices with appropriate cutting geometries is recommended.

Cutting geometries

Special attention must be paid to the chip shape and chip drain. With appropriate cutting geometries, the chip drain (even hot chips) will not cause any problem and soiling of the tools will be avoided.

Another great advantage is that ColoRex® plus allows dust-free processing (no sawdust, but chips), which can be of enormous importance in dust-sensitive working environments.

No dust development

ColoRex® plus is a thermoplastic material. When fitting tile elements into awkward areas – e.g. around pipes – the material can be very easily heated with a hot air gun. The thus softened material can then easily be bent and shaped and, after cooling down, it will regain its original shape and hardness.

Fitting and adjustment around pipes, etc.

If – over extensive areas – tiles are installed in high temperature conditions (e.g. in summer) or with a subfloor temperature that considerably deviates from the air temperature (>5°C), a dimension reduction of the area is to be expected. In such cases and wherever possible, the tiles to be installed should be laid out individually on the subfloor for acclimatisation.

Differences in temperature during installation

Since the individual tile elements are connected together, the **whole** floor space will expand or shrink with temperature fluctuations. Due to the thermoplastic properties, the area will expand with higher temperatures and shrink with lower temperatures.

Temperature fluctuations after installation

An expansion of the floor space is unproblematic, provided that the border tiles have been accommodated with appropriate movement joints. As a matter of fact, the material also “softens” with expansion and thus either the connection system and/or the border tiles are only slightly stressed/squeezed.

Thermoplastic behaviour of the connection system

When it is cold, the tiles shrink and become hard. Then a temporary dummy joint may become visible.

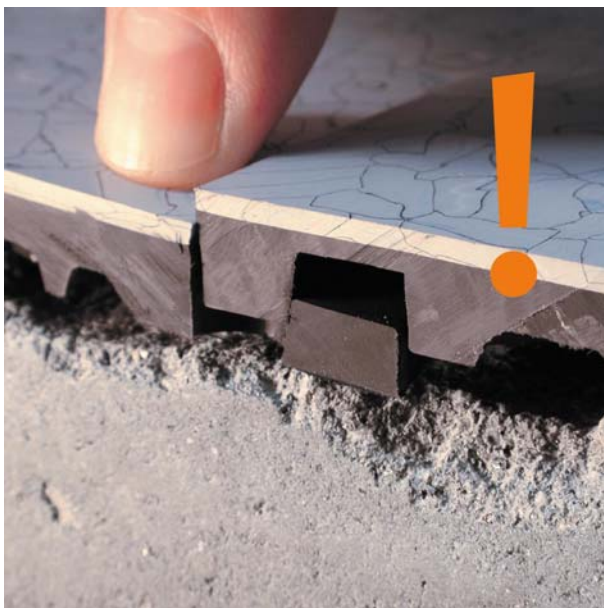
When tiles shrink due to low temperatures, the whole flooring area should be able to follow. If movement of the whole floor space is inhibited by high static loads such as machines, frames, etc., a slight deformation of the connection system may appear. In extreme cases, “open joints” may become visible. **It is important to know that the above mentioned phenomena may, at most, impair the optical appearance. They do not present any reason for rejection. This effect can be avoided by correct hot seam welding.**

Possible deformation of the connection system

In the case of critical subfloors with hollows and holes, it is absolutely important to pay attention that the connection system is adequately supported.

Support of the connection system

Wrong! The photo below clearly shows that the hollow is too large. The connection system may therefore hang out when stressed.



When installed correctly, ColoRex® plus is perfectly viable for vehicle traffic (max. 1.5 t with hard tyres or 2.5 t with pneumatic tyres). What is more critical is the direct placing of machines on ColoRex® plus. It must be taken into consideration that the material is thermoplastic and thus softens when it is heated. Machines which must be placed in a horizontal position (e.g. lathes, moulding machines, erosion machines, etc.) can be placed on ColoRex® plus, provided that the load is evenly distributed (max. 50 kg/cm²). Unevenly distributed loads (revolving cranes, radial drilling machines, etc.) must NOT be placed on ColoRex® plus. The same applies to vibration measurement devices (wheel balancing machines). The cut ends around machine feet/baseboards must always be sealed with polyurethane.

Machines and machine feet

Border areas (incl. machine bases) must never be sealed or grouted with silicone. Silicone adhesion is not strong enough for PVC. Polyurethane is recommended for a two-sided adhesive sealing/grouting of border areas. A filling cord should be used as an underlay profile to ensure two-sided lateral adhesion and to reduce material consumption.

Polyurethane for border sealing (with two-sided lateral adhesion)



Correct! Lateral adhesion of PUR sealing compound. A foam cord is inserted first for optimum result.



Wrong! A three-sided adhesion of PUR sealing compound inhibits free expansion and may lead to damages!



In certain applications, grouting with PUR sealing compound may be reasonable even when skirting are applied.

Various skirting and coving profiles are available in different versions and colours. Please refer to the accessories section for details.

Floor-to-wall transition solutions



Traditional plastic skirting profiles in matching colours, flexible.



Hard plastic skirting elements with hollow space and exhaust holes. To complete the subfloor ventilation features of ColoRex® plus (subfloors with high moisture).



Flexible underlay profiles for GMP compatible coverings in hygiene critical areas. Coverings to be realised with ColoRex 2.0mm tiles or ready-to-use, pre-cut and pre-welded coving stripes.

Carry out a construction end cleaning and a basic maintenance appropriate to the location immediately after installation.
Industrial or commercial areas laid with ColoRex® plus can then easily be kept dust-free by means of cleaning machines (scrubber drier machines).

Cleaning

Cleaning with **low speed**, single disc machines and **pads** that are suitable for PVC always provides a clean appearance. Cleaning with **brushes** may result in incompletely cleaned surfaces. Depending on the requirements, both methods can be combined. For areas other than industrial areas, further cleaning techniques (e.g. dry polishing or dry buffing with single disc machines and pads) can be employed.

Cleaning methods

Certain driving traces left by fork lifts, pneumatic tyres or crawler-type vehicles as well as drag marks left by pallets cannot be avoided and must of course be accepted as normal wear and tear.

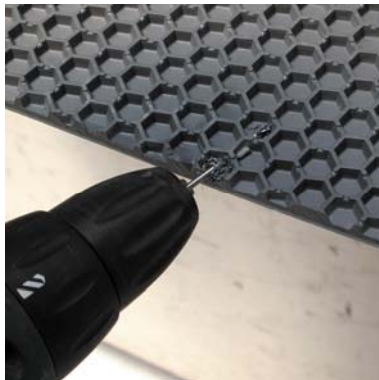
Wear

Attention! Forbo cannot assume any guarantee for damages resulting from strong heat development due to wheel spin.

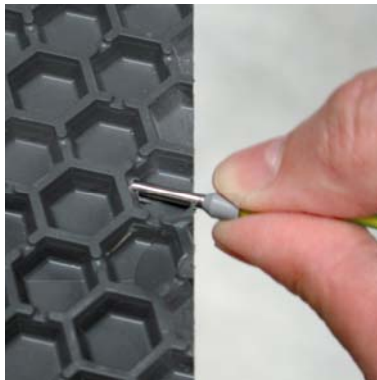
Besides flexibility, also an effective ESD protection is a major requirement in modern areas of industry and research, e.g. electronics, computer assembly, telecommunication, laboratories and clean rooms. The **EC type** ColoRex® plus offers reliable, consistent and permanent ESD protection that is independent from air humidity and that does not decrease over time. A correctly installed and grounded **EC type** ColoRex® plus flooring, in conjunction with appropriate ESD footwear, offers ESD protection and body voltage generation values in full accordance with European and international industry standards (please refer to the performance data diagram for details).

Grounding of conductive installations (EC type)

For conductive installations of EC type ColoRex® plus, **no copper strips and, of course, no conductive adhesive are necessary**. The electrical connection between tiles is ensured by the backing structure of the EC type tiles, made of a conductive compound. Just provide a connection to earth every 30 m² as shown here below:



Drill a hole for the plug with appropriate diameter.



Insert plug with grounding cable.



The grounding cable must be connected to earth by a qualified electrician.

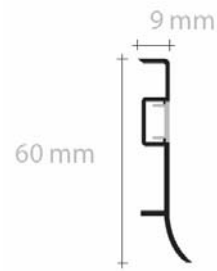
Accessories



Fixed skirting elements, with ventilation holes and sliding cover strip

Boxes of 20 pieces of 3 lm

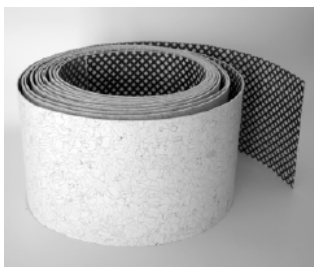
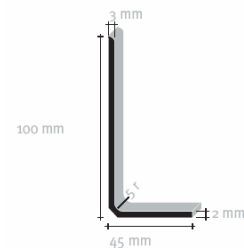
Art. Nr.: Grey 171301
White 171302
Beige 171303



Traditional skirting, available in matching colours and fixed size

Rolls of 25 lm

Art. Nr.: 1200 xx



Pre-welded skirting stripe, invisibly welded, available in various colours, for coved skirtings

Material: ColoRex SD 2.0mm

Rolls of 12,20 lm

Stripe height: 150 mm

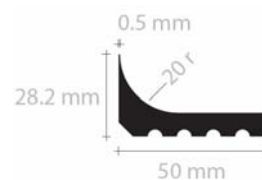
Art. Nr.: 1600 xx



Underlay profile for coved skirtings

Pieces of 2,5 lm

Art. Nr. 280200



Access ramp

Pieces of 2,5 lm

Art. Nr.: 171500



xx = two last digits of ColoRex Plus colour reference