IS SAFE Stays safe

colorex[®] SD | EC | plus

homogeneous conductive vinyl tiles

creating better environments



11 1 ##

Protecting your technology

D

G8027 Kartonagen Colorex is an advanced technical flooring system specifically designed to control static discharge in sensitive areas such as cleanrooms, operating theatres and the electronics industry. Not only does Colorex provide an advanced technical solution, it is also aesthetically pleasing, enhancing any commercial interior from industrial to healthcare establishments.

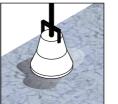
Providing peace of mind

Forbo Flooring Systems is an international market leader with a wealth of experience in providing ESD and cleanroom flooring through one of the most trusted brands on the market - Colorex. You can have peace of mind that Colorex complies to every standard and norm that is required today and likely to be required tomorrow.

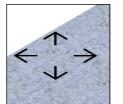
The **benefits** of Colorex



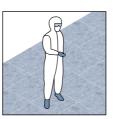
1 The technology ensures a permanently conductive product guaranteeing optimal performance throughout the life of the product, regardless of the humidity level of the area. Colorex fully complies with all ESD standards.



2 The surface of Colorex can be fully restored and repaired extending the useful life of the product.



3 The low plasticizer content in Colorex tiles creates excellent dimensional stability and prevents shrinkage.



4 The low plasticizer content also ensures extremely low emissions and outgassing making Colorex the right choice for cleanrooms. Colorex fully complies with all cleanroom standards, confirmed by the Fraunhofer institute.

Use in ESD

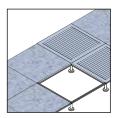
Protected Areas

Environmental credentials

We constantly strive to produce sustainable flooring solutions that create better environments across all application areas. At the same time we help take care of the natural environment through our commitment to sustainable development, responsible raw material procurement and manufacturing processes.



5 | The dense construction of Colorex and the Colorex plus loose lay system provides excellent resistance to heavy loads making it an ideal solution for commercial and industrial environments.



6 Colorex is available in tile format, a prerequisite for raised access floors found in many commercial environments such as data centres and server rooms.



7 | There is an option to add safety signs and guiding with Colorex signal and Colorex signal glow.

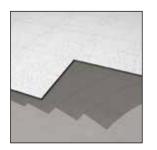
Under light



In the dark

The Colorex system glued

Colorex can be used in many different applications. It can be installed by fully adhering it directly to a subfloor or bonding it to a raised access floor panel. Colorex is available with different levels of conductivity. With Colorex, static charges flow easily through the dense network of conductive veins. The charge is transmitted via the conductive adhesive and securely discharged to earth via a copper strip. The conductivity is created by the nature of the material and needs no volatile chemical additives. Therefore Colorex is not affected by changes in temperature or humidity.



Colorex fully adhered directly to the floor

Colorex can be installed onto a solid subfloor. When conductive properties are required, the connection between tiles is assured by conductive adhesive between the tiles and by copper strip to the earthing point. When Colorex is installed using this process, the static charged is drained to earth via the earthing point. When conductivity is not required, a standard primer and adhesive can be used. When installed on solid floors, Colorex can withstand heavy loads such as fork lift trucks without being damaged. The welding of Colorex tiles is optional for ESD areas however, is a requirement for cleanrooms. The unique dimensional stability of Colorex ensures no shrinkage and therefore, a correctly installed weld will never open up.

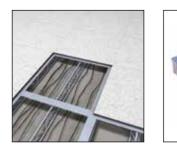
Connection between tiles through conductive adhesive and

connected to earth through copper strip. Compliant to IEC

Places where conductive flooring is required: ESD facilities,

cleanrooms, pharmaceutical laboratories, production sites

(electronics, manufacturing, life sciences) and operating theatres.



Colorex bonded to a raised access floor panel

Often Colorex is bonded to a raised access floor panel that can be used in cleanrooms or data centres. Due to the strength and unique properties of Colorex, it is suitable for use on all formats of raised access floor panels, including those designed to withstand heavy point loading. Since Colorex has extremely low emissions and a high density, it can be perforated for air flow systems that are often used in combination with raised access floors.

COLOREX EC

Application areas

Permanently conductive

61340-4-5 with appropriate ESD shoes.

COLOREX SD

Permanently dissipative

Connection between tiles through conductive adhesive and connected to earth through copper strip. Also available in signal colours.

Application areas

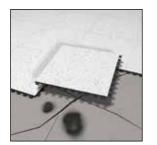
Places where dissipative flooring is required: new build laboratories, cleanrooms, production sites (electronics, manufacturing, life sciences) and operating theatres.





The Colorex system **loose lay**

Colorex plus is a loose lay tile system with a Colorex surface. Available in a permanently conductive version (plus EC), a slip resistant (plus R10) and a basic version. Accessories (page 21) complete the comprehensive Colorex high tech solutions offer.



Colorex as loose lay tile

Colorex plus is a high performance floor covering system consisting of loose lay tiles for all application areas where expensive sub floor preparation or downtime is an issue. Specific sub floor treatment or preparation is not necessary as long as the floor is reasonably level. Colorex plus can be installed without disruption of activities and it can be used immediately after installation, even by fork lift trucks. The unique honeycomb structure on the back of Colorex plus allows damp floors to be ventilated during use. Colorex plus tiles offer all the benefits associated with Colorex along with a unique

dovetail system that remains hidden under the surface. Colorex plus is available as Electrical Conductive (EC). Additionally the Colorex basic version is available for installations where conductivity is not required. The Colorex plus collection is complemented with a R10 slip resistant option that can be used in conjunction with all other types of Colorex plus tiles for areas of heavy duty usage.

A range of specially developed ramps and skirtings are available for use with Colorex plus to provide a complete installation solution.

COLOREX PLUS EC

Permanently conductive

Colorex plus EC is a heavy duty loose lay floor system. It is permanently conductive via the connection between tiles through the dovetail system and connected to earth with a copper strip. Colorex plus EC performs regardless of the humidity level of the area. Compliant to IEC 61340-4-5 with appropriate ESD shoes.

Application areas

Renovation of ESD facilities, cleanrooms, pharmaceutical laboratories and production sites. Suitable when down time, damp floors or poor sub floors are an issue.

COLOREX PLUS R10

Antistatic

Colorex plus R10 is a heavy duty loose lay floor system with a textured surface for enhanced slip resistance (R10). The surface structure improves safety when there is a risk of contamination of the floor for example through powder or water spillage.

Application areas

Places where slip resistance is required: production sites (electronics, manufacturing, life sciences).

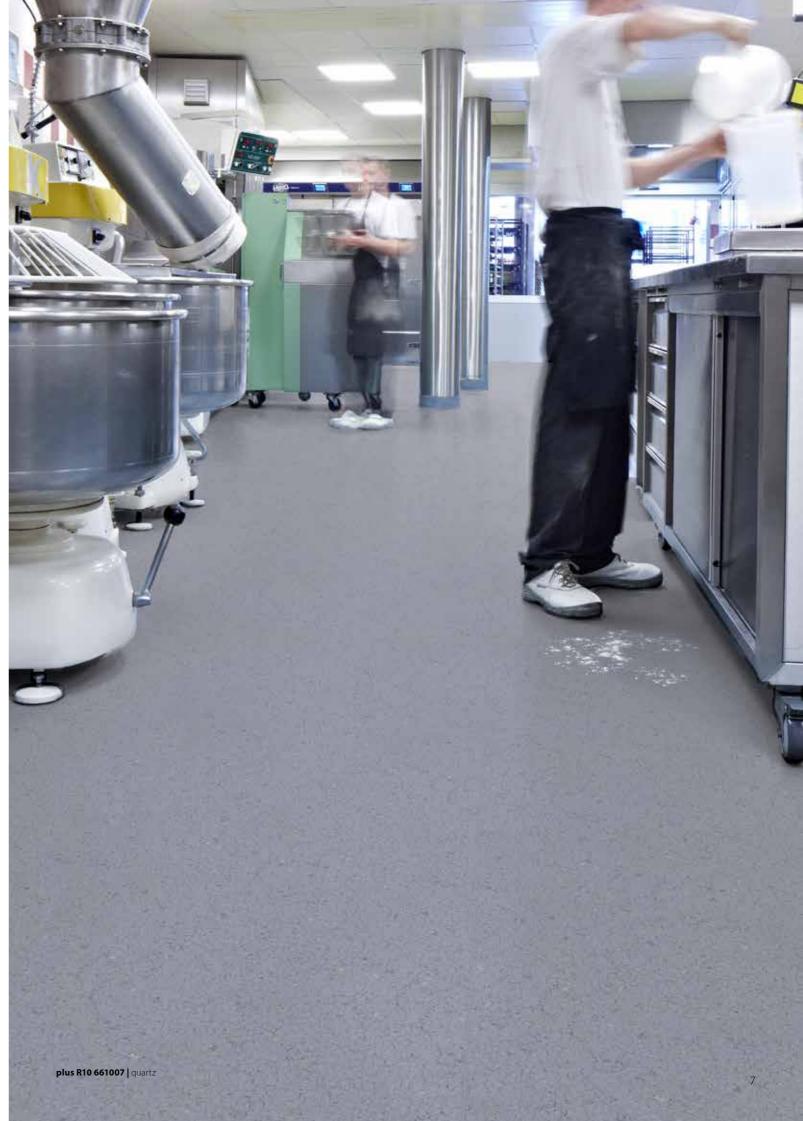
COLOREX PLUS BASIC

Antistatic

Colorex plus basic is a heavy duty loose lay floor system, which provides excellent chemical resistance. The floor can also be repaired in case of heavy damage.

Application areas

Shops, stores, warehouses. Areas with high traffic needing daily intensive cleaning. Suitable when downtime, damp floors or poor sub floors are an issue.



We start where others stop

For decades, Colorex has been produced by Forbo in a factory which specializes in the production of ESD tiles. The production process has been specifically set up for this product and the development work is carried out by ESD specialists with extensive knowledge of the application areas. Colorex also has very low plasticizer content, so there is no need to worry about emissions or shrinkage and the

Step 1: Chips and conductive coating

Vinyl chips are coated with a conductive substance.

- The coating on the chips ensures that the ESD properties are consistent throughout the product.
- The construction assures permanently conductive or dissipative properties over time.
- The technology used guarantees performance, regardless of changes in humidity and temperature.

Step 2: High pressure production

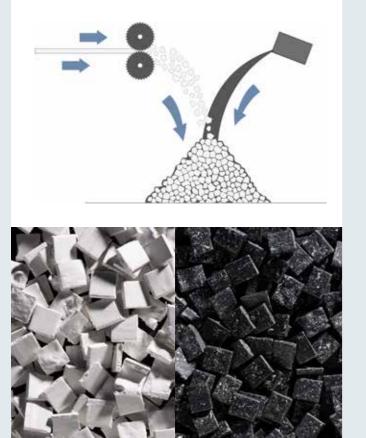
By applying very high pressure and a high temperature, these coated chips are then compressed into solid blocks of homogeneous material.

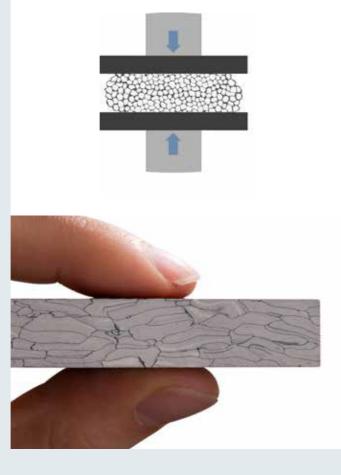
- After pressing, the conductive coating around each chip forms a dense, continuous network of tiny black veins.
- The continuous paths enable safe electrostatic discharge across both the width and the depth of the tile.

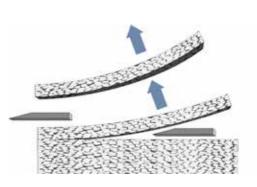
Step 3: Splitting and surface treatment

Colorex tiles are cut from the solid blocks of homogeneous material and machine finished to provide a pore free surface.

- Colorex is a highly compressed tile with a compact pore free, easy to clean and repairable surface.
- Batch information is printed on the back of each tile to enable easy identification.









corresponding diminishing of conductive properties. Our production process produces a material of superior and consistent quality with an extremely high and uniform compression. The dense, smooth and pore free surface makes Colorex suitable for the most stringent hygiene requirements, right up to certified cleanrooms.

Finished product

To ensure the integrity of the product post-production, special care is taken to get the product to the final location in good shape.

- Distinct labelling of the pallet.
- Protection to prevent damage during transport and handling.



ESD flooring that is **future proof**

SD 150201 | everest



The right floor makes the difference

Reducing the generation of electrostatic charges is the main purpose of control measures in ESD protected areas (EPA). In such areas such as electronics assembly, life sciences and data centres the right floor covering plays a crucial role. Not only does it drain electrostatic charges from personnel and equipment, but it also reduces the generation of charges where they occur at the interface between the soles of shoes and the floor.

Low body voltage generation

It is a natural phenomenon that anybody can accumulate an electrostatic charge just by the simple motion of walking. By wearing the appropriate ESD shoes however, these charges will be securely drained through the dense network of conductive veins of Colorex EC and Colorex SD.

Consistent, lifetime conductivity

The unique construction and technology of Colorex SD and Colorex EC ensures the permanent and stable conductive performance of the floor over its entire life time, regardless of changes in humidity and temperature.

As a sole manufacturer of ESD tiles, we measure the electrical resistance of Colorex SD and Colorex EC while we produce on the production line and upon request, we can provide a test report clearly showing the results of our measurements.

Proven results

Colorex SD and Colorex EC are tested to all relevant international ESD standards, such as IEC, ANSI/ESD and ISO, for which test reports can be provided on request.

Industrial flooring for heavy duty areas

Suitable for the most demanding applications

Industrial environments present their own flooring problems, particularly in areas with high wear and tear. Our Colorex high performance floor covering systems are designed for all industrial areas, including the most demanding of applications. Cut from a homogeneous, solid block of highly compressed material with a high vinyl content and a well balanced volume of mineral filler for optimum performance.

Colorex offers you:

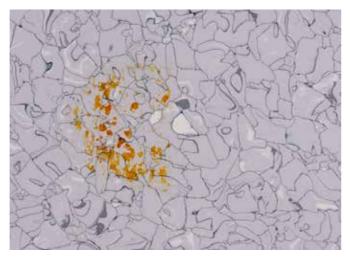
- High mechanical and wear resistance with no need for factory coating or additional surface hardening treatments.
- Excellent chemical resistance thanks to the pore-free surface and a remarkably low percentage of plasticizer.
- A 100% repairable and restorable solution that leaves no trace of abrasive treatment methods.
- Real sample or dedicated presentation are available upon request from our sales contact.



Heavy soiling on the floor can be fully cleaned.



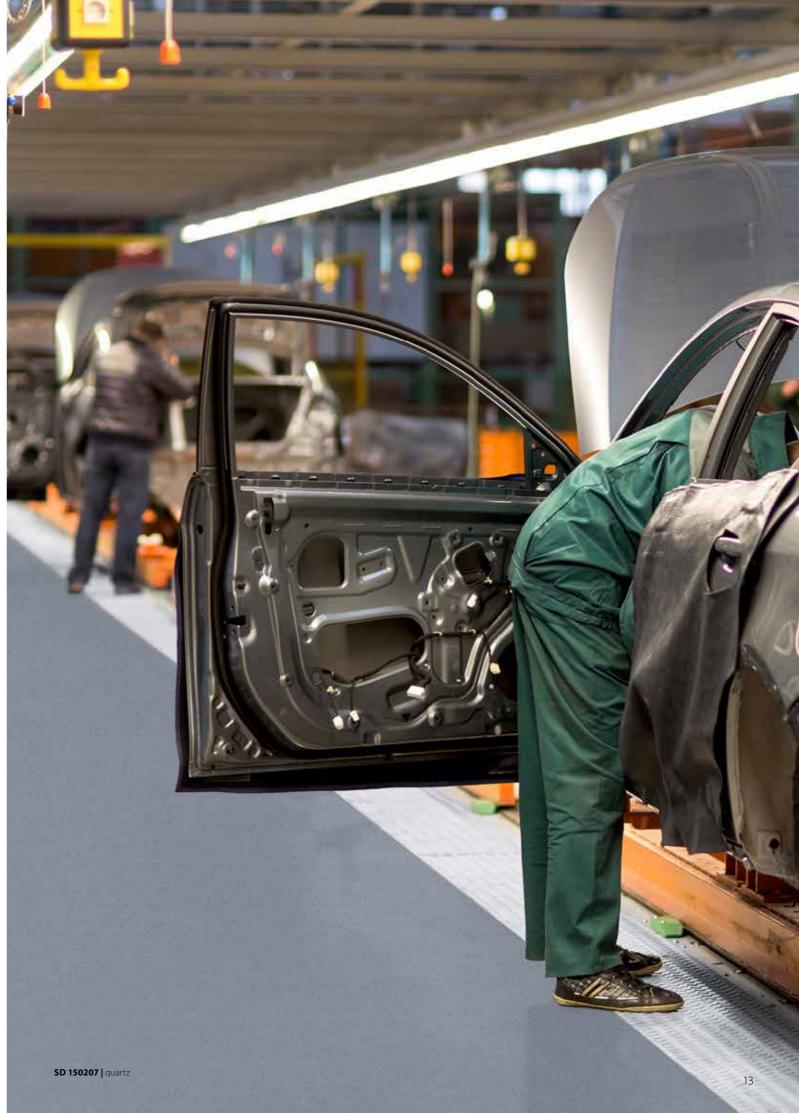
A piece of Colorex can be used for a seamless repair.



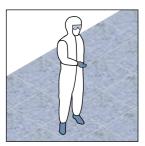
Stubborn stains left by iodine based substances can be fully removed.



Marks from burns or stains can be fully removed.



Cleanroom flooring for the **highest standards**



Contamination control

In cleanroom environments in the pharmaceutical, life sciences and manufacturing industries, airborne particles can be a major source of contamination. Not only can they cause yield loss, the particles can also lead to corrosion and product degradation. Colorex EC satisfies the strictest requirements for particle release behavior and outgassing, helping to reduce any threat of contamination.

Certification and validation

ISO standards and GMP regulations for air purity require you to comply by presenting consistent results that can be verified on a regular basis. What's more, following a comprehensive program of testing, its suitability in cleanroom applications has been certified by the renowned Fraunhofer IPA Institute in Germany.

Colorex EC has been tested for the following:

- Airborne particle emission test and cleanroom suitability (ISO 14644-1)
- Outgassing analysis and classification (ISO 14644-8)
- Assessment of microbial metabolic potential (ISO 846)
- Chemical resistance (ISO 2812-4)
- Cleanability rating (VDI guideline 2083 Part 4)
- GMP classification complying to Class A





Hygiene and safety for sensitive healthcare areas

A demanding area

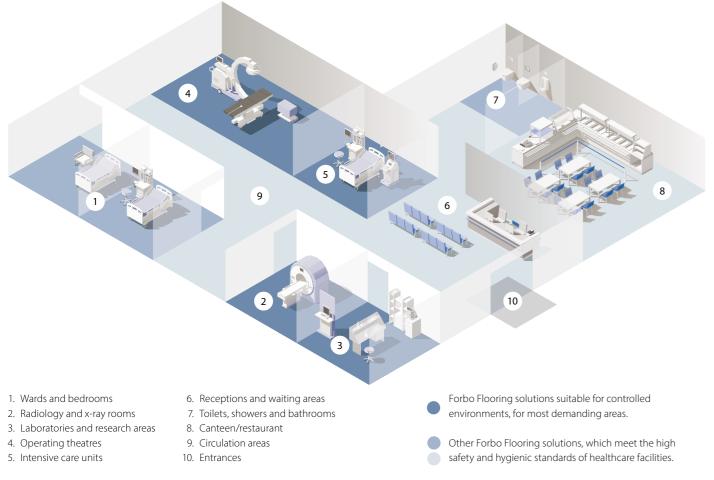
In sensitive healthcare areas such as operating theatres, intensive care units and diagnostic imaging facilities, flooring presents its own unique challenges. Not only must it comply with stringent hygiene regulations to help prevent hospital acquired infections, it must also demonstrate that it meets any necessary safety requirements. Most importantly, it must prevent any electrostatic discharges as these can cause malfunctions, or even failures, in highly sensitive medical equipment and devices and may endanger the health of patients and personnel.

The highest standards of hygiene

Colorex satisfies all requirements. Its conductive properties allow you to avoid the negative effects of an accumulation of static electricity. At the same time, the compact, pore-free surface is resistant to bacteria and moulds, helping you to maintain the highest standards of hygiene.

Stain resistant

Colorex is highly stain resistant helping to ensure your investment will still look good in years to come. Its aesthetic appeal won't be tarnished by the regular cleaning and disinfecting cycles that are imperative in healthcare environments.

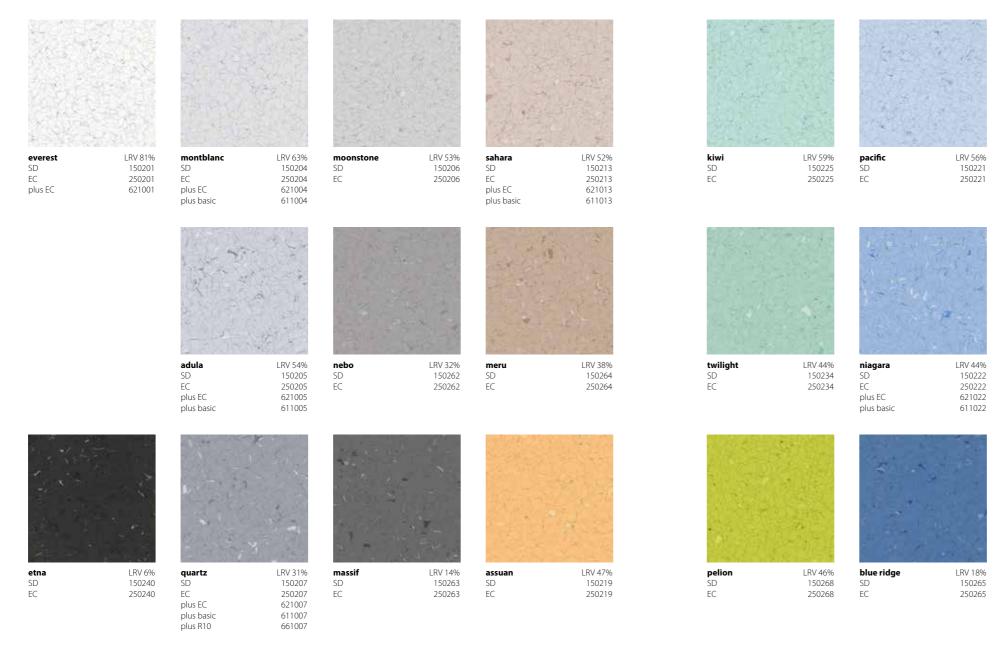


Forbo Entrance Flooring solutions, to keep dirt and moisture outside.



The **collection**

colorex[®] SD | EC | plus



colorex[®] signal

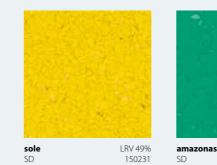


Example signal glow under light

Example signal glow in the dark



LRV 45% 250299





fuego SD

fuji SD EC

montserrat

SD EC



LRV 12% 150266 250266



LRV 13% 150267 250267



LRV 20% 150233

The finishing detail hygienic and aesthetic

In hygiene sensitive areas, Colorex finishes not only look attractive but are in many cases, a must from a hygienic point of view. The use of preformed corners and skirtings provides the perfect solution in terms of freedom of design combined with ease of maintenance.

In highly sensitive healthcare areas, and other places that have strict hygiene requirements, it's vital that floor-to-wall transitions are water-tight, perfectly hygienic and aesthetically pleasing. Our integrated coving system creates a perfect seal for these critical areas using the same Colorex material.

The Colorex accessories have, amongst other benefits, preformed corners with a radius linked to the size of cleaning pads found on most commercial cleaning machines. This ensures that no sharp corners are created that would prove difficult to clean.

Preformed outer corners are prevented from tearing because of their special construction. The inner reinforcement prevents the outer corners tearing or breaking due to high mechanical pressure, e.g. the rotation of a cleaning machine.

COLOREX GENERAL ACCESSORIES



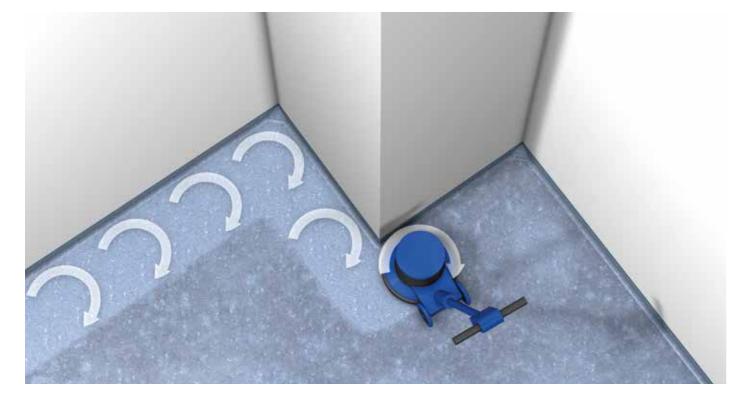
COLOREX SKIRTING STRIPE

Dimension Length: 12 m Height: 150 mm Shipping unit 2 piece/carton Article 1600 xx

COLOREX WELDING ROD







COLOREX PLUS ACCESSORIES



Dimension 50 x 20 x 8 mm Radius: 20 mm Length: 1.22 m Shipping unit 1 piece

COLOREX PLUS UNDERLAY PROFILE

Article X1197

COLOREX PLUS - VENTILATED BASE SYSTEM ACCESSORIES



Dimension Height: 60 mm Base: 20 mm Length: 2 m Shipping unit 20 x 2 m 222750 (KL60 bright grey 0138) 222751 (KL60 dark grey 0146)



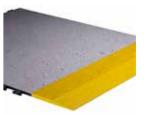
COLOREX INNER/OUTER CORNER

Dimension	Base: 50 mm		
	Height: 100 mm		
	Radius: 20 mm		
Shipping unit	1 piece		
Article	1700 xx (inner)		
	1800 xx (outer)		



COLOREX UNDERLAY PROFILE

Dimension	20 x 20 mm		
	Radius: 20 mm		
	Length: 25 m		
Shipping unit	2 piece/carton		
Article	1500 00		



COLOREX PLUS RAMP

Dimension	1220 x 150 mm			
Shipping unit	1 piece			
Article	171500 (solid grey)			
	171531 (yellow)			

VENTILATED SKIRTING AVAILABLE IN TWO COLOURS: BRIGHT GREY AND DARK GREY

The **repairable** surface

Deep scratches, holes, burns or other surface damage can be easily and effectively repaired, without leaving any visible trace or affecting the original characteristics of the floor. This genuine, 100% repairable surface is unique to Colorex and something that no other flooring system can promise.

All Colorex conductive vinyl collections are easy to maintain and restorable, thanks to their highly durable pressed vinyl construction. The cleaning & maintenance instructions can be downloaded from the Forbo website. Do not apply any wax or emulsion floor finishes in ESD protected areas as these may adversely affect the conductive properties of the floor.

Invisible repairs

Problem: Deep or long scratches, holes and burns. Advantage: Invisible repairs without damaging the initial characteristics of the product.

Reason: Perfect homogeneous product with low plasticizer content.

Deep scratches and other serious damage can be repaired by hot welding. A small strip of Colorex of the same colour should be welded directly into the damage using a hand welding machine. After the excess material has been trimmed off, the repaired spot can be restored to a good-as new condition by sanding and dry polishing.

- Unique 100% repairable surface.
- Scratches or serious damage can be repaired.
- It will be restored to a good-as-new condition.

Restoration

Problem: Surface damage such as burns, abrasion or staining. Advantage: Abrasive cleaning can restore the floor to its original condition.

Reason: Thanks to a compact high pressure pressed surface a PUR treatment is not necessary.

After sanding, the surface can be restored to its original quality and appearance by dry polishing using progressively smoother pads till the desired result is achieved.

• Easy sanding with conventional equipment.

• Restore to its original quality and appearance by simply polishing.







Technical specifications

s of FN ISO 10581 and ASTM 1700

			Colorex [®] SD	Colorex [®] EC	Colorex [®] plus EC	Colorex [®] plus Basic	Colorex [®] plus R	
	Binder content	EN ISO 10581	type 1	type 1	type 1	type 1	type 1	
×	Total thickness	EN ISO 24346	2.0 mm / 3.0 mm*	2.0 mm / 3.0 mm*	10.3 mm	10.3 mm	10.3 mm	
ļĥ)	Commercial use	EN ISO 10874	34 very heavy	34 very heavy	34 very heavy	34 very heavy	34 very heavy	
jî.	Light industrial use	EN ISO 10874	43 heavy	43 heavy	43 heavy	43 heavy	43 heavy	
Ð	Tile size	EN ISO 24342	615x615 mm 615x1230 mm*	615x615 mm 615x1230 mm*	607x607 mm	607x607 mm	607x607 mm	
2	Total weight	EN ISO 23997	3.2 kg/m ²	3.2 kg/m ²	12.0 kg/m ²	12.0 kg/m ²	12.0 kg/m ²	
	Electrostatics (general requirements)	IEC 61340-5-1	Compliant	Compliant	Compliant	n.a.	n.a.	
	Electrical resistance	IEC 61340-4-1 ESD STM7.1	$1 \ x \ 10^{^{\wedge}}6 \leq R \leq 10^{^{8}} \Omega$	$5 \ x \ 10^4 \leq R \leq 10^6 \ \Omega$	$2.5 \times 10^4 \le R \le 10^6$	n.a.	n.a.	
	Electrical resistance in combination with ESD control footwear	IEC 61340-4-5 ESD STM97.1	$R \leq 1 \; x \; 10^9 \; \Omega$	$R \leq 3.5 \ x \ 10^7 \ \Omega$	$R \leq 3.5 \ x \ 10^7 \ \Omega$	n.a.	n.a.	
	Body Voltage Generation, in combination with ESD control footwear <i>Typical value</i>	IEC 61340-4-5 ESD STM97.2	< 100 V ~ 40 V	< 100 V ~ 20 V	< 100 V ~ 20 V	< 2 kV n.a.	< 2 kV n.a.	
٦ لا	Dimensional stability	EN ISO 23999	≤ 0.05%	≤ 0.05%	≤ 0.25%	≤ 0.25%	≤ 0.25%	
	Residual indentation Typical value	EN ISO 24343-1	≤ 0.10 mm ~ 0.02 mm	≤ 0.10 mm ~ 0.02 mm	≤ 0.10 mm ~ 0.05 mm	≤ 0.10 mm ~ 0.07 mm	≤ 0.10 mm ~ 0.07 mm	
	Resistance to loads Powered pallet truck and forklifts: total weight up to 2.5 t with hard wheels and up to Static loads: 50 kg/cm ² - dynamic loads: 90 kg/cm ² (performance may vary, subject to loads)							
Ņ	Castor chair continuous use	ISO 4918	pass	pass	pass	pass	pass	
	Impact sound reduction	EN ISO 140-8	2 dB	2 dB	12 dB	12 dB	12 dB	
R	Light fastness	EN ISO 105-B02	≥ 6	≥6	≥6	≥ 6	≥ 6	
Э	Resistance to chemicals	EN ISO 26987	Excellent	Excellent	Excellent	Excellent	Excellent	
2		DIN 51130	R9	R9	R9	R9	R10	
\$	Bacteria resistance	ISO 846	Pass	Pass	Pass	Pass	n.a.	
	Thermal dilatation coefficient		0.07 mm/m°C	0.07 mm/m°C	0.07 mm/m°C	0.07 mm/m°C	0.07 mm/m°C	
Ĭ	Outgassing	IDEMA M11-99	total < 1 µg/cm ²	total < 1 µg/cm ²	total < 2 μg/cm ²	total < 2 μ g/cm ²	total < 2 μg/cm	
	Indoor Air Emsissions: TVOC after 28 days	EN 16516	≤ 0.025 mg/m ³	\leq 0.025 mg/m ³	≤ 0.025 mg/m ³	≤ 0.025 mg/m ³	≤ 0.025 mg/m ³	
	Cleanroom particle emission	ISO 14644-1	ISO 4	ISO 2	ISO 2	ISO 4	ISO 6	
\geqslant	Creating better environments							
K	Renewable electricity		Colorex SD and Colorex E 100% electricity from					
	Recycled content Colorex plus contains up to 95% recycled content in the bac							
			EN 14041	EN 14041	EN 14041	EN 14041	EN 14041	
	All Colorex [®] products meet the requireme	ents of EN 14041	0201083-DoP-003	CE 0201081-DoP-003	0201082-DoP-003	CE 0201070-DoP-003	CE 0201070-DoP-003	
h. 191	Reaction to fire**	EN 13501-1	B _n -s1, G, CS	B _{fl} -s1, G, CS	B _{fl} -s1, L, CS	B _n -s1, L, CS	B _f -s1, L, CS	
22	Slip resistance	EN 13893	µ ≥ 0.30	$\mu \geq 0.30$	μ ≥ 0.30	µ ≥ 0.30	µ ≥ 0.30	
-23 t t	Thermal conductivity	EN 12524	0.25 W/(m·K)	0.25 W/(m·K)	0.25 W/(m·K)	0.25 W/(m·K)	0.25 W/(m·K)	
Â	Body voltage	EN 1815	$\leq 2 \text{ kV}$	$\leq 2 \text{ kV}$	\leq 2 kV	≤ 2 kV	\leq 2 kV	
/2 090	Electrical behaviour - static dissipative	EN 1081	$\leq 1 \times 10^9 \Omega$	n.a.	n.a.	n.a.	n.a.	
	Electrical behaviour - conductive	EN 1081	n.a.	≤ 1 x 10 ⁶ Ω	≤ 1 x 10 ⁶ Ω	n.a.	n.a.	

All Forbo Flooring Systems' sales organisations worldwide have a certified Quality Management System in accordance with ISO 9001. All Forbo Flooring Systems' manufacturing operations have a certified Environmental Management System in accordance with ISO 14001. The Life Cycle Assessment (LCA) of Forbo Flooring Systems' products is documented in individual Environmental Product Declarations (EPD's) which can be found on all of our websites.





 $\frac{\mathsf{Find}\,\mathsf{us}\,\mathsf{on}}{\mathsf{f}\,\mathfrak{G}\,\mathcal{P}\,\mathsf{in}\,\boldsymbol{\blacktriangleright}\,\boldsymbol{\heartsuit}}$

creating better environments

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