



ESD SOLUTIONS





A complete range of products for all sites sensitive to the risk of electrostatic discharge



Static electricity

Static electricity is everywhere. At its most spectacular expression appear storms and lightnings. Static Electricity is also generated by friction and separation of two materials where one is nonconductor. This produces a build-up of electric charge on the surface of each material with one becoming positively and the other becoming negatively charged.

The electrostatic charges naturally seek to balance themselves out. Electro Static Discharge (ESD) occurs as soon as contact is made with a conductive element.

Static electricity is harmless to humans. However, it can pose serious threats to sensitive equipment. Vulnerable electronic equipment can be subject to a reduction of sensitivity and even complete failure in the event of an uncontrolled discharge of static energy.

Typical concerned areas include healthcare environments such as operating theatres and intensive care wards, electronics industry and industrial clean rooms.



ESD risks

In technical areas and industrial premises, electrostatic discharges lead to numerous problems. The most frequent among them are:

- degradation of sensitive electronic components leading to a loss of performance which is occasionally impossible to detect during routine quality control
- deterioration of production conditions: disruption of sensitive electronic equipment, aggregation of dust, reduction in line output, etc.
- risk to human safety.

In the electronic industry, 30-50% of faults found in components are due to uncontrolled Electro Static Discharge (ESD).

In particular circumstances, close packing of components can have a marked increase in the sensitivity of products and charges as little as 10 volts may be sufficient to increase risk.

This is most notable in restricted industrial areas where ESD can cause explosions. This may be due to the presence of flammable or explosive mixtures but also in areas were fine powders are subject to friction such as the bakery industry where fire is a permanent threat.

Controlling ESD

To reduce the risk from static electricity, various solutions can be effective including: earthing points for people and equipment, static control packaging or ionisation, all having the intention of:

- Limiting charges
- Controlling discharges

An overall ESD risk assessment must be carried out in order to take into account the professional environment, the risks linked to procedures and the sensitivity and susceptibility of the components.

The most employed method for limiting electrostatic charge is by grounding people and objects. The use of electroconductive floorings combined with conductive footwear constitutes a key part in managing this phenomenon. It guarantees a long-term, low level and harmless discharge to people.

Mipolam EL floorings

Mipolam EL floorings offer a complete range of products, **conductive (EL5)** and **dissipative (EL7)**. According to the type of requirements they ensure:

- the protection of electronic equipment and components
- the protection of people against electro-static discharge
- the protection of premises against explosive risks

Used in conjunction with conductive footwear, Mipolam EL floorings guarantee the highest level of protection against ESD risk due to their low generation of charges (< 100 to < 20 V according to the IEC 61340 - 4 - 5) and to the effective elimination of charges over long term.

APPLICATIONS: A SOLUTION FOR ALL MARKETS











MIPOLAM EL BENEFITS



Controlling discharges

■ Mipolam EL floorcoverings guarantee the lasting elimination of electrostatic charges while taking into account people's safety.

Low accumulation of charges

■ Mipolam EL floorcoverings guarantee a low accumulation of electrostatic charges to people and equipment.

Mechanical resistance

■ The homogeneous and compact surface provides enduring resistance to static and dynamic loads.

Chemical resistance

■ Mipolam EL floorcoverings display excellent resistance to chemical products such as detergents, acids and alkaline products.

Minimum gas emission

■ Low VOC emissions (<10 μ g/m³).





Decontamination

■ Mipolam EL floorcoverings are rated as "good" in compliance with the nuclear decontamination standard ISO 8690.

Fully hygienic

- Floorcovering is non-absorbent, impervious and non-porous.
- Can be hot welded and installed with a coved skirting for easy cleaning.
- Mipolam Elegance EL5 and Mipolam Accord EL7 are treated with Evercare[™] ensuring easy maintenance, no wax for life, stain barrier, chemical resistance.

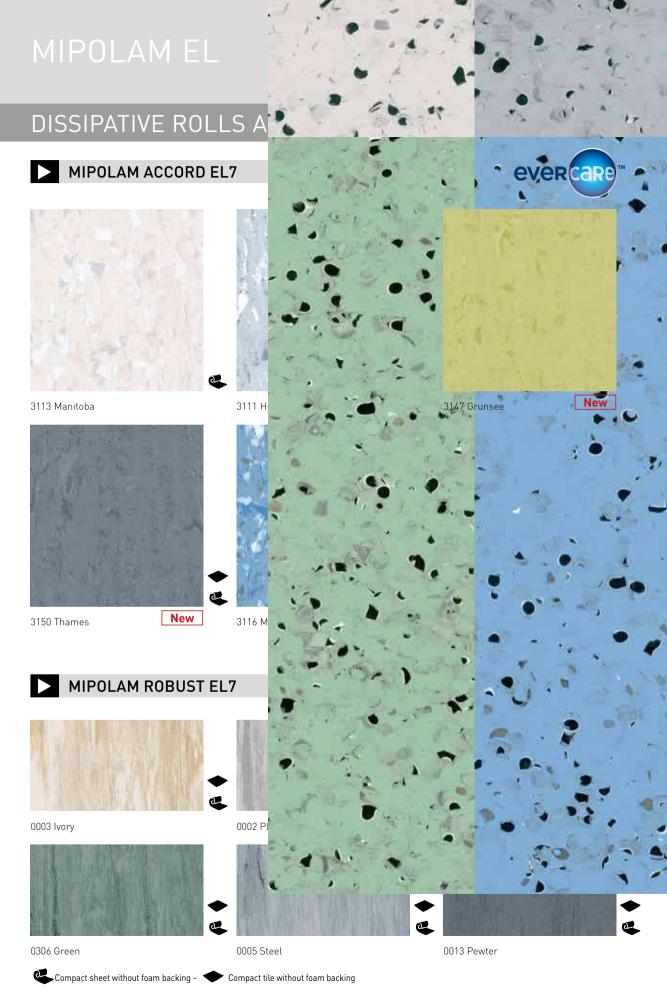
Access flooring with laminar flow

■ Mipolam EL floorings and GTI EL5 tiles are especially well suited to "high-tech" applications. They are designed to be compatible with access flooring in cleanrooms with laminar flow.

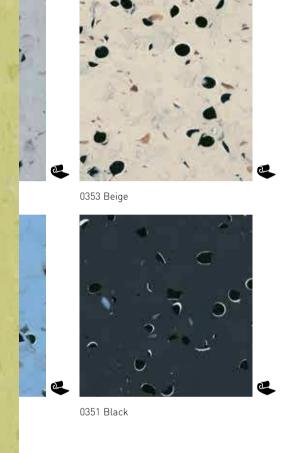
Low risk of particle contamination

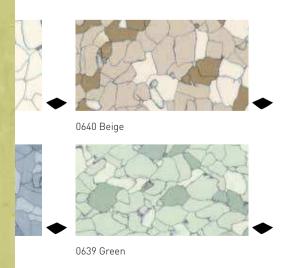
■ The Mipolam EL tile meets the high requirements for particle contamination set by electronic industry due to the low release of carbon particles.











nnology permits.



MIPOLAM ELEGANCE EL5



 $10^4 \le Rt \le 10^6 \Omega$



🗘 100 % recyclable





MIPOLAM ELEGANCE EL5 is a conductive flexible homogeneous vinyl floorcovering available in sheet. The 2 mm homogeneous material incorporates carbon encapsulated granules throughout its full thickness. It has a conductive backing to ensure optimal and consistent conductive properties throughout its full life expectancy.

This floorcovering is treated with **Evercare™**: the latest improvements in polyurethane surface treatment obtained by UV laser cross-linking. Evercare™ avoids stain of chemical products used in healthcare like betadine, eosin or anti-bacterial hand gel and increases the durability of the flooring.

This treatment has excellent maintenance characteristics; it requires no wax for life!

MIPOLAM ELEGANCE EL5 acts as a continuous conductive 10⁴ ≤ Rt ≤ 10⁶. It has permanent antistatic properties (< 100 V). The product has to be grounded with an ESD copper strip (cf. finishes) to meets its full performance. The product is non-reactive to residual indentation with a value ≤ 0,02 mm EN ISO 24343-1 [EN 433].

The flooring complies with the EN ISO 10581 (EN 649) [34-43] offering a group P wear rating suitable for heavy duty traffic areas and Bfl-s1 fire resistance.

The product is non-emissive of volatile organic compounds with <10 µg/m3 (TVOC after 28 days ISO 16000-6).

MIPOLAM TECHNIC EL5



 $10^4 \le Rt \le 10^6 \Omega$



♠ 100 % recyclable



MIPOLAM TECHNIC EL5 is a conductive flexible homogeneous compacted vinyl floorcovering available

The conductive carbon coated PVC pellets create a perfect conductive network for permanent conductive properties and antistatic properties (< 100 V) throughout its full life expectancy.

It acts as a continuous conductive 104 ≤ Rt ≤ 106 (EN 1081).

MIPOLAM ACCORD EL7





 $10^6 \le Rt \le 10^8 \Omega$

♠ 100 % recyclable





MIPOLAM ACCORD EL7 is a dissipative flexible homogeneous vinyl floorcovering available in both sheet and tile form, calendered and compacted.

This floorcovering is treated with **Evercare™**: the latest improvements in polyurethane surface treatment obtained by UV laser cross-linking. Evercare™ avoids stain of chemical products used in healthcare like betadine, eosin or anti-bacterial hand gel and increases the durability of the flooring.

This treatment has excellent maintenance characteristics; it requires no wax for life!

MIPOLAM ACCORD EL7 acts as a continuous dissipater 10⁶ ≤ Rt ≤ 10⁸.

The product is non-reactive to residual indentation with a value \leq 0,02 mm.

The flooring is a group P wear rating suitable for heavy duty traffic areas and Bft-s1 fire resistance.

The product is non-emissive of volatile organic compounds with <10 µg/m3 (TVOC after 28 days ISO 16000-6).

MIPOLAM ROBUST EL7





 $10^6 \le Rt \le 10^8 \Omega$

3 100 % recyclable



Mipolam ROBUST EL7 is a dissipative flexible homogeneous vinyl floorcovering available in both sheet and tile. Calendered and compacted. It acts as a continuous dissipater 106 < Rt < 108 (EN 1081).





			MIPOLAM ELEGANCE EL5	MIPOLAM TECHNIC EL5	MIPOLAM ACCORD EL7	MIPOLAM ROBUST EL7
DESCRIPTION						
Total thickness	EN ISO 24346 (EN 428)	mm	2.00	2.00	2.00	2.00
Total themicss	ASTM F386-02	inch	-	0.08	-	-
Weight	EN ISO 23997 (EN 430)	g/sq.m	3060	3800	3100	3300
Width/length of sheet	EN ISO 24341 (EN 426)	cm / lm	200 / 20	-	200 / 20	200 / 20
Tile size	EN ISO 24342 (EN 427)	mm	-	608 x 608	608 x 608	608 x 608
Number of tiles per package	-	-	-	20	20	20
CLASSIFICATION						
Standard / product specification	-	-	EN ISO 10581 (EN 649)	EN ISO 10581 (EN 649)	EN ISO 10581 (EN 649)	EN ISO 10581 (EN 64
European classification	EN ISO 10874 (EN 685)	class	34-43	34-43	34-43	34-43
Fire rating	EN 13501-1	class	Bfl - s1	Bfl - s1	Bfl - s1	Bfl - s1
	EN 1081	Ohm	10 ⁴ ≤ Rt ≤ 10 ⁶	10 ⁴ ≤ Rt ≤ 10 ⁶	10 ⁶ ≤ Rt ≤ 10 ⁸	10 ⁶ ≤ Rt ≤ 10 ⁸
Electrical resistance [1]	IEC 61340-4-1	Ohm	≤ 10°	≤ 10°	-	-
	IEC 61340-4-5	Ohm	≤ 10°	≤ 10 ⁹	-	-
	ANSI / ESD-STM 7.1	Ohm	≤ 10°	$2.5 \times 10^4 \le Rt \le 10^9$	-	-
Static electrical propensity	EN 1815	kV	< 2	< 2	< 2	< 2
Static electrical properisity	IEC 61340-4-5	V	≤ 100 ^[2]	≤ 100 ⁽²⁾	-	-
Protection against electrostatic	ESD S20.20	-	OK	OK	-	-
discharges	IEC 61340-5-1	-	OK	OK	-	-
Slip resistance wet	DIN 51130	class	R9	-	R9	-
PERFORMANCE						
Wear resistance	EN 660.2	mm³	≤ 4.0	≤ 4.0	≤ 4.0	≤ 7.5
Wear group	NF 189	group	Р	Р	Р	М
Type binder content	ISO 10581	type	1	II	II	II
Dimensional stability	EN ISO 23999 (EN 434)	%	≤ 0.40	≤ 0.25	Sheet ≤ 0.40 Tile ≤ 0.25	Sheet ≤ 0.40 Tile ≤ 0.25
Residual indentation	EN ISO 24343-1 (EN 433)	mm	≃ 0.02	≃ 0.03	≃ 0.02	≃ 0.03
Castor chair test (Type W)	ISO 4918 (EN 425)	-	OK	OK	OK	OK
Thermal conductivity	EN ISO 10456 (EN 12524)	W/(m.K)	0.25	0.25	0.25	0.25
Colour fastness	EN 20 105 - B02	degree	≥ 6	≥ 6	≥ 6	≥ 6
Surface treatment	-	-	Evercare™	-	Evercare™	-
Chemical products resistance	EN ISO 26987 (EN 423) AIR QUALITY	-	ОК	ОК	ОК	ОК
TVOC after 28 days	ISO 16000-6	μg/m³	< 10	< 10	< 10	< 10
Certification CE MARKING	-	-	Floorscore®	-	Floorscore®	-
	EN 14041	-				
CC		-	7 (1010)			3

⁽¹⁾ Measured before installation

(2) Measured with ESD shoes (ABEBA and Uvex)
Important : please refer to GERFLOR installation guidelines – www.gerflor.com

Product description and technical data sheet available in various languages. See our Gerflor Country websites.

Installation and Maintenance Guidelines, Complementary ranges available on our Gerflor website.



Rubber leaves indelible stains on vinyl floorings: do not use mats with rubber backing and replace tubular furniture feet with those made of PVC or polyamide. Place mats of sufficient length at entrances to reduce outside sources of dirt.

IMPORTANT: The information contained in this document is valid from October 1st 2017 and is subject to change at any time without notice. In the context of constantly changing technology, our customers are responsible, prior to any use, for checking with us that this document is the version in force.

GTI EL5 BENEFITS





All the benefits of a GTI Tile

with Evercare[™] treated smooth surface and electro-conductive properties.

■ INTERLOCKING SYSTEM GTI EL5 CONNECT







■ WELDED SQUARE FORMAT GTI EL5 CLEANTECH





Renovation solution

■ Easy repairs with no special tools / Easy replacement





Direct installation

■ On existing floor (concrete, ceramic, epoxy resin, pvc, ...) or problem subfloors (asbestos subfloor, damp subfloor, ...)

Fast & Easy Installation

■ Up to 20 sqm / 215 sq. ft. per hour

No shut down required

■ No lost revenues + Time saving

High Traffic Resistance

■ Withstands heavy loads

Durability

■ Will not crack / will not blister / will not break

Watertight System

■ Hot welding with GTI EL5 CLEANTECH

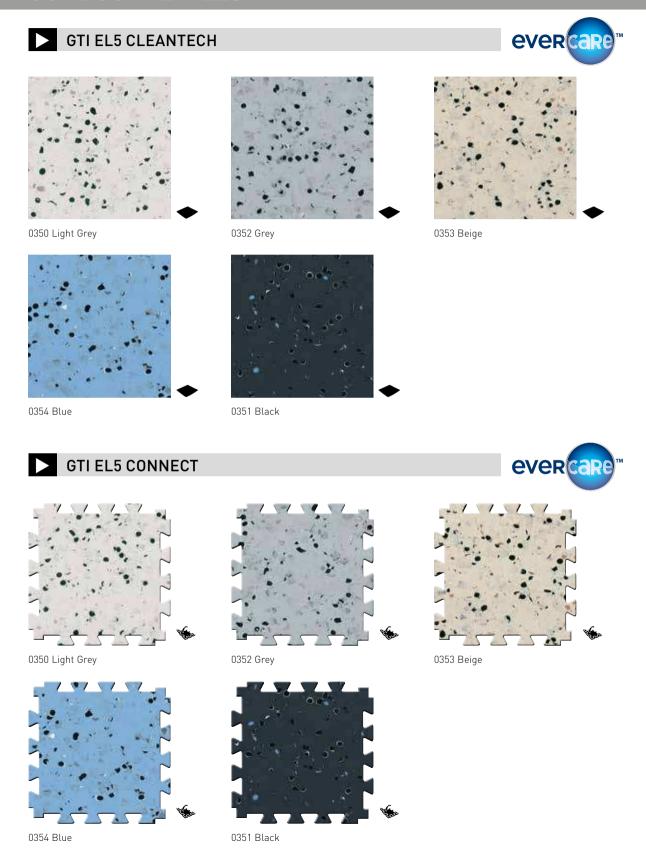
Electro-conductive properties

- 5 x 10⁴ ≤ Rt ≤ 10⁶ (EN1081) conductive properties throughout its full life expectancy
- Low static electrical propensity: < 2000 V (EN1815), <100 V (IEC 61340-4-5)



GTI EL5

CONDUCTIVE TILES

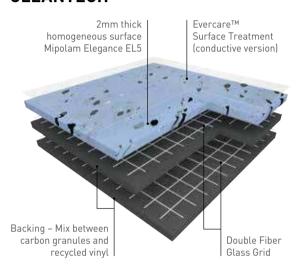




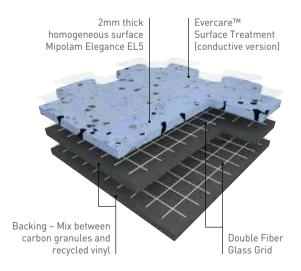
PRODUCT DESCRIPTION



CLEANTECH



CONNECT



GTI EL5 is a multi-layered looselay vinyl tile, 6 mm thick, reinforced with 2 glass fibre grids

GTI EL5 tiles can be installed using interlocking system with dovetails (${\it GTI}$ EL5 CONNECT).

They are also available in **square format with welded joints** for clean environments and watertight systems requirements (**GTI EL5 CLEANTECH**).

GTI EL5 wearlayer is 2 mm homogeneous vinyl manufactured with continuous high pressure process, abrasion group P.

This floorcovering is treated with **Evercare™** technology: the latest improvements in polyurethane surface treatment obtained by UV laser cross-linking. Evercare™ offers **easy maintenance and resistance against stain** of chemical products used in industry and healthcare like betadine, eosin or anti-bacterial hand gel **and also bio-decontamination protocols**.

This treatment has excellent maintenance characteristics; it requires no wax for life!

The carbon encapsulated granules throughout its full thickness and the **conductive backing** and **conductive surface treatment** ensure optimal and consistent conductive properties throughout its full life expectancy.

- 5x10⁴ ≤ Rt ≤ 10⁶ according to EN 1081
- Rt \leq 10° according to IEC 61340-4-1

It has permanent antistatic properties.

- < 2000V according to EN 1815
- < 100V according to IEC 61340-4-5

The product is non-emissive of volatile organic compounds with $<10 \mu g/m^3$ (TVOC after 28 days ISO 16000-6).

Finishes: GTI EL5 ACCESS (access ramp), GTI EL5 CORNER (corner finishes), GTI EL5 CLEANTECH COVING (COVING CORNER IN and COVING CORNER OUT) and conductive welding rods (GTI EL5 CLEANTECH WELDING RODS).

TECHNICAL DATA

EN ISO 24346 (EN 428) EN ISO 24340 (EN 429) EN ISO 23997 (EN 430) EN ISO 24342 (EN 427)	mm mm q/m²	6.00	6.00
EN ISO 24340 (EN 429) EN ISO 23997 (EN 430)	mm		
EN ISO 23997 (EN 430)		2	
	g/m²		2
EN ISO 24342 (EN 427)	J.	9240	9240
	mm	635 x 635	650 x 650
¥	-	EN ISO 10582 (EN 649)	EN ISO 10582 (EN 649)
EN ISO 10874 (EN 685)	class	34-43	34-43
EN 13 501-1	class	B _{fl} -s1	B _{fl} -s1
EN 1081	Ω	5 x 10 ⁴ ≤ Rt ≤10 ⁶	5 x 10 ⁴ ≤ Rt ≤10 ⁶
IEC 61.340-4-1	Ω	≤ 10°	≤ 10°
IEC 61340-4-5	Ω	≤ 10°	≤ 10°
ANSI/ESD STM 7.1	Ω	≤ 10°	≤ 10°
EN 1815	kV	< 2	< 2
IEC 61340-4-5	٧	≤ 100 ^[2]	≤ 100 ⁽²⁾
ESD S20.20	-	OK	OK
IEC 61340-5-1	-	OK	OK
DIN 51 130	class	R9	R9
EN 660.2	mm³	€ 4	≤ 4
NF 189	group	Р	Р
ISO 10582	type	Γ	I
EN ISO 23999 (EN 434)	%	≤ 0.25	≤ 0.25
EN ISO 868	Hd	≥ 90	≥ 90
ISO 4918 (EN 425)	-	OK	OK
EN ISO 10456 (EN12524)	W/(m.K)	0.25	0.25
EN 20 105 - B02	degree	≥ 6	≥ 6
-	-	Evercare™	Evercare™
EN ISO 26987 (EN 423)	class	OK	OK
ISO 16000-6	μq / m³	<10	<10
-	-	Floorscore®	Floorscore®
EN 14041			B _{II} -s1
	EN ISO 10874 (EN 685) EN 13 501-1 EN 1081 IEC 61.340-4-1 IEC 61340-4-5 ANSI/ESD STM 7.1 EN 1815 IEC 61340-4-5 ESD S20.20 IEC 61340-5-1 DIN 51 130 EN 660.2 NF 189 ISO 10582 EN ISO 23999 (EN 434) EN ISO 868 ISO 4918 (EN 425) EN ISO 10456 (EN12524) EN 20 105 - B02 - EN ISO 26987 (EN 423)	EN ISO 10874 (EN 685) class EN 13 501-1 class EN 1081 Ω IEC 61.340-4-1 Ω IEC 61340-4-5 Ω ANSI/ESD STM 7.1 Ω EN 1815 kV IEC 61340-4-5 V ESD \$20.20 - IEC 61340-5-1 - DIN 51 130 class EN 660.2 mm³ NF 189 group ISO 10582 type EN ISO 23999 (EN 434) % EN ISO 868 Hd ISO 4918 (EN 425) - EN ISO 10456 (EN12524) W/(m.K) EN 20 105 - B02 degree - EN ISO 26987 (EN 423) class	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

⁽¹⁾ Measured before installation

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⁽²⁾ Measured with ESD shoes (type ABEBA and Uvex)

GTI EL5 FINISHES





ESD FINISHES

CLEAN CORNER SYSTEM





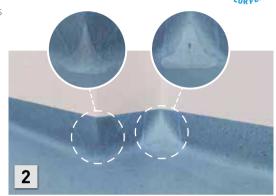
AN INNOVATIVE CORNER SYSTEM

Contamination control in technical platforms and clean rooms is an ongoing issue.

Corners, in particular, are the focal point of most negligence in respect of hygiene rules:

- With ultra-resistant and versatile profiles (picture 1)
- Clean Corner System can be used for all your projects with a perfect result (picture 2).







- Compliant with GMP
- Suitable for E2 and E3 zones
- Easy coving
- Limited and easy welding



RESISTANT & DURABLE

• Ultra-resistant bi-material corner profiles



CLEAN & HYGIENE

- Quick and easy cleaning and decontamination
- Easy manoeuvring of twist upright vacuum cleaner
- No blind spot



VERSATILE

- Suitable for all Gerflor floors
- Suitable for all skirting heights (7 to 15 cm)
- Suitable for all cove formers (20 x 20 mm to 38 x 38 mm)
- Suitable for all angles (85° to 95°) with or without coving sections



• Neat and uniform design for all your corners

Patent pending



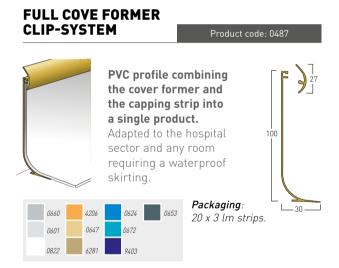


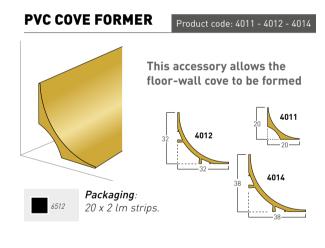


ESD FINISHES

CAPPING STRIP CLIP SYSTEM Product code: 0486 Rigid clipped finishing profile with 2 flexible lips Capping strip that covers the skirting Packaging: 0660 4206 0624 0653 20 x 3 lm strips. 0401 0647 0672 0822 6281 9403













EXCLUSIVE PATENTED TECHNOLOGY BY GERFLOR





USER'S BENEFITS

Easy maintenance
Stain barrier
Chemical resistance

No wax for life

Cost-effective maintenance

- 80% less water and detergent use for cleaning
- 30% savings on maintenance costs

ECO-RESPONSIBLE SOLUTIONS

LESS SPEAKING FOR MORE ACTION





COMPOSITION

- 100% REACH compliant
- FREE of formaldehyde
- FREE of heavy metals
- FREE of solvent



INSTALLATION

 Innovative adhesive free installation systems



RECYCLED CONTENT

- 25% average recycled content
- 100% REACH compliant recycled content



RECYCLING

• 100% recyclable product



LIFE CYCLE ANALYSIS

- Eco-designed according to a product specific Life Cycle Analysis
- Manufactured in an ISO 14001 and ISO 50001 certified site
- Contribution to many Green Building Schemes (LEED, HQE, BREEAM...)
- **Exclusive surface treatments** to reduce drastically the use of chemical product and water and ensure the lowest environmental impact



INDOOR AIR QUALITY

- TVOC emissions 10 times better than norms requirements (TVOC < 10 µg/m³ after 28 days)
- TVOC < 10ug/m³ after 28 days for all products treated Evercare™
- Floorscore certified
- No formaldehyde emission



WELLNESS

- Safety: Anti slip performance
- Comfort: Walking comfort and impact noise reduction

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gerflor.com

ARCHITECTURE DECORATION SPORT TECHNOSPECIFIC











&

& Profiles

Be connected!















#Gerflor

GERFLOR, ECO-RESPONSIBLE SOLUTIONS



COMPOSITION

100% REACH compliant FREE of formaldehyde FREE of heavy metals FREE of solvent



RECYCLED CONTENT

25% average recycled content 100% REACH compliant recycled content



RECYCLABILITY 100% recyclable product



INDOOR AIR QUALITY

TVOC emissions between 10 and 100 times better than norms requirements Floorscore certified No formaldehyde emission



INSTALLATION Innovative adhesive free installation systems



LCA

-Eco-designed according to a product specific Life Cycle Analysis -Manufactured in an Iso 14001 and Iso 50001 certified site -Contribution to many Green Building Schemes (LEED, HOE, BREEAM...)



WELLNES

Safety: Anti slip performance Comfort: Walking comfort and impact noise reduction

