vebrostatic: safely grounding electrostatic discharge

seamless resin ESD control flooring

vebro polymers

vebrostatic
seamless resin ESD control flooring

Making the correct choice of flooring system, when establishing an electrostatic protected area (EPA), is essential to ensure that sensitive electronic components and assemblies are adequately protected from the harmful effects of electrostatic discharge (ESD).

Electrostatic Discharge (ESD) refers to the rapid, spontaneous transfer of electrostatic charge induced by a high electrostatic field. Charge can build-up while simply walking across the floor of a processing environment.

Without flooring materials equipped with adequate protection, this charge can cause irreversible damage to sensitive components.

When used in conjunction with suitable footwear, **vebro**static flooring systems will safely dispel charge to ground faster than it accumulates, in accordance with ESD Association guidelines.

As part of the **vebro**static range, Vebro Polymers offers both a conductive and dissipative grade of both epoxy and polyurethane resin as well as vapour permeable and decorative quartz-based options. **vebro**static flooring systems demonstrate consistent ground readings throughout the life of the floor and exhibit very low body voltage generation.

how to speak **vebro**

The **vebro**static range includes systems with key words in their names.

These terms refer to the aesthetic features or performance benefits of each system in the **vebro**static range. Here's what they all mean…

ESD	Conductive	Dissipative	SL	VP
Electrostatic Discharge	50,000–1,000,000 Ω ($5 \times 10^4 – 10^6$ ohms)	<1,000,000,000 Ω (1×10^9 ohms)	Self Smoothing (BS 9204-6 Type 5)	Vapour Permeable

vebropolymers.com

key performance **benefits**

- **vebro**static meets EN 61340-5-1, EN 61340-4-1 & EN 61340-4-5 criteria
- **vebro**static is low-viscosity, more workable than competitive systems and easy to install
- **vebro**static is ISEGA certified, hygienic and safe for use in food production facilities
- **vebro**static delivers an easy to clean, non-tainting and non-dusting finish
- **vebro**static exhibits low body voltage values, minimising charge created by movement
- **vebro**static is formulated from natural biopolymers and meets AgBB low emissions criteria
- **vebro**static offers excellent resistance to fuels, lubricants, solvents and other chemicals
- **vebro**static is available in a range of colours and decorative quartz blends

keep emissions on the **down low**

low emissions AgBB

All **vebro**static systems have been tested and certified as low emissions coatings by the Committee for the Health Assessment of Construction Products (AgBB).

The AgBB evaluation scheme sets out the quality standards for building products intended for use indoors that are relevant to health. In doing so, the scheme fosters the innovation and development of low to zero emissions products.

The AgBB scheme has been developed in compliance with a number of international standards, including ISO 16000 standards and LEED, ensuring certified products meet the criteria set out, as well as contribute to building credits where applicable.

LEED is the pre-eminent program for the design, construction, maintenance and operations of high-performance green buildings, setting out a framework and providing third-party verification for a building's green design, construction, operations and maintenance solutions.

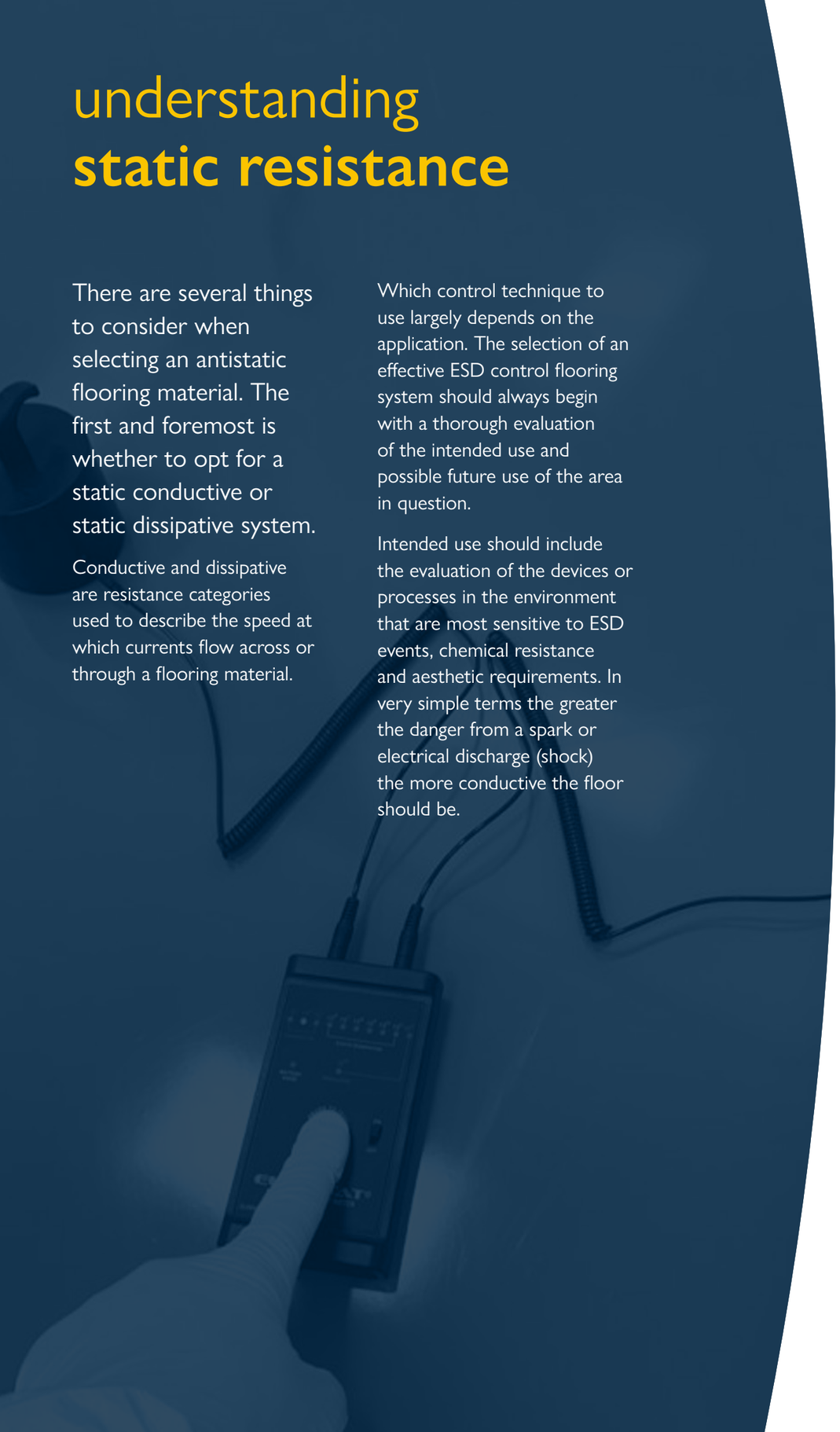
understanding **static resistance**

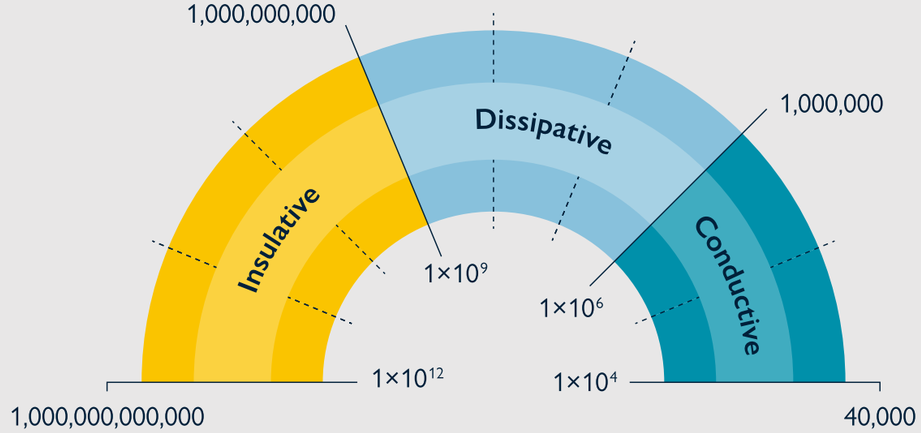
There are several things to consider when selecting an antistatic flooring material. The first and foremost is whether to opt for a static conductive or static dissipative system.

Conductive and dissipative are resistance categories used to describe the speed at which currents flow across or through a flooring material.

Which control technique to use largely depends on the application. The selection of an effective ESD control flooring system should always begin with a thorough evaluation of the intended use and possible future use of the area in question.

Intended use should include the evaluation of the devices or processes in the environment that are most sensitive to ESD events, chemical resistance and aesthetic requirements. In very simple terms the greater the danger from a spark or electrical discharge (shock) the more conductive the floor should be.





dissipative vs. conductive flooring materials

Conductive and dissipative are resistance categories used to describe the speed at which currents flow across or through a flooring material.

Neither option is better than the other, which category of resistance to specify depends entirely upon the application criteria, flooring material and other EPA controls in place within the environment.

In both instances, ESD resistance is improved by installing the floor over a grid of copper tape and earthing it to the ground.

dissipative *1×10⁶ – 1×10⁹ ohms*

Static dissipative floors allow static electricity to ‘dissipate’, or discharge in a controlled way.

They are used in areas such as computer rooms, x-ray suites, operating theatres and some electronics manufacturing facilities.

In technical terms, a static dissipative floor is defined as having a surface resistance of between 1×10^6 ohms and 1×10^9 ohms.

conductive *1×10⁴ – 1×10⁶ ohms*

Conductive floors allow any electrostatic charge that accumulates to be dispelled much quicker.

They are used in places where very sensitive components are being handled, such as on electronic assembly lines or where charge may present a fire or explosion risk.

The surface resistance of static conductive floors is defined as being between 4×10^4 ohms and 1×10^6 ohms.

seamless antistatic resin flooring frequently asked questions

what is ESD?

Electrostatic discharge (ESD) is the release of static electricity when two objects come into contact. Familiar examples of ESD include the shock we receive when we walk across a carpet and touch a metal doorknob and the static electricity we feel after drying clothes in a clothes dryer. A more extreme example of ESD is a lightning bolt. While most ESD events are harmless, it can be an expensive problem in many industrial environments.

ESD first requires a build-up of an electrostatic charge. This occurs when two different materials rub together. One of the materials becomes positively charged; the other becomes negatively charged. The positively charged material now has an electrostatic charge. When that charge comes into contact with the right material, it is transferred, and we have an ESD event.

The heat from the ESD event is extremely hot, although we do not feel it when we are shocked. However, when the charge is released onto an electronic device, the intense heat from the charge can melt or vaporize the tiny parts in the card causing the device to fail. Sometimes an ESD event can damage a device, but it continues to function. This is a called a latent defect, which is hard to detect and significantly shortens the life of the device.

what is an EPA?

An Electrostatic Protected Area, also known as an EPA, is a designated area where static is controlled under strict regulations. In an EPA all surfaces, objects, people and ESD sensitive devices are kept at the same electrical potential.

This is achieved by using only groundable with an electrical resistance typically of less than 10^9 ohms for the covering of surfaces and for the manufacture of containers and tools.

where is ESD control epoxy resin flooring used?

ESD control flooring is especially important within industries where static can cause interference or damage to employees and/or equipment.

These can include electronic production and testing areas, data centres, computer chip manufacturing plants, laboratories, military bases, aerospace facilities, operating theatres and clean rooms.

Seamless epoxy resin ESD control can also be used in areas subject to fire and explosion risk, including flammable solvent and chemical stores.

do I need to wear specialist footwear?

Understanding the need for and importance of ESD compliant footwear is also critical in the performance of the ESD flooring chosen. Personnel grounding requires effective ESD footwear that is appropriate to the application, properly worn and in good repair.

Without the use of special ESD footwear – heel straps, toe straps, sole straps or ESD shoes – some static control floors do not prevent static from accumulating as people walk.

The type of footwear used in the space also affects charge generation. Shoes with PVC soles, for instance, generate more static than shoes with leather soles. Because of its triboelectric propensities, leather is naturally low charge generating; leather also absorbs moisture, which acts as a conductor to reduce static charges. However, the anti-static tendency of leather is not reliable; in lower humidity ranges, leather shoes are not always anti-static.

is moisture in the slab a concern?

In scenarios where the slab is porous or the concrete has been newly laid, rising moisture can quickly impact the integrity of and negatively affect your ESD control flooring. Moisture can lead to cracking, bubbling, staining, and other physical changes to the floor, which in turn can alter the properties of your ESD floors and hinder their ability to prevent static build up.

how does seamless epoxy resin ESD control flooring work?

The main purpose of ESD control flooring is to help reduce possible electrostatic discharge (ESD), which accumulates as people walk, from causing damage.

Conductive elements such as carbon, graphite or metal-coated particles, distributed throughout the flooring system, give the ESD control floors electrical conductivity, and create an electrical pathway from the walking surface to ground.

Some, but not all, ESD control floors also prevent charge generation – i.e., static from accumulating as people walk. Thus, it's critical to determine the type of footwear people will use in the space. When choosing an ESD control floor, always test for both electrical resistance and charge generation.

vebrostatic colours available

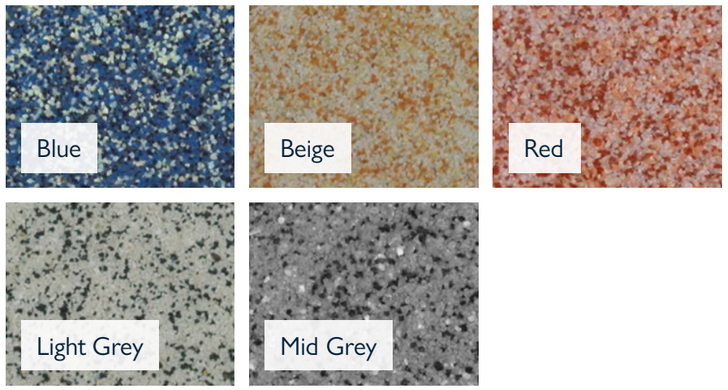
vebrostatic solid colour finish systems

vebrostatic solid colour finish systems are available in a range of standard, non-standard and premium RAL Classic colours. Below is just a snapshot of the colours available.

Light Grey RAL 7035	Agate Grey RAL 7038	Dusty Grey RAL 7037
Concrete Grey RAL 7023	Graphite Grey RAL 7024	Beige RAL 1001

vebrostatic ESD Quartz (Conductive)

vebrostatic ESD Quartz (Conductive) is available in a range of colourful quartz blends.



looking for a different colour?

vebrostatic solid systems are available in an almost unlimited palette of RAL colours and custom blends are available for **vebro**static ESD Quartz (Conductive)! For more information, visit **vebro**polymers.com

vebrostatic in action

vebrostatic ESD SL (Conductive), a 1 – 2 mm pigmented, solvent-free, self-smoothing epoxy flooring system designed to safely dissipate electrostatic discharge in highly sensitive areas, has been installed at a Space Research & Technology Development Centre in the UK.

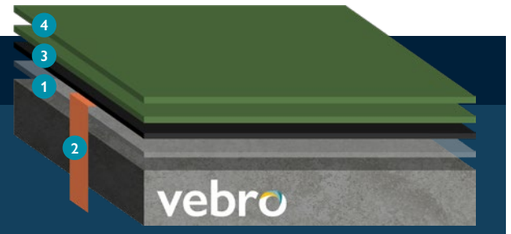
Some feedback from the application team:

The conductive primer can be laid as low as 0.08 kg / m^2. Traditionally, this goes down at a higher consumption and has a reputation in the industry as being difficult to work with – a bit like treacle – whereas **vebro** EP ESD Primer is water-based (with a 20% water addition) and rolls on like a sealer.

Likewise, the body coat installs like a normal self-leveller. Again, typically ESD systems are fairly viscous and often difficult to lay, whereas **vebro** EP ESD SL (Conductive) is more workable, meaning that more material could be installed over a shorter period of time, averaging just over 500 m^2 in one day.

vebrostatic systems

vebrostatic ESD HBC (Conductive)

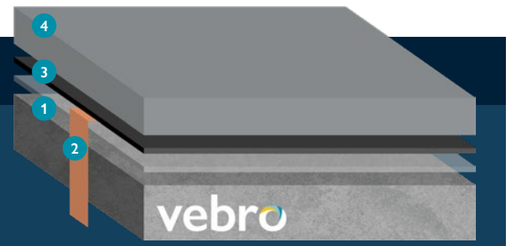


1. **vebro** EP Primer
2. Self adhesive copper tape
3. **vebro** EP ESD Primer
4. **vebro** Conductag
5. **vebro** EP ESD HBC (2 coats)

meets EN 1081, EN 61340-4-1

1.0 – 1.5 mm

vebrostatic ESD SL (Conductive)



1. **vebro** EP Primer
2. Self adhesive copper tape
3. **vebro** EP ESD Primer
4. **vebro** EP ESD SL (Conductive)
5. Optional **vebro** PU ESD Seal (Matt)

Enhanced slip resistance can be achieved with **vebro**static ESD SL SR (Conductive).

meets EN 1081, EN 61340-4-1

1.0 – 2.0 mm

vebrostatic ESD SL (Dissipative)

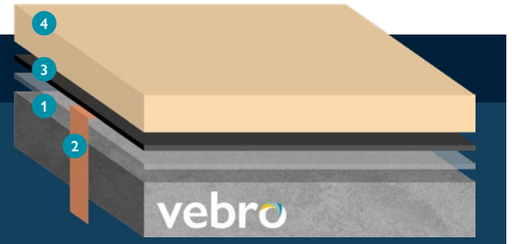
1. **vebro** EP Primer
2. Self adhesive copper tape
3. **vebro** EP ESD Primer
4. **vebro** EP ESD SL (Dissipative)
5. Optional **vebro** PU ESD Seal (Matt)

Enhanced slip resistance can be achieved with **vebro**static ESD SL SR (Dissipative).

meets EN 61340-5-1, EN 61340-4-1 & EN 61340-4-5

1.0 – 2.0 mm

vebrostatic PU ESD SL (Conductive)

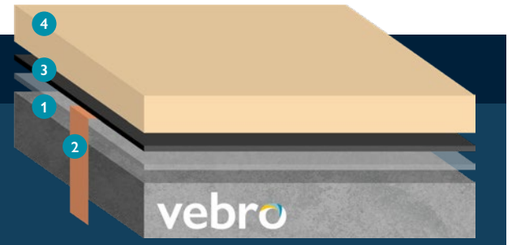


1. **vebro** EP Primer
2. Self adhesive copper tape
3. **vebro** EP ESD Primer
4. **vebro** PU ESD SL (Conductive)
5. Optional **vebro** PU ESD Seal (Matt)

meets EN 1081, EN 61340-4-1

1.0 – 3.0 mm

vebrostatic PU ESD SL (Dissipative)

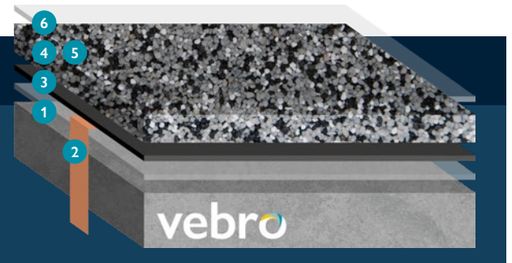


1. **vebro** EP Primer
2. Self adhesive copper tape
3. **vebro** EP ESD Primer
4. **vebro** PU ESD SL (Conductive)
5. **vebro** PU ESD Seal (Matt) or **vebro** UR ESD Seal (Gloss)

meets EN 61340-5-1, EN 61340-4-1 & EN 61340-4-5

1.0 – 3.0 mm

vebrostatic ESD Quartz (Conductive)



1. **vebro** EP Primer
2. Self adhesive copper tape
3. **vebro** EP ESD Primer
4. **vebro** EP ESD Quartz Primer with **vebro** Quartz Filler 0 and **vebro** Quartz Filler 2
5. **vebro** EP ESD Coloured Quartz Blends
6. **vebro** UR ESD Seal (Clear Gloss)

meets EN 1081, EN 61340-5-1; 5×10^{4} – 1×10^{9} Ω

4.0 mm

technically speaking…

Looking for technical information? Full technical profiles can be found in the **vebro**static technical datasheets.

For the most recent **vebro**static technical datasheets and standard system specifications, please visit **vebro**polymers.com

vebropolymers.com

vebro polymers.com

Please note: the information in this guide is subject to change and the most recent technical data should be sought for accurate, up-to-date product or system information. Errors & omissions excepted. The applied colours may differ from the examples shown within this guide. Actual samples should always be viewed before making a final decision, especially if colour accuracy or matching is key to your decision.