

# Electromagnetic compatibility (EMC)

## Shielding

Electromagnetic compatibility (EMC) refers to the usually desired state that technical devices do not interfere with each other through undesirable electrical or electromagnetic effects. In today's age of modern transmission technologies, highly sensitive and delicate technical systems and equipment, **the correct and efficient shielding of the radiation of the own devices and equipment as well as the immunity to interference is therefore an important issue.**

The 5th generation of mobile networks was developed to meet the enormous growth in data rates and connectivity in today's modern society.

This technology is responsible for the Internet of Things. Billions of objects and systems will be interconnected, even in critical sectors such as energy, transport, banking and healthcare, but also in industrial control systems that process sensitive information and support security systems.

As a result, the demands on electrical engineering products are increasing and all manufacturers must meet new requirements.

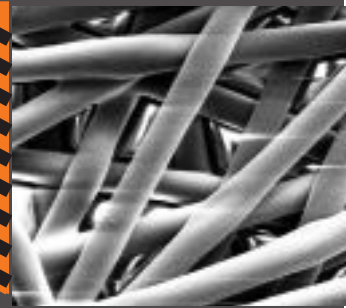
Equipment must be designed and manufactured in accordance with the latest state of technology that :

1. the electromagnetic disturbance it generates does not reach a level at which radio and telecommunications equipment or other devices cannot function as intended
2. it is sufficiently insensitive to the electromagnetic disturbances to be expected in normal operation to be able to function as intended without unacceptable degradation.

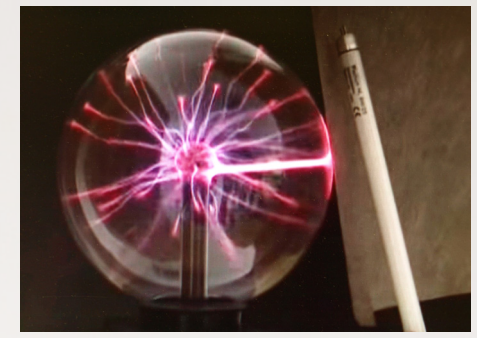
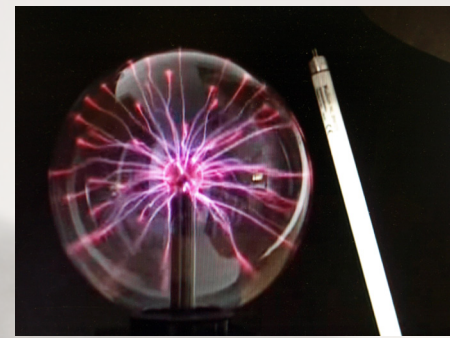
Almost all electrical and electronic equipment and installations containing electrical and/or electromagnetic components are covered by the EMC Directive.

Electromagnetic compatibility (EMC) is an essential quality feature of your products. Within the EU, EMC requirements are strictly regulated. This is the only way to exclude mutual interference between the various devices.

To ensure and optimise the quality of your products, Ecologa offers a very effective shielding solution.



Our company offers a **unique solution to prevent and reduce these phenomena**. Our customers benefit from the fast delivery of samples as well as fast and cost-effective solutions. Our materials offer maximum efficiency and safety thanks to continuous development based on the latest production and research technologies. The base material of all shieldings is our Absorb Fleece 84, which is equipped with a special coating of highly conductive copper. The attenuation value of the shielding is ideal for all areas where flexibility, high shielding effectiveness and current carrying capacity as well as simple and trouble-free processing are required. The material is air-permeable and breathable and can be cut and sewn with scissors or a knife. This non-woven fabric is a material that has the special properties of metals. The material is flexible, air-permeable and structured. There are 40 g metal on 32 g fabric. In the following example you can see how extreme **radiation is absorbed** by this material.



The fluorescent tube goes out as soon as the material is placed in between.

Mobile phones and radios go silent when covered with this material.

The rays are repelled and directed at the material, absorbed and **converted into heat**.

Material designation:	<b>Absorb-Fleece 84</b>
Substrate:	Polyamide Spunbond fleece
Weight:	84 g / m <sup>2</sup>
Thickness:	0,12 mm
Coating:	copper, protective coating
Shielding effectiveness: (MIL-STD 285)	60 - 120 dB at 0.05 - 40 GHz average attenuation 87 dB
Resistance:	5.5 mOhm

#### Further advantages for the customer:

Very low surface resistance of 0.02 Ohm

Resistance to ozone, oils and other environmental influences

Simplest application

Easy cutting with knife or scissors

Abrasion resistant and non fraying

Low contact pressure forces required (from 5% linear resistance)

100% halogen-free ingredients

Not water absorbing

Wide temperature application range from - 40°C to + 110°C

## EMC adhesive

In our standard program we always have a variety of widths available from stock. Widths from approx. 4 to 1,000 mm are freely selectable. The EMC adhesive tape is supplied in rolls of 50 metres each on a 76 mm core sleeve.

Our EMC adhesive tapes are the first and only ones in the world to be able to conduct current in all axes (X,Y,Z) and can therefore dissipate very high currents and energies. They comply with the flammability class UL94V0.

They can be used for EMC/RFI shielding, grounding and to avoid electrostatic charges.

Punching or cutting of individual adhesive surfaces with laser or water jet equipment is possible.

### The advantages of our patented EMV adhesive tape:

High shielding effectiveness 100 Mhz to 40 Ghz of over 87 dB

Very low surface resistance of 0.02 Ohm

Extremely high and immediate adhesive strength

Free of resins (no drying out)

Resistance to ozone, oils and other environmental influences

Easy cutting with knife or scissors

Abrasion resistant and non fraying

Low contact pressure forces required (from 5% linear resistance)

100% halogen-free ingredients

Not water absorbent

Punching possibilities

Wide temperature application range from -40°C to +110°C

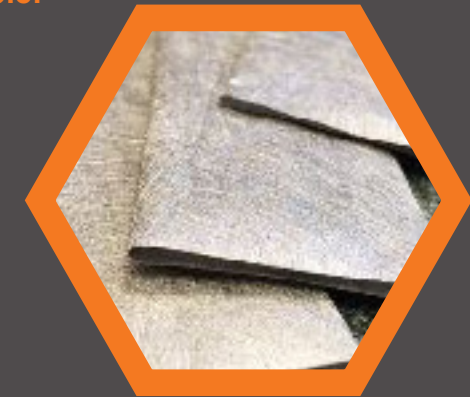
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## Flat cable shielding

We offer an innovative solution for the shielding of all types of flat cables. The shielding material Absorb-Fleece 84 is used for this purpose. Flat tape has already proven itself in many applications due to its extremely high shielding effect. In order to enable a suitable contact at the cable ends where needed, we recommend the use of our EMC adhesive tape. With this new technology it is possible to effectively shield existing systems for the first time.

The shielding of ribbon cables is a very effective and economical solution for the modernization of existing systems with highly shielded cables. The possibilities and applications are almost unlimited. The shielding can be supplied in all widths and lengths.

Standard widths and lengths are available from stock at short term. Delivery in rolls is also possible.



### Technical data:

Substrate: Polyamide Spunbond fleece

Weight: 84 g / m<sup>2</sup>

Thickness: 0,12 mm

Coating: copper, protective coating

Shielding effectiveness: 60 - 120 dB at 0.05 - 40 GHz (MIL-STD 285) average attenuation 87 dB

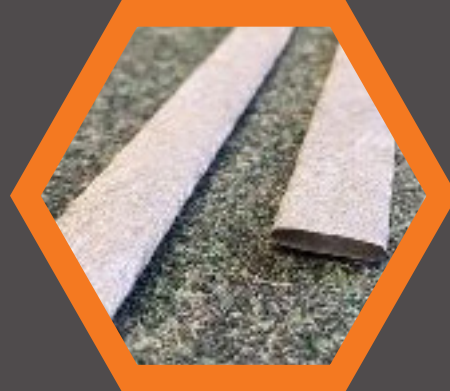
Resistance: 5.5 mOhm

## Shielding of round cables

Ecologa Europe offers you an innovative solution for shielding all types of round cables. The shielding material Absorb-Vlies 84 is used for this purpose, which has already proven **its extremely high shielding effectiveness in many applications**. In order to enable appropriate contacting at the cable ends where needed, we recommend the use of our EMC adhesive tape. With this new technology it is possible to efficiently shield existing systems for the first time.

The shielding of round cables is a very efficient and cost-effective solution for retrofitting existing systems with cable shielding with high effectiveness. The possibilities and applications are almost unlimited. The shielding can be supplied in all widths and lengths.

Standard widths and lengths are available from stock at very short term. Delivery as roll goods is also possible.



### Technical data:

Substrate: Polyamide Spunbond fleece

Weight: 84 g / m<sup>2</sup>

Thickness: 0,12 mm

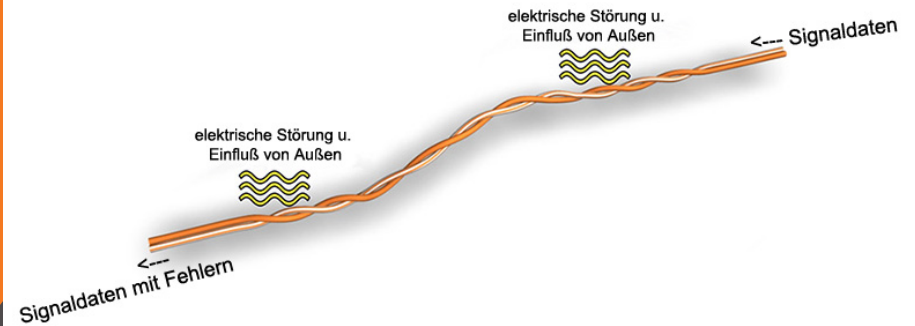
Coating: copper, protective coating

Shielding effectiveness: 60 - 120 dB at 0.05 - 40 GHz

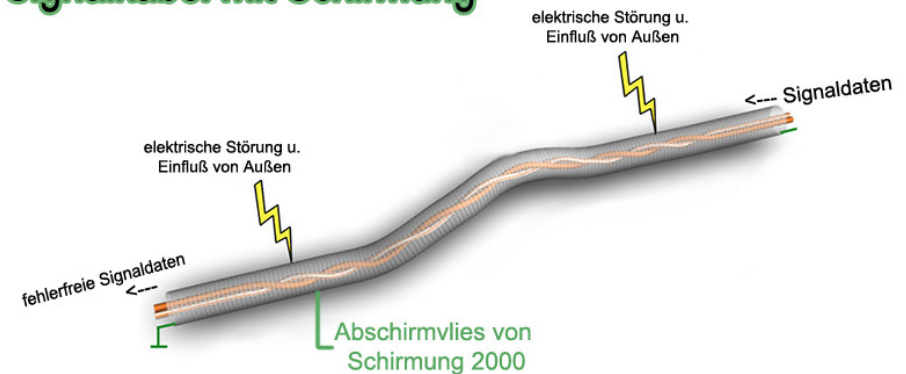
(MIL-STD 285) average attenuation 87 dB

Resistance: 5.5 mOhm

### Signalkabel ohne Schirmung



### Signalkabel mit Schirmung



### Further advantages for the customer:

Very low surface resistance of 0.02 Ohm

Resistance to ozone, oils and other environmental influences

Easiest application

Easy cutting with knife or scissors

Abrasion resistant and non fraying

Can also be used as a retrofit solution

100% halogen-free ingredients

Not water-absorbent

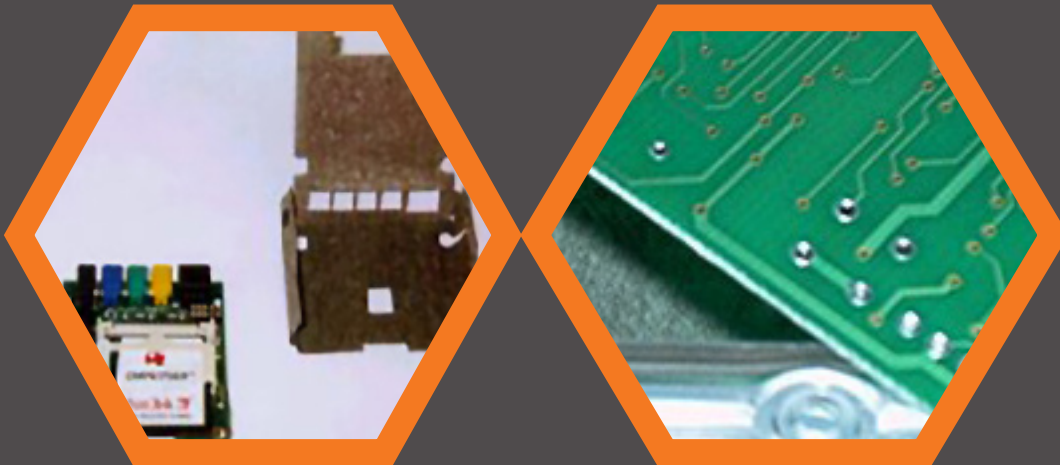
Wide temperature application range from - 40°C to + 110°C

## Other possible applications

### Housing protection through laminate

Our EMC shielding fleece is equipped with a special electrical insulation foil. This system has a very high dielectric strength and can therefore be used in all areas of electronics.

The laminate can be punched with punching tools if your company is equipped for this. All imaginable contours are possible. It is also possible to define bending areas with special punching techniques to create a kind of box if required, which can then be inserted directly into the enclosure parts. In this way, electronics, shielding and enclosure must be considered as independent units, which makes the products design independent, as the shielding does not need to be adapted.



## Room shielding

Best shielding at low cost is the motto of our new shielding system. By using our new special shielding material for indoor applications, our shielding achieves an extremely high attenuation factor of up to 99.999999%. These results are based on many years of research and development work in aircraft construction and the military sector.

Thanks to its special structure and coating, the shielding system can be used not only in an electric field but also in a magnetic field for the first time. The assembly of the material can be carried out either by a company or, like wallpaper, by the customer himself. It is advisable to use our adhesive, which has a very high adhesive strength and at the same time electrical conductivity for the contact of the different panels. This way the system can easily be implemented by small companies and the users themselves according to instructions. Also existing installations and conditions, such as ventilation, cable ducts, etc., can be integrated into the system.

### Technical data

Material name: **Absorbent wallpaper 90**  
Shielding effectiveness: max. 120 dB  
Shielding effectiveness: average value 85 dB  
Frequency range: 15 kHz - 40 GHz  
Surface resistance: < 5.5 mΩ-  
Basis weight: approx. 90 g / m<sup>2</sup>  
Material thickness: 0,15 mm  
Halogen content: Material is halogen-free  
Coating: copper (special), protective coating

## Fields of application:

EMV measuring rooms / measuring cabins  
Security centres / universities  
Tap-proof rooms and facilities  
Hospitals and medical rooms  
Laboratories, living and working rooms

## Advantages of the system:

Considerably more cost-effective than previous systems of room shielding  
Shielding efficiency up to 99.9999 %  
Max. value 120 dB, Average value 85 dB  
Breathable and resistant to environmental influences (age test 25 years)  
Absolutely maintenance-free  
Structure / form of the room is retained (material can be wallpapered over)  
Shielding of existing doors  
Very low ceiling load compared to sheet metal cabins  
Absorber effect (sheet metal cabins do not fulfil this property)  
Acoustic damping  
Several system solutions for the integration of windows into the shielding system  
New system of ventilation and air conditioning  
Room-in-room system possible by drywall



Due to the special structure and coating, the shielding system can be used not only for the electric field but also for the magnetic field for the first time.

## Absorption



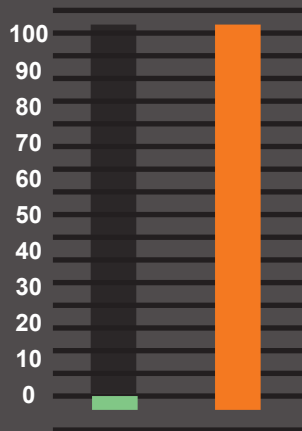
## Exceptional shielding



## Application

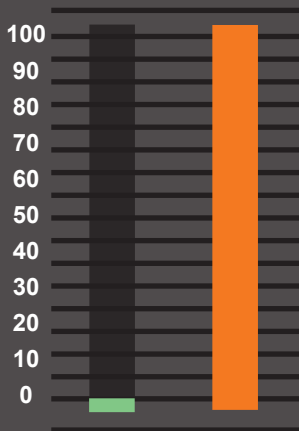


### Absorption



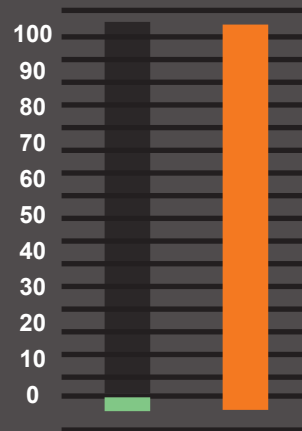
Conventional products reflective  
Our Products absorbent

### Magnetic field



Conventional products Low and High Frequencies  
Our Products low, high frequencies and magnetic field

### Applikation



Conventional products reflective  
Protection with our absorbent product no risk

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