

# ESD PROTECTION



QUALITY THAT WORKS



## Static Electricity & Product Quality

It is very important to apply ESD protection to all stages of equipment's lifespan, from inception of the design, through the production and testing of the electronics equipment, to its final installation and use.

There are many ways in which ESD protection can be applied to electronics circuits and assemblies, as well as to the areas in which they are built, stored and tested. ESD protection is therefore a key consideration of the automotive industry and any electronics organisation. Without sufficient ESD protection measures, not only will equipment show a poor yield in production, but it will also exhibit poor reliability in service as a result of the latent failures that ESD can cause.

Clothing is a very important element in certain ESD protective areas, especially cleanrooms and very dry environments. Inappropriate clothing materials can generate electrostatic fields and charges, which may discharge in the form of ESD and damage expensive equipment and components.

**Klopman fabrics are the best solution for safeguarding electronic components against ESD during their assembly.**



## What is ESD

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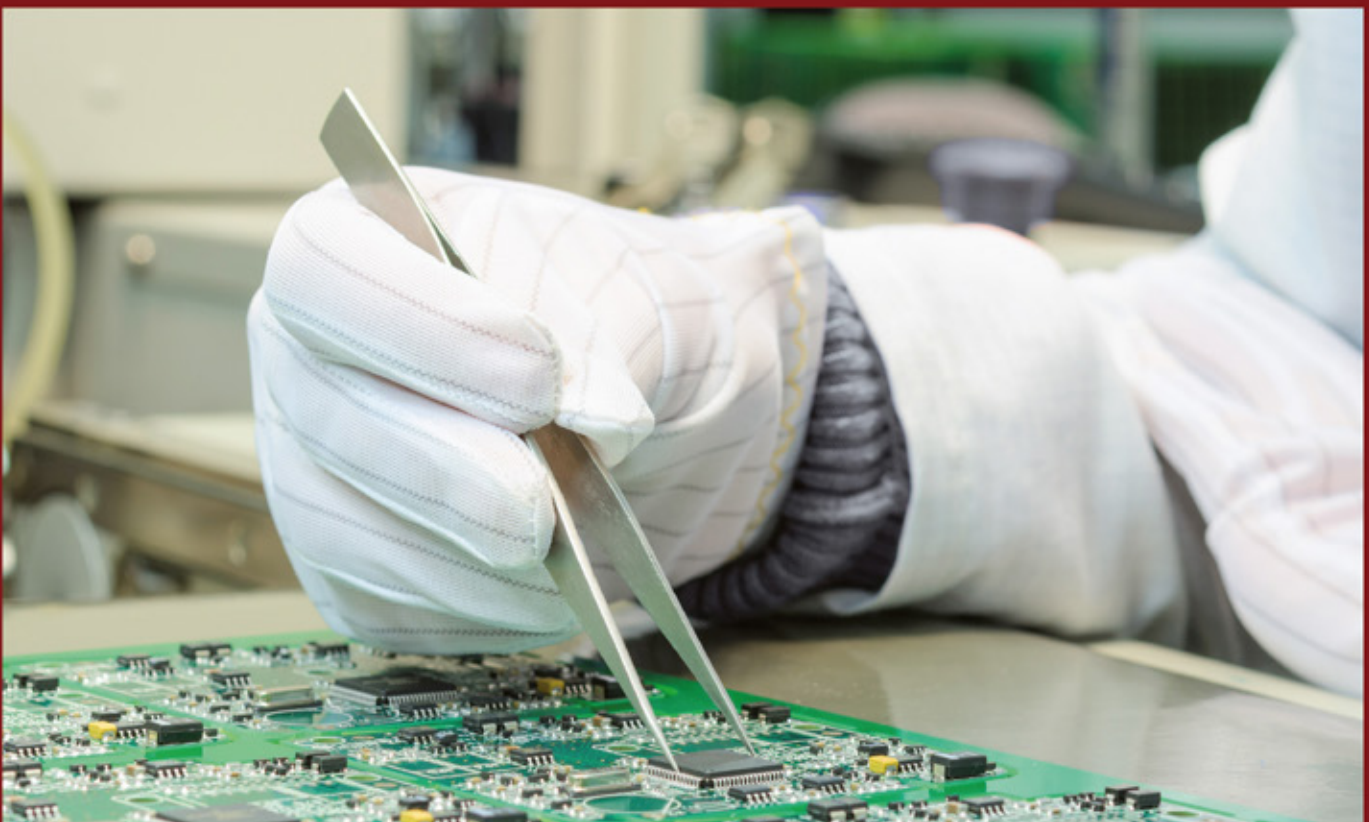
Electrostatic Discharge, or ESD, is a single-event, rapid transfer of electrostatic charge between two objects, usually resulting when two objects at different potentials come into direct contact with each other. ESD can also occur when a high electrostatic field develops between two objects in close proximity.

Today, electronics equipment reliability levels must be very high to meet the expectations of the market. The small size of the components makes microelectronics very sensitive to ESD, which can damage the components. ESD damage may lead to premature or intermittent failure, causing severe damage to electronic equipment.

Electronic parts are common in all different types of industries, and growing levels of automation increase the use and assembly of electronic parts significantly. ESD solutions are in ever-greater demand in the automotive and mechanical engineering industries particularly.

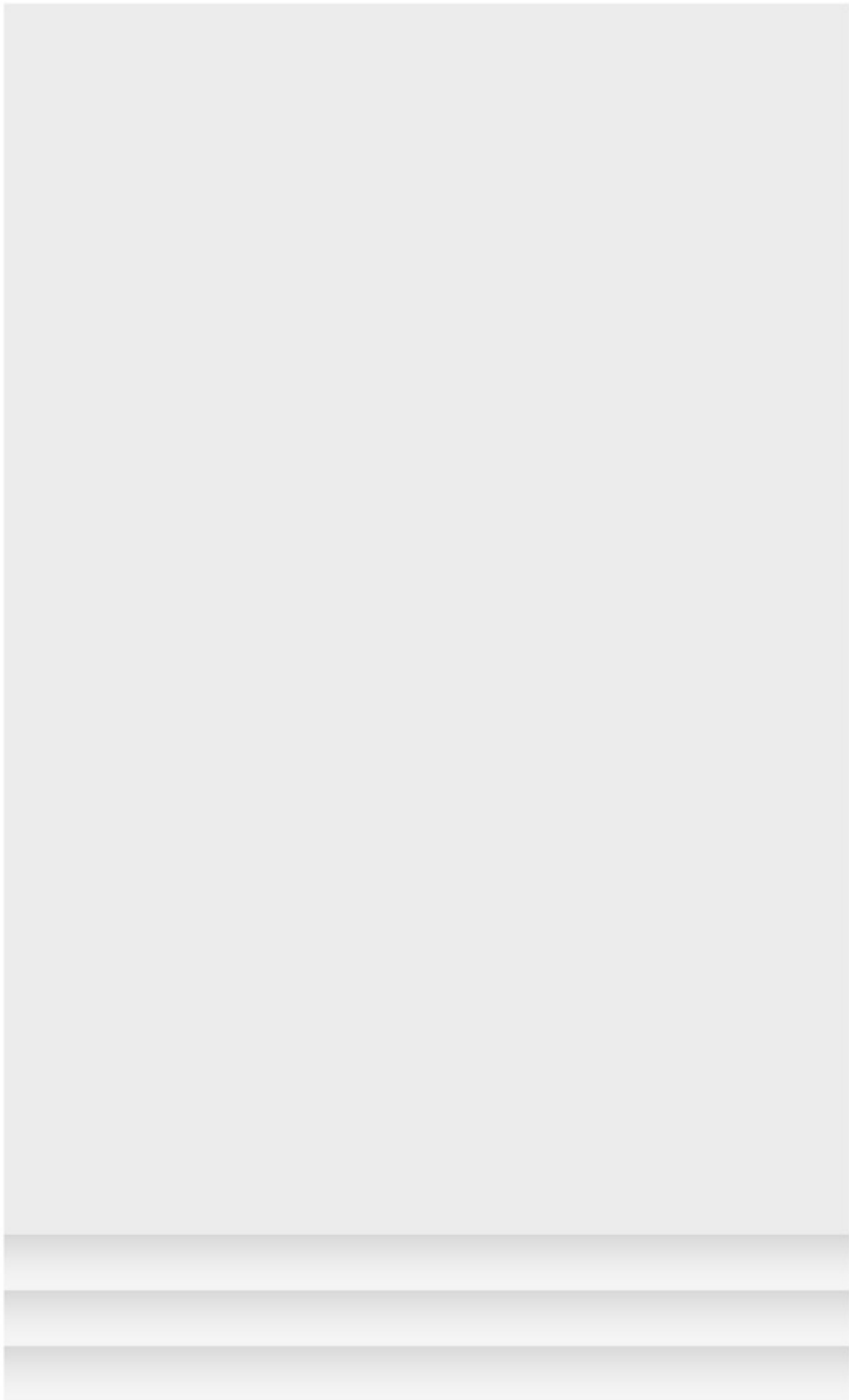
The cost of ESD-damaged electronic devices for production companies goes up to several thousand euro, with significant loss of production time.

Unfortunately, ESD damage to electronic components is not as readily apparent as the effects of static electricity in other industries. It is not generally visible when it occurs and may be latent or not show up in functional testing of electronic devices.





## ESD PROTECTION



Concept ESD  
150 g/m<sup>2</sup>

Telestat Plus  
175 g/m<sup>2</sup>

Superbandmaster ESD  
210 g/m<sup>2</sup>

Indestructible ESD  
245 g/m<sup>2</sup>

## Klopman solutions

Our Electrostatic Discharge Protection fabrics meet the industry's toughest requirements both in terms of certification and safety, being compliant to European Standards EN 1149-1, EN 1149-3, IEC 61340-4-9 and EN 61340-5-1. Superbandmaster ESD, Indestructible ESD, Telestat Plus, and Concept ESD are our key solutions for this specific sector. They offer the highest level of protection and durability to the wearer, without compromising the comfort thanks to excellent breathability. These fabrics have been specifically conceived for the automotive and electronic industries. Klopman's experience of 50 years in the market guarantees that garments made with our fabrics meet the most demanding laundry and garment-maker expectations. Having the highest levels of comfort, health, safety and durability have made Klopman fabrics the number one workwear textiles in Europe.

### FEATURES

- Maximum ESD and antistatic protection
- Good air permeability and breathability to provide optimum wearer comfort
- High durability

### APPLICATION

- Suitable for all applications which require electricity dissipation and ESD control
- Wide range of industrial applications includes the automotive, electronics and high precision mechanics industries

	WEIGHT	BLEND	FINISH	WEAVE	USABLE WIDTH	CERTIFICATION FULFILMENTS
Concept ESD	150 g/m <sup>2</sup>	67,5% Polyester 31% Cotton 1,5% Anti-static carbon	Crease Resist Soft	Plain	150 cm	EN 1149-1 EN 1149-3 IEC 61340-4-9
Telestat Plus	175 g/m <sup>2</sup>	68% Polyester 30,5% Cotton 1,5% Anti-static carbon	Crease Resist Finish	Plain	150 cm	EN 1149-1 EN 1149-3 IEC 61340-4-9
Superbandmaster ESD	210 g/m <sup>2</sup>	66,5% Polyester 32% Cotton 1,5% Anti-static carbon	Crease Resist Finish	2 x 1 Z Twill	150 cm	EN 1149-1 EN 1149-3 IEC 61340-4-9
Indestructible ESD	245 g/m <sup>2</sup>	66,5% Polyester 32% Cotton 1,5% Anti-static carbon	Crease Resist Finish	2 x 1 Z Twill	150 cm	EN 1149-1 EN 1149-3 IEC 61340-4-9

FABRIC		CONCEPT ESD	TELESTAT PLUS	SUPERBANDMASTER ESD	INDESTRUCTIBLE ESD
Bottle green	702001 STD	✓		✓	✓
Charcoal	912002 STD	✓		✓	✓
Convoy	912005 STD			✓	✓
Graphite	952005 STD		✓	✓	✓
K-Black	911052 SPEC	✓		✓	✓
New Empire Red	301001 SPEC			✓	✓
Pale grey	924001 LGT	✓			
Petrol Blue	482002 STD		✓		
Royal box	502001 STD	✓	✓	✓	✓
Sailor blue	501001 SPEC	✓		✓	✓
White	000020 WHT	✓	✓	✓	✓

To arrange a product presentation or to request samples visit [www.klopman.com](http://www.klopman.com) or contact our sales representatives at [sales@klopman.com](mailto:sales@klopman.com)



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