

# BONDLINE



## ESD Matting Explained

### Which ESD Matting Do I Need?

Bondline offer a wide range of ESD table and floor matting for use in EPA Areas. This technical guidance sheet has been compiled to allow you to make an informed decision on the best matting to use. If you have any further queries or need some more advice, please contact one of our knowledgeable sales employees who will be happy to help.

### How A Static Mat Works?

Static matting is designed to drain static charge from items placed on its surface. They also protect the surface of the ESD sensitive devices from wear and tear. For a mat to effectively ground an item, the item must be either conductive or dissipative as insulative items will not allow charges to drain to ground e.g. most plastics.

### Performance Of Matting

The performance of static matting is based on the material it is constructed from. The performance is based on electrical properties, tolerance to heat, chemicals and mechanical abrasion and cost.

Electrical Properties: For a mat to work properly, it must be able to conduct electricity and its range of conductivity is crucial. If the mat's resistance is too low, static transfers to the mat and a spark is created causing an electrostatic discharge which will in turn damage electronic devices. If the mat's resistance is too high, static transfers slowly and any items placed on the mat will not lose their charge. When the item is removed from the mat, the static charge will be capable of discharging to other items.

### Test Methods

Surface Resistivity: This test does not reveal much about the mat's ability to perform correctly. However, it does allow differentiation between ESD mats and non-ESD mats. Although, dirt can act as an insulator on the surface of a mat, so it is a useful test to monitor the mat after cleaning.

### Standards

All mats are manufactured to IEC61340-5 and ANSI 20.20 Standard.

### 2 Categories of ESD Damage

**Catastrophic** - Complete breakdown of an object.

**Latent Defect** - Partial degrading of an object that will downgrade productivity and longevity.



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### Combating ESD

We can't eliminate generation or discharge of static in a working environment, therefore the best solution is to neutralize the charges when they occur. Proper grounding and use of anti-static mats neutralizes the ESD.

ESD mats are designed to eliminate static on its surface and any objects / devices placed upon it. For a mat to correctly ground an item, the mat must be conductive or dissipative and connected to Earth via a grounding lead. If the material is insulative, items will not allow charge to drain to ground.

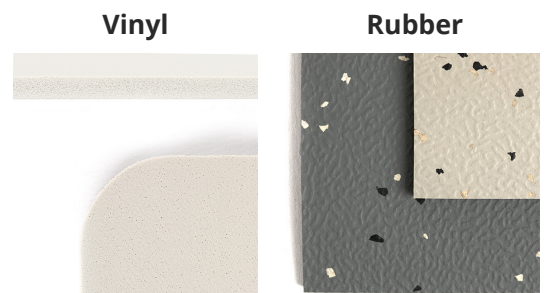
### Selecting The Right Mat

Guidance to help you choose the right mat.

<p><b>Table Mats</b></p>	<ul style="list-style-type: none"> <li>• Usually thinner than floor mats.</li> <li>• Use light colours to make finding small parts easier.</li> <li>• Have smooth or lightly embossed surfaces.</li> </ul>
<p><b>Floor Mats</b></p>	<ul style="list-style-type: none"> <li>• Have heavy embossing or groves to improve traction.</li> <li>• Are usually thicker than table mats to absorb more wear.</li> </ul>

### Rubber Advantages Over Vinyl

- Rubber is heat resistant (resistant of hot solder whereas Vinyl material will melt).
- Rubber remains in its same form. Whereas vinyl can change and become harder in cold conditions.
- Rubber is said to be better for the environment.
- Rubber is stable; ESD properties cannot change.
- Rubber is generally cheaper to manufacture - cost-effective savings.



**Note:** Dirt can behave as an insulator, it is important to regularly clean the mat before testing / monitoring the resistivity.

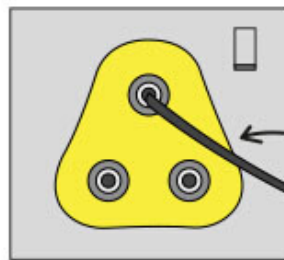


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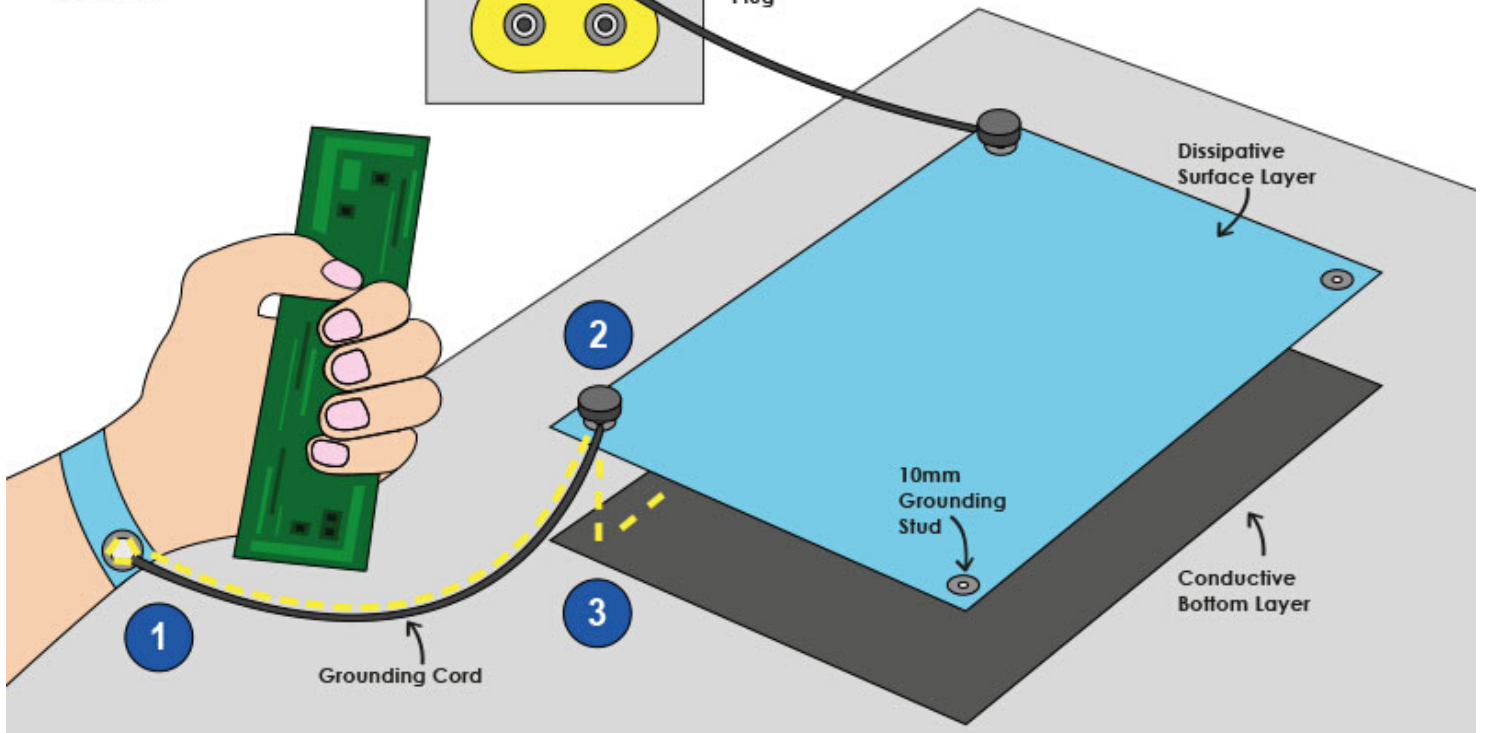


## ESD Matting Explained

How Does An Anti Static Mat Work?



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- 1 Operator is grounded as charge passes through the wrist strap into the coil cord.
- 2 Coil cord is connected to the 10mm grounding stud.
- 3 The static charge passes through the mat, through the grounding lead to earth.

