



ElectroStatic Discharge or ESD

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Introduction



ESD, or *ElectroStatic Discharge*, is one of the few things an individual can do to damage or destroy his or her computer or hardware components. Much like the shock you receive when rubbing your feet on the carpet and touching something metal, ESD can occur when working in your computer and will cause components you touch to no longer work properly. ESD can occur without the user feeling a shock and will only occur while working on the inside of the computer or handling an expansion card.

[How to help prevent ESD](#)

The best method of preventing ESD is to use an ESD wrist strap and/or use a grounding mat or table. However, because most users do not have access to such items, we have included the below steps to help reduce the chances of ESD as much as possible.

Zero Potential - Most importantly, make sure you and the computer are at Zero Potential by continuously touching an un-painted metal surface of the chassis or the computer power supply case.

Standing - It is also very important that you are standing at all times when working on the computer. Setting on a chair can generate more electrostatic.

Cords - Make sure everything is removed from the back of the computer (power cord, mouse, keyboard, etc).

Clothes - Make sure not to wear any clothing that conducts a lot of Electrical Charge, such as a wool sweater.

Weather - Electrical storms can increase the ESD risk; unless absolutely necessary, try not to work on a computer during an electrical storm.

Accessories - To help reduce ESD and help prevent other problems, it is also a good idea to remove all jewelry.

ESD related terms

Below is a listing of ESD and related definitions found in our computer dictionary.

- Antistatic - Any device or product that helps prevent or eliminate static electricity and protect hardware from being damaged by any electrostatic discharge
- Antistatic bag - A bag that has been specially designed to help prevent static electricity inside the bag. These bags are often used to store and transfer electrostatic sensitive hardware. If you've ever purchased a computer hardware device such as a hard disk drive, sound card, or video card it's likely it came inside a dark gray antistatic bag.

It is important to remember that *only* the inside of an antistatic bag is protected, placing a hardware device on top of the bag and not inside of the bag will not protect it. In fact it is often more harmful to place a electrostatic sensitive device on top of the bag.

- Antistatic device - Any physical device that minimizes static electricity, such as a wrist strap, floor mat, workbench, etc.
- Antistatic mat - Also known as a **grounding mat**, an **antistatic mat** is a floor or table mat used to help reduce the risk of electrostatic discharge while working on a computer or other electrostatic sensitive object.
- Antistatic spray - **Antistatic spray** is a liquid spray that can be used to eliminate static electricity and prevent static cling. Note that it cannot be used on certain equipment, such as certain monitor screens; use as directed.
- Static -

1. Another term used to describe constant.
2. An electrical discharge, see our ESD information page for additional information about a static discharge, aka ESD, and the potential dangers it can cause to a computer or electronics.

- Wrist strap - Also known as a **antistatic strap** or **antistatic wrist strap**, a **wrist strap** is a strap that wraps around the users wrist like a bracelet and has a cord or other connection coming from that bracelet that attaches to the device being worked on, clips onto, and/or plugs into. The wrist strap keeps the user grounded, which helps prevent electrostatic damage to the device being worked on. Below are some examples of how a user would properly use an antistatic wrist strap.
- While working on a computer you could place your wrist in the strap and attach the other end (often using the alligator clip) to a metal portion of the computer case.
- While working with a electrostatic sensitive hardware you could place your wrist in the strap and plug the other end into an antistatic mat the device is laying on or into an antistatic workbench.

Damaged hardware

If after working inside your computer and/or adding additional hardware your computer no longer boots properly, please try the below recommendations.

1. If you have added a new component, remove it and try booting the computer. If the computer boots, it is likely an incompatibility between the computer and that hardware device. Try it again just to make sure.
2. If the computer still does not boot properly after removing the new hardware or you did not add any new hardware, make sure that all the cables are firmly connected to their devices. It is possible that a cable may have become loose. This also includes the cables going to the back of your computer; make sure your power, monitor, mouse, keyboard are connected.
3. Make sure each of the expansion cards in your computer are firmly seated into the slots and not partially seated.
4. Unfortunately, if your computer still does not properly boot, it is very possible that you may have mistakenly damaged your computer or a component within the computer causing it not to work. If the computer is beeping abnormally, refer to our [beep code page](#) for recommendations and beep code listings.