



Compliance – Resource Bulletin

Electrostatic Discharge (ESD)

Overview:

Static electricity and Electrostatic Discharges (ESD) have become an increasing problem in our technological environment across several industries, particularly the electronic industries.

The cost of damages caused by ESD to electronic devices has created a real concern for the industry, but also for the military. Damages can be very expensive, but also very harmful to anyone as ESD can ignite a fire or create an explosion, according to the workplace or the environment.

Following a request from the United States Department of Defense to replace MIL-STD 1686, the ESD Association published in a standard approved as an ANSI standard, the **ANSI/ESD S20.20**. This covers the development of an Electrostatic Discharge Control Program. This program helps to protect electric or electronic parts, equipment and assemblies sensitive to ESD damage from Human Body Model (HBM) discharges greater than or equal to 100 volts.

ANSI/ESD S20.20 has simple requirements based on three fundamental principles of static control:

- All conductors of electricity should be grounded to ensure an equipotential balance of electrical charge at all times in the defined Electrostatic Protected Area.
- Ionized-air sources should be provided to neutralize electrostatic charge on the necessary nonconductors in the Electrostatic Protected Area.
- Appropriate static control packaging or containment for protection of sensitive items should be used when the items are removed from an Electrostatic Protected Area.

Resources:

ANSI/ESD S 20.20-2014: (\$\$\$)

[ESD S20.20-2014](#)

ESD Association: (Free and \$\$\$)

<https://www.esda.org/>

JEDEC Global Standards For the Microelectronics Industry JEDEC Standard 625-A: (Free)

<http://www.jedec.org/>

ASTM Standard: (\$\$\$)

<http://www.astm.org/Standards/D5445.htm>

[1] ANSI/ESD S20.20-2007



ESD

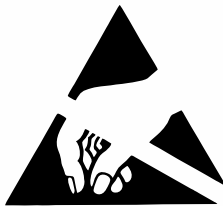
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Design and Symbols of ESD Signs and Labels

The labels and signs used as ESD warning or caution should use the following symbols:

ESD SYMBOLS IN USE



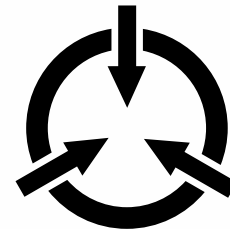
ESD
SUSCEPTIBILITY
SYMBOL



ESD
PROTECTIVE
SYMBOL



ESD
COMMON POINT GROUND
SYMBOL



ESD
FORMER MILITARY
SYMBOL

For proper usage of symbols according to your area of application, visit the ESD Association, the JEDEC, the DLA and ASTM websites to review/buy the standards.

EXAMPLE OF LABEL TYPES:

For packing and handling in the military (**MIL-STD-129P**), two different types of labels are used to identify static sensitive materials or devices:

- **The unit packs labels:**

The text should be adjacent to the triangle and should specify the words:

"ATTENTION STATIC SENSITIVE DEVICES" and the statement "HANDLE ONLY AT STATIC SAFE WORK STATIONS"

The symbol and lettering are black on a yellow background. These labels are generally used to seal protective bags or cartons containing ESD sensitive material.

- **The intermediate and exterior container labels:**

For containers, 2 sizes of labels are required, 2x2-inch label for an intermediate container (1 per container), and 4x4-inch for an exterior container (2 by container)

The symbol and lettering on the label are black on a yellow background

"ATTENTION OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC DISCHARGE SENSITIVE DEVICES"



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For **JEDEC**, different labels and signs are available to inform people and employees of an ESD potential, they will use the same approved symbol EIA-471. The military uses it in a “negative” version, with a black hand and a triangle.

- **The ESD caution signs** have to be posted at ESD protected area boundaries and workstations using the symbol and/or words:

ESD HANDLING IS REQUIRED in the area and/or at the workstation.

- **ESD caution labels** are used on ESD protective packages and have the same ESD symbol. This label should be readable from three feet away.

Although there is no specific color required, only a contrast between the lettering/symbol and the background, it is suggested to have a black symbol on a yellow background.

The words and the symbol should clearly identify that ESDS devices are inside the package, and that it is *NOT TO BE OPENED*, or to be opened at an ESD protected area or workstation.

For ESD Signs and Labels, visit our store: <https://www.compliancesigns.com/products/electrical/static-and-grounding-signs>