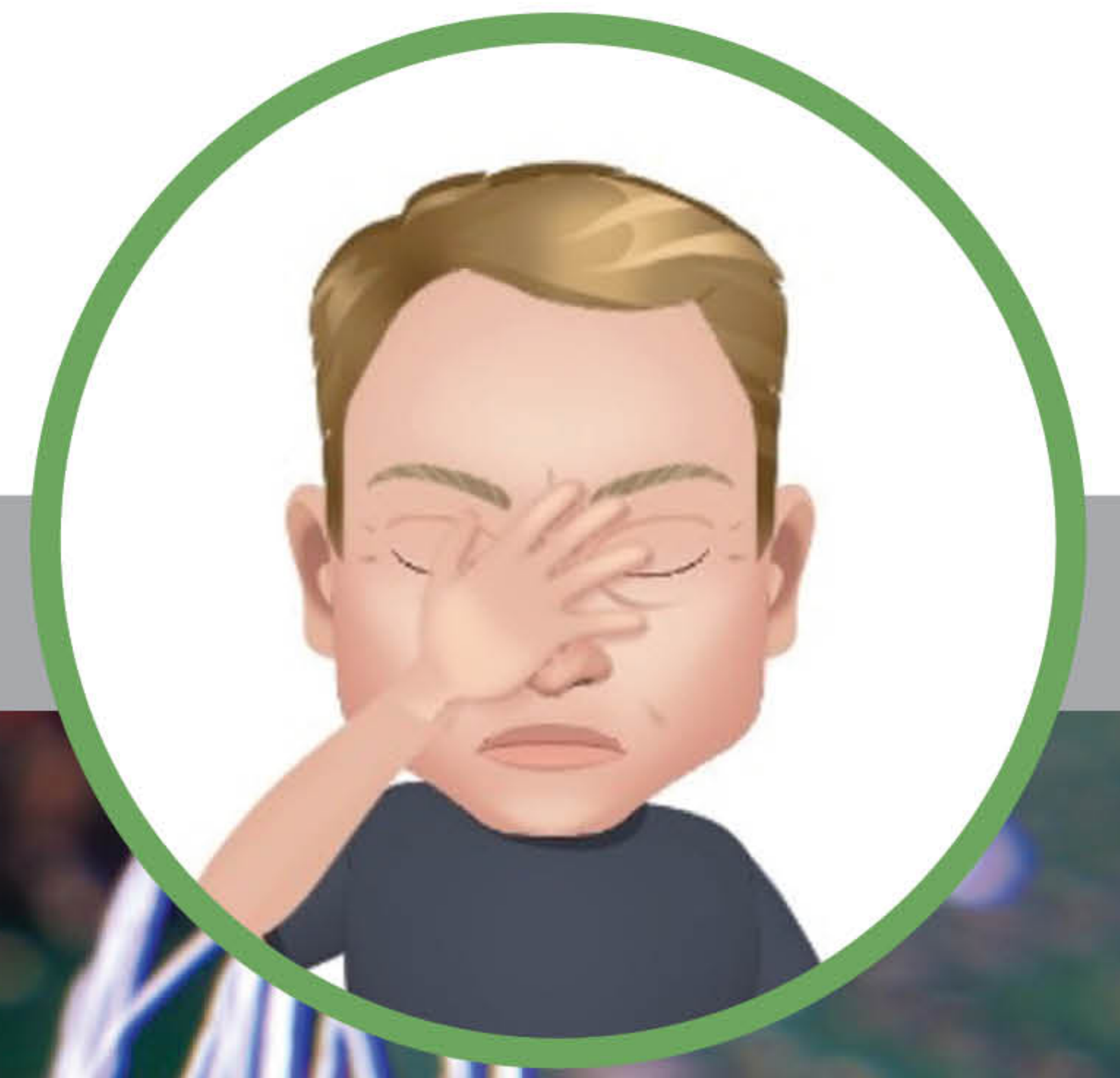




# PORT PLASTICS

## Semiconductor



## Manage Your Spark! ESD PLASTIC MATERIALS

Electro Static Discharge (aka ESD) controlled materials refer to a group of engineering thermoplastic materials that are selected to properly manage the discharge of an electrical potential before it can cause damage. Static electricity can cause issues such as the attraction of foreign particles or even worse, it can cause spark that ruins the device or even can lead to a fire. ESD plastic materials are used throughout the Semiconductor process to avoid risk of discharge. Applications can range from the chucks that secure or transport the wafer into and between process tools to chip trays used in the fabs to move the IC chips. ESD materials are also common in the electronics manufacturing market as fixturing is used to secure the device being assembled and moved through the manufacturing facility.

In selecting an ESD material one must first ask what they want to accomplish with the potential electromotive force. In order to do this, it becomes important to classify the material by surface resistivity. Surface resistivity, measured in  $\Omega$  / Square, measures the resistance (R) to the flow of the energy across a material. This is based on Ohms Law, which defines the Current as proportional to the electromotive forces impressed on a circuit (measured in Volts) and inversely proportional to the resistance of on the circuit. (measured in Ohms  $\Omega$ ) ESD plastics are selected to properly control the bleed off of the electromotive force such to protect the system. The following table summarizes the different categories of ESD controlled thermoplastic materials.

Category	Surface Resistivity	Description
Conductive Plastics	$10^3 - 10^6$	Conductive plastics allow for electromotive force decay rates measured in nano seconds!
Dissipative	$10^7 - 10^9$	Dissipative plastics allow for electromotive decay rates to be controlled & measured in milliseconds
Anti Static	$10^{10} - 10^{12}$	Antistatic plastics have minimum capacity of absorption of current and resist static build up
Insulative	$>10^{13}$	Insulative plastics completely resist the flow of electric current, most plastics are insulators in their natural state

Once you select the range of surface resistivity, then you complete your selection based on your applications physical, thermal and mechanical needs. Port Plastics is the expert in providing the market with ESD materials. Contact your Port Plastics sales office or click on the following link for assistance in selecting the optimal product to meet your ESD needs.

[PortPlastics.com/product-category/esd-materials/](https://PortPlastics.com/product-category/esd-materials/)

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