



PORT PLASTICS

Semiconductor



What's the difference between Antistatic & Dissipative Plastics?

With all the attention placed on managing the electromotive force once its present, commonly known as static electricity, there is a class of materials that actually focus on the prevention of the build up of static electricity. This class of materials is commonly referred to as antistatic. Found sandwiched between the dissipative material and insulative material range, antistatic materials exhibit a surface resistivity of $10^9 - 10^{12}$. When two dissimilar surfaces are rubbed together a contact electrification process happens that allows for the build up of static electricity. This static electricity can reach upwards of 30,000 Volts! The release of that stored energy can not only be painful but can ruin an electrical devise, cause an explosion in a grain tower or even cause a fire in chemical transport. The phenomenon of building up of static electricity is know as triboelectric charging.

Antistatic plastic materials are used where there is constant contact between dissimilar materials and thus one needs to prevent the build up of static electricity. Antistatic materials are commonly found in a production setting or chemical transport of flammable materials. Antistatic materials hinder the build up of triboelectric charging and will bleed off any excess charge in a very slow and controlled manner, generally from hundredths of seconds to seconds. This is compared to the dissipative range which bleeds off triboelectric charging in milliseconds and conductive materials that bleed off in nanoseconds. Insulative materials allow for the build up of electromotive forces, thus allowing for a potentially destructive discharge.

When selecting ESD materials it becomes critical to choose the right category of surface resistivity that corresponds with what you need to do with the electrical force first, then match the thermal, mechanical and chemical properties to the application. Port Plastics has years of experience with ESD materials and can assist you with proper selection of antistatic, dissipative or conductive materials.

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