

Pentastat®

Pentastat® – Static Control Films for Electronics Packaging

Why do you apply three different materials to protect your electronic components when the package can be done with only one?

Electronic components require a sturdy form of package as they are often very expensive, delicate and easily damaged in transit. Electronic components such as printed circuit boards or processors need special protection against electrostatic discharge. Furthermore, the packaging material has to be non contaminating.

Traditionally, the packaging of electronic components as printed circuit boards, hard disk drives, chips, and connectors consists of three different elements. In a first step of the packaging process, the parts are sealed in an antistatic or electrostatic dissipative bag. In a second step, they are protected by expanded polystyrene cushions and in a third step, they are packed with manuals and product documentations into a corrugated box. The corrugated box is often covered with a printed sleeve or a jacket in order to identify the product and provide promotional graphics. This kind of package is quite costly due to the different materials applied and the complexity of the process.

Transparent ESD clamshells made of Pentastat® film provide the same electrostatic protection of the electronic components as the traditional package but, in addition, offer several advantages throughout the whole value chain, the main one being their unbeatable cost efficiency.

Electronic Component Producers

Beside the controlled electrostatic protection, ESD clamshells offer a protection of the electronic component against mechanical impact. Unlike the antistatic bags, they have a high puncture resistance. Therefore no additional wrapping or foam is required which reduces significantly the volume of packaging material employed. Furthermore, no contamination derived from the foam/cardboard can occur. The packaging process is simplified. The time required to put the electronic component into the package is significantly reduced. Handling and transportation during the production process are simplified.

In addition, the thermoformed trays take up far less space than the traditional package which has a positive impact on the storage of packaging materials. The single pack also offers an improved consistency of the static control properties in the packaging. Due to their high clarity and

transparency, ESD clamshells made of Pentastat® films allow to identify the content of the package at a glance without opening it and to scan barcodes through the package. This way they minimise the need of product handling which can cause damage to the electronic component. The reclosability of the clamshells makes them suitable not only as consumer package but also as transport package for the internal logistics – even within an EPA - of semi finished components and work-in-progress. The disposal costs of the package are much lower than the conventional package. In addition, Pentastat® clamshells can be recycled.

Retailers

The retailers get a package which shows off the product and which is especially designed for the respective electronic component. The clamshells are convenient to inspect and inventory, since they can scan the barcodes without removing the product from the package. Depending on the individual design of the thermoformed clamshell, this can either stand on a shelf or be arranged on a display.

End users

The end users of the electronic component receive the part and the product manual in a transparent thermoformed clamshell which offers visibility of contents, product protection, and easy opening and use. The appearance of the final product is more attractive.

Klöckner Pentaplast offers a broad range of antistatic, electrostatic dissipative and electrostatic conductible films which are marketed under the brand name Pentastat®. Klöckner Pentaplast has a long-term experience in the production of antistatic films which are globally available.

Pentastat® washable films permit pre-washing with commonly used cleaning solutions and reuse of thermoformed trays with no compromises of ESD properties. Therefore they are suitable for use in clean-room environments and have superior deep-draw thermoforming qualities with the benefit of transparency, allowing for bar code readability and component visibility.

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