

# BONDLINE



## ESD Bags Explained

### Which ESD Bag Do I Need?

Electrostatic damage to electronic devices can occur at any point from manufacture to field service. Damage results from handling the devices in uncontrolled surroundings or when poor ESD control practices are used. Using the correct packaging not only protects your static sensitive components but it can save money too.

### Metallised Shielding Bags (silver in colour)

Metallised Shielding bags provide a complete static safe environment for the safe storage and transportation of static sensitive devices and printed circuit boards ensuring easy identification. If bags, holding static sensitive components, are to be handled outside of an 'EPA' they should be in metallised shielding bags, a faraday cage. Metallised Shielding bags can be an effective faraday cage, subject to the quality of material and physical condition.

#### Loc-top (Resealable)



#### Open top



We offer two different bag features to suit your preference: **Resealable loc-top** and **open top**.

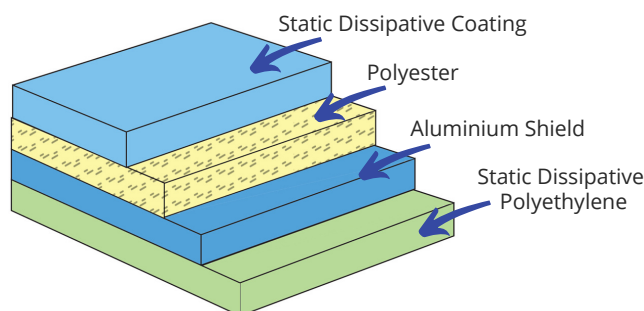
*Bespoke sizes, thickness, printing and packaging solutions can be manufactured on request.*

**Note:** Do not crease the bag, as this can breakdown the integrity of the metalised shield. You should not use any bags damaged with tears and/or punctures; these can destroy the function of the faraday cage. Metallised Shielding bags can deteriorate with use. Monitoring them for effectiveness is crucial.

### Feature Summary

- Metallised shielding bags should be used for storing all electronic components i.e. assemblies and boards.
- Used to safely transport and store static sensitive devices and printed circuit boards.
- Semi-transparent for easy identification of component.
- Static shielding bags provide 'faraday cage'.

Figure 1: Construction of Metallised Shielding Bag.



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## ESD Bags Explained

### Moisture and Metallised Barrier Bags

Moisture and metallised barrier bags are designed for the packaging of SMD's protecting them from moisture and static damage. They are ideal for PCBs or integrated circuits. Dry devices are placed inside the moisture/metallised barrier bag and the moisture laden is evacuated. The bags are opaque and light-tight ensuring the contents cannot be seen from the outside, adding a layer of operational security. The 4mil puncture-resistant and moisture-proof packaging has a flexible structure and is suitable for vacuum-sealing.

#### Moisture Barrier Bag



#### Metallised Barrier Bag



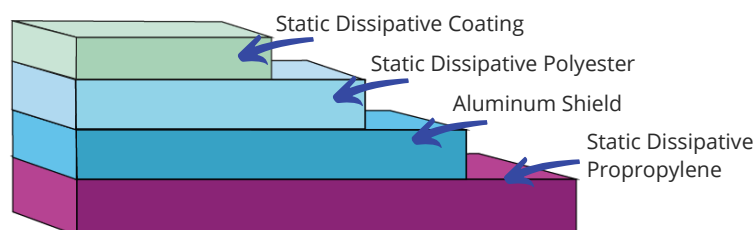
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Moisture and metallised barrier bags have a similar structure to the metallised shielding bags. However, they are generally stronger than metallised shielding bags. They are usually used when barrier protection or maximum shielding protection is needed without transparency being an issue.

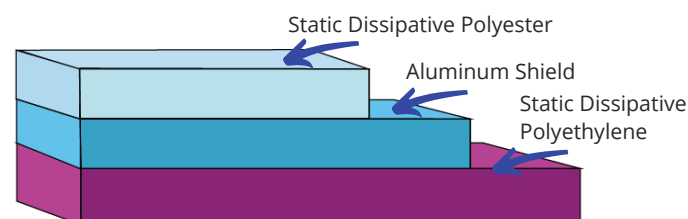
### Feature Summary

- Moisture and metallised barrier bags are used for storing all electronic circuits.
- Opaque and light-tight.
- Protects SMDs from moisture and static damage.
- Ideal for storing static sensitive devices in humid environments.
- Safely transport Jedec Trays.
- Bags are Heat Sealable with Faraday Cage protection.

**Figure 2: Construction of Metallised Barrier Bag.**



**Figure 3: Construction of Moisture Barrier Bag.**



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## ESD Bags Explained

### Antistatic Bags (Pink in colour)

These are the only acceptable “plastic” bags in an EPA. Antistatic bags offer NO effective protection against a contact ESD. They should only be used for non static sensitive components, e.g. nuts, bolts, paper etc. Pink anti-static bags have a layer of anti-static coating and no shielding ability. The material will not charge if rubbed in conjunction with other materials.

#### Loc-top (Resealable)



#### Open top



We offer two different bag features to suit your preference:  
**Resealable loc-top** and **open top**.

*Bespoke sizes, thickness, printing and packaging solutions can be manufactured on request.*

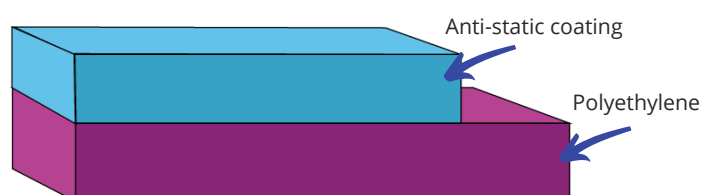
### Important To Note

Ordinary plastic bags can generate and hold static charges in excess of 10,000v. Antistatic bags deteriorate with time and wear - monitoring them is vital.

### Feature Summary

- Use antistatic bags for non-electronic parts that need to be close to electronics i.e. nuts, bolts, paper etc.
- They offer no protection against a contact ESD.
- No shielding ability.

Figure 4: Construction of Antistatic Bag.



### Bag Sourcing

When choosing a bag, investing in the least expensive bag may not provide the best results. Manufacturers should test their bags before shipping to ensure the quality is of a good standard. Always review the supplier's material trace-ability, quality program and test standards.



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## ESD Bags Explained

### Static Threats

There are **three types** of primary threats you should be aware of that can affect electronic devices:

#### 1) Electrostatic Discharge (ESD)

If a bag came into direct contact with discharge then it can subject the device inside to a very high current, fusing or melting the circuit.

#### 2) Tribocharging

If a bag and device created friction then it can produce damaging static fields and volts.

#### 3) Static Fields

Fields can induce destructive currents in circuit conductors. Field differentials can break down the circuit dielectric.

### "Know" Static

#### Glossary Of Terms

**E.S.D** - Electro Static Discharge. An uncontrolled surge of "static" between objects with different voltage potentials.

**E.P.A** - Electrostatic Protected Area. A static safe handling area could be a bench, a room or any designated area and should not have any "static field" greater than 100v maximum.

**Static** - An electrical charge/field that isn't moving.

**Antistatic** - Minimal generation or retention of a "static" charge.

**Conductive** - Low resistance. i.e. less than 1 meg-ohm ( $10^6$ ) - the closer to 1 meg-ohm, the slower the discharge.

**Static Dissipative** - Increased resistance, which protects better against an E.S.D i.e. between 1 meg-ohm ( $10^6$ ) and 1000 meg-ohm ( $10^9$ ).

**Insulative** - Does not allow the free flow of electrons, therefore, it will more than likely cause problems e.g. prevent a path to earth, hold a "static" field, etc.

**Faraday Cage** - A conductive barrier against E.S.D e.g. Metallised Shielding Bag, Conductive Box etc.

**Tribocharge** - To generate "static" by the rubbing or separating of surfaces.

**Potential Difference** - A static voltage difference between two items.

