Antistat
Part of Ant Group Ltd

Learning About ESD - Part 2

Dry packaging of SMD's

108 Claydon Business Park, Great Blakenham, Ipswich, IP6 0NL, UK
t +44 (0) 1473 836 200 f +44 (0) 1473 836 220 e sales@antistat.co.uk

www.antistat.co.uk

Antistat
Part of Ant Group Ltd

Why SMD's have to be dry packaged?

Before we learn how to dry pack, we can learn why it is needed...

This is a plastic packaged integrated circuit.
It is also called an "IC", or "Chip" or a "Device"

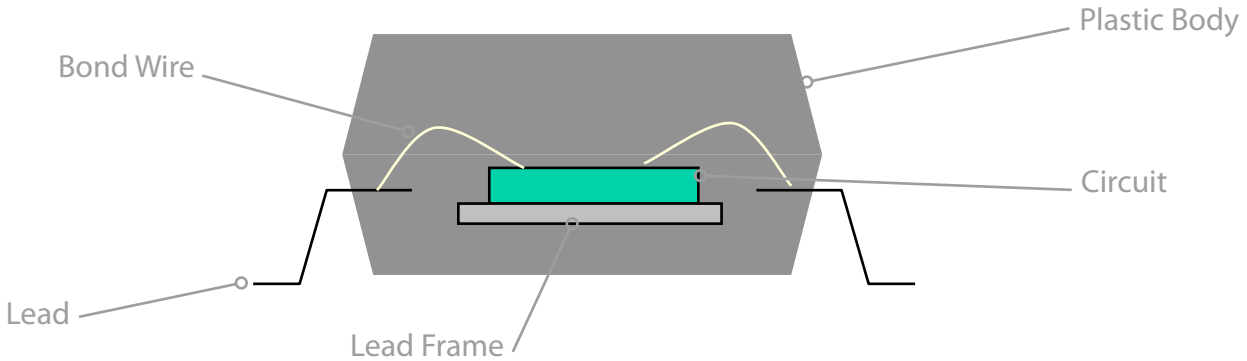
Electronic devices are made up of a circuit (or die) packaged inside a plastic body.

The leads connect the circuit to the board. The plastic body can absorb moisture (humidity) from the air.

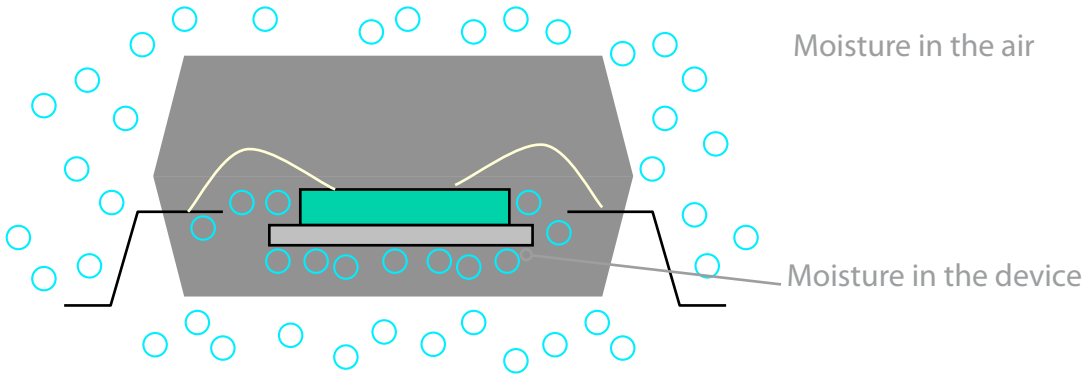
Antistat
Part of Ant Group Ltd

Why SMD's have to be dry packaged?

Here is a different view of the device. We can see the body, the circuit, and the leads.



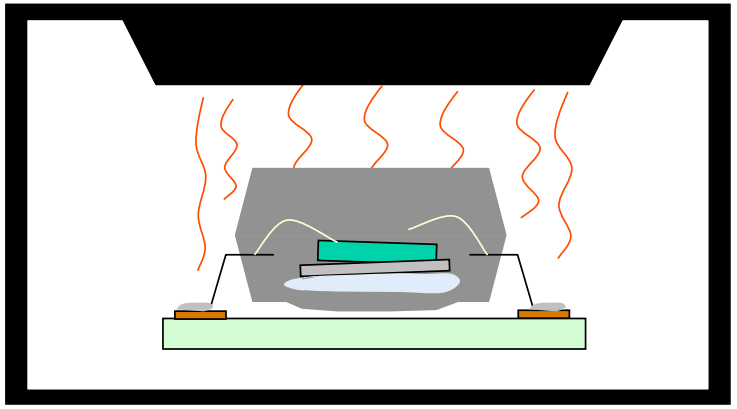
Moisture (or humidity) from the air diffuses inside the plastic body and collects around the spaces between the body and the circuit, lead frame, and wires.



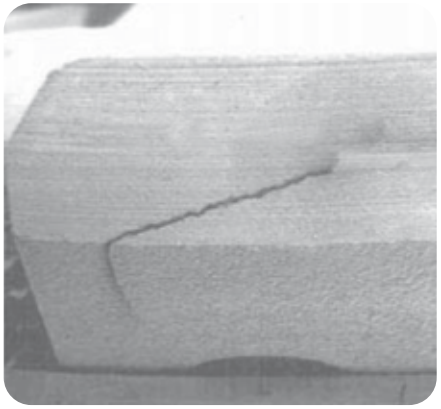
Antistat
Part of Ant Group Ltd

Why SMD's have to be dry packaged?

Heat from soldering the SMD to a board causes the moisture inside the SMD to expand and damage the SMD.



The device is placed on a printed circuit board (PCB) and heated in an oven to melt (reflow) solder. Solder connects the leads to the pads on the board. Heat causes the moisture to expand. The expanding vapor can crack (popcorn) the plastic body or cause delamination.



Featured opposite are photos of damaged SMD's. These were not protected by a dry package. This is why it is important to keep SMD's dry before soldering.

How to dry pack a tray...

There are four items used to make a dry package:

1. Moisture Barrier Bag (MBB or Dri-Shield bag)
Moisture Barrier Bags (MBB) work by enclosing a device with a metal or plastic shield that keeps moisture vapor from getting inside the bag. The bag also provides static (ESD) protection.

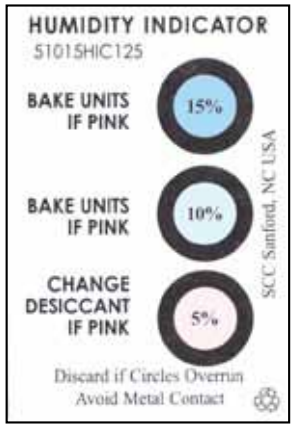
2. Desiccant
Desiccant is a drying agent, which is packaged inside a porous pouch so that the moisture can get through the pouch and be absorbed by the desiccant. Desiccant absorbs moisture vapor (humidity) from the air left inside the barrier bag after it has been sealed. Moisture that penetrates the bag will also be absorbed. Desiccant remains dry to the touch even when it is fully saturated with moisture vapor.

Antistat
Part of Ant Group Ltd

How to dry pack a tray...

3. Humidity Indicator Card

Humidity Indicator Cards (HIC's) are printed with moisture sensitive spots which respond to various levels of humidity with a visible color change from blue to pink. The humidity inside barrier bags can be monitored by the HIC inside. When the bag is opened, the card is examined for proper dryness inside the bag. This indicates that the barrier bag and desiccant functioned correctly.

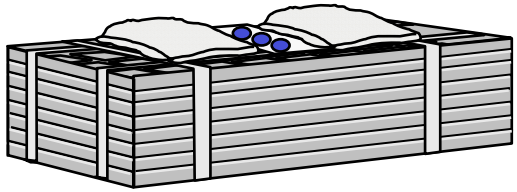


4. Bag Label

The moisture sensitive level (MSL) label tells us how long the devices can stay outside the bag before they have to be soldered onto the board. This label is applied to the outside of the bag. If the "level" box is blank, look on the barcode label nearby.

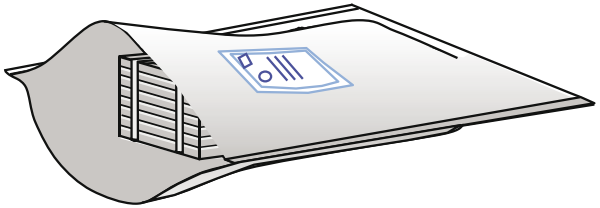
How to dry pack a tray...

Please follow the next steps to make a dry package:



Step 1. Place the desiccant and HIC onto the tray stack. Trays carry the devices. Remember to store desiccant in an air tight container until it is used.

Step 2. Place the MSL label on the bag and note the proper level on the label.



Step 3. Place the tray stack (with desiccant and HIC) into the moisture barrier bag.

Step 4. Using a vacuum sealer, remove some of the air from the bag, and heat seal the bag closed. It is not good to take all of the air out of the bag. Only slight evacuation is needed to allow the bag to fit inside a box.

Now your devices are safe from moisture and static.

Antistat
Part of Ant Group Ltd

Thank you...

For more information on how we can help you with all of your ESD requirements, please either visit www.antistat.co.uk or contact one of our experienced sales team on +44 (0) 1473 836 200.

108 Claydon Business Park, Great Blakenham, Ipswich, IP6 0NL, UK
t +44 (0) 1473 836 200 f +44 (0) 1473 836 220 e sales@antistat.co.uk

www.antistat.co.uk