

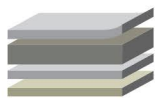
PACKAGING BAGS & FILM

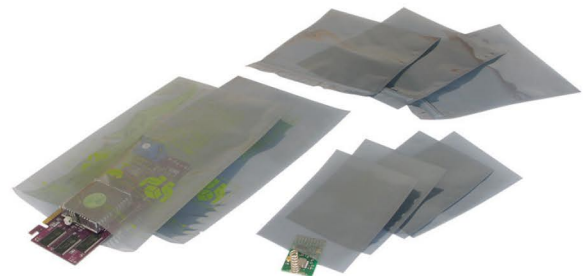


Electro Static Discharge (ESD) is nothing new, but its effect on electronic components and devices is serious if it is not properly controlled. Uncontrolled ESD not only causes partial damage to electronic components, but also sometimes destroys electronic components and devices totally. Together with controlling of ESD, moisture is also essential to be controlled for sensitive devices or components. Apart from personal grounding, sensitive goods should also be well protected from ESD and moisture during transportation and storage. There are several types of packaging bags in the market. The most important thing is to select a suitable bag for each application.


Static Shielding Bag (SSB)

SSB is manufactured by depositing a thin metal coating, like aluminum over an antistatic polyester film substrate. This metalized layer protects the devices or the components in the bag from electrostatic fields. According to the position of the metalized layer, there are two types of metalized shielding bags, "Metal-In" and "Metal-Out", in the market. A metal-in bag or a buried metal shielding bag is the most commonly used and recommended for packaging of static-sensitive components. It also tends to be superior to a metal-out bag in durability and cost. A metal-out shielding bag also protects the devices in the bag against static-induced damage. As the metal layer is closer to the outside surface, the metal-out shielding bag has lower ESD reading than a metal-in bag. The SSB we offer is a metal-in type, which has the metalized layer inside.

Item Code	M04P-000
Thickness	55 ~ 200 μm (Common: 75 μm)
Maximum Width	1,250 mm
Surface Resistance	10e9 ~ 10e11 ohm
Constructions	 <ul style="list-style-type: none"> • Antistatic coating • Metalized (Aluminized) PET • LLDPE • Antistatic coating



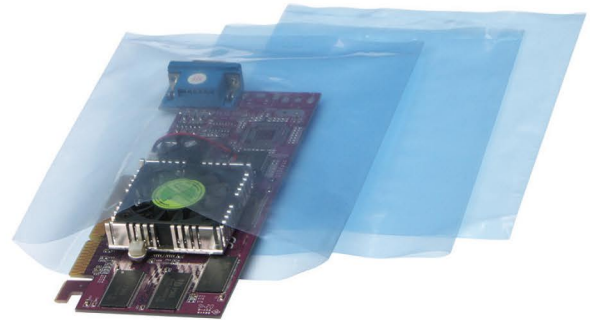
Conductive Black PE Bag (CBPB)

Item Code	M06P-000
Thickness	40 ~ 200 μm (Common: 80 μm , 100 μm)
Maximum Width	700 mm
Surface Resistance	10e3 ~ 10e6 ohm
Constructions	 PE resin + conductive carbon
Features <ul style="list-style-type: none"> • Cost-effective bag • Low surface resistance 	



Antistatic PE Bag (APB)

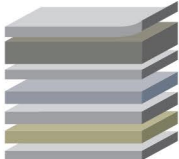
Item Code	M07P-000
Thickness	40~200 μm (Common: 50 μm , 80 μm)
Maximum Width	1,000 mm
Color	Pink, Blue, etc.
Surface Resistance	10e9 ~ 10e11 ohm
Constructions	 <ul style="list-style-type: none"> • Antistatic coating • PE resin+color pigment • Antistatic coating
Features <ul style="list-style-type: none"> • Cost-effective bag • Suitable for less sensitive components for ESD 	



Moisture Barrier Bag (MBB)

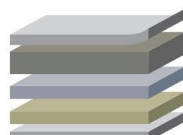
It is essential to keep Surface-Mount Devices (SMDs) dry from manufacturing point to the time of reflow soldering. Moisture Barrier Bag, also known as Vapor Barrier Bag, is made by multiple layers of plastic and a thin aluminum layer or aluminized layer that controls moisture vapor leakage. Basically, there are 3 kinds of Moisture Barrier Bags (MBBs), Tyvek MBB, AMBB and ANMBB, in the market. The key factor of moisture barrier function of the bag is a metal layer or a metalized layer, like thickness of the foil layer, metalized layer, etc., but the thickness or the material of other layers also affects the quality of MBB as well.



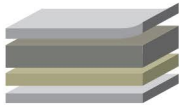
Product	Tyvek Moisture Barrier Bag (Tyvek MBB)
Item Code	M01P-000
Thickness	307 μm , 247 μm
MVTR*	< 0.02 g/100 sqinch/24h
Constructions	 <ul style="list-style-type: none"> • Antistatic coating • Tyvek Paper • PE • AL Foil • PE • LLDPE • Antistatic coating

Tyvek MBB is ideal for moisture sensitive devices or components, and especially suitable for sharp-shape components thanks to its excellent puncture resistance.



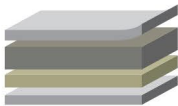
Product	Aluminum Moisture Barrier Bag (AMBB)
Item Code	M02P-000
Thickness	307 μm , 247 μm
MVTR*	< 0.02 g/100 sqinch/24h
Constructions	 <ul style="list-style-type: none"> • Antistatic coating • Nylon or PET • AL Foil • LLDPE • Antistatic coating

AMBB is a good choice for moisture sensitive devices and components. Depending on the products stored in the bag and the periods of storage, you have several selections on AMBB by adjusting the total thickness of the bag, the thickness of AL foil layer, etc.

Product	Aluminized Moisture Barrier Bag (ANMBB)
Item Code	M03P-000
Thickness	62 ~ 200 μm (Common: 90 μm , 100 μm)
MVTR*	1,250 mm
Constructions	 <ul style="list-style-type: none"> • Antistatic coating • Metalized (Aluminized) PET • LLDPE • Antistatic coating

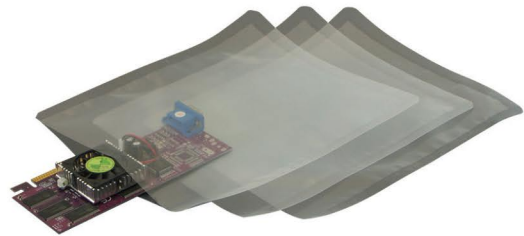


ANMBB is a new technology for barrier materials, which reduces material cost. Aluminum is vapor-deposited onto the polyester film or the nylon film.

Product	Transparent Moisture Barrier Bag (TMBB)
Item Code	M05P-000
Thickness	62 ~ 200 μm
MVTR*	1,250 mm
Constructions	 <ul style="list-style-type: none"> • Antistatic coating • Nylon or Polyester • LLDPE • Antistatic coating

Features

- Suitable for less moisture sensitive devices
- Suitable for food industries
- Visible bag inside
- No metal layer, but good moisture resistance and vacuum properties.



TMBB has a no metal layer, but it can be used for less moisture sensitive devices and this bag can be a good choice for foods packing too, which requires clean and good vacuum properties.

Packaging Film

Item Code	Product Name	Width (mm)	Length/roll (m)	Thickness (μm)
M08P-000	Film for TyvekMBB	200~900	1000	247~307
M09P-000	Film for AMBB	200~1200	1000	62~200
M10P-000	Film for ANMBB	200~1200	1000	62~200
M11P-000	Film for SSB	200~1500	1000	55~200
M17P-000	Film for TMBB	200~1200	1000	62~200
M12P-000	Film for CBPB	50~700	1000	40~200
M13P-000	Film for APB	50~1000	1000	40~200

Thickness units

Mil - 0.001 inch, ex) 3 mils = $0.003 \times 25.4 \text{ mm} = 0.0762 \text{ mm} = 76.2 \text{ microns}$

Micron - $1/1,000,000 \text{ m}$ ($1/1,000 \text{ mm} = 0.001 \text{ mm}$), ex.) 100 microns = $100/25.4 = 3.93 \text{ mils}$

MM - 0.15 mm = 150 microns

MVTR

The Moisture Vapor Transmission Rate (MVTR) is the rate that water vapor passes through a specific area of barrier material. MVTR is measured in grams of water vapor per 100 square inches of barrier per 24 hours (g/100 in.²/24 h).

EIA 583 Packaging Material Standards for Moisture-Sensitive Items defines a Class 1 barrier as having an MVTR of $<0.02 \text{ g/100 in.}^2/24 \text{ h}$. A Class 2 barrier is set at $<0.08 \text{ g/100 in.}^2/24 \text{ h}$.



All types of pre-laminated packaging films, thicknesses and sizes are available.

Humidity Indicator Card (HIC)

Item Code M14P-000

HIC allows fast visual inspection of the Relative Humidity(RH) in sealed packaging and containers. As the humidity increases, the chemically impregnated spots will be changed traditionally from blue to pink (Cobalt-HIC), blue to pink (CDF-HIC), brown to green (CB-HIC), yellow to green (CF-HIC) and green to purple (MF-HIC). Our HICs have 3 spots or 6 spots, but we also have a one spot type. It contains 3 spots, but only one spot is chemically impregnated and other two spots are just printed with reference colors for "OK" and "NG" (not good) so that user can easily check if it is failed or passed according to acceptable preset limit (ex. Semiconductor -10% RH, PCB/LED – 30% RH, etc.) in each industry.

We also have a plug type in round shape different from most other square designs in the market. Especially, if we use it with a specially designed plug case, it will become a lot easier and effective to check the humidity conditions inside of the bags without opening them.

Features

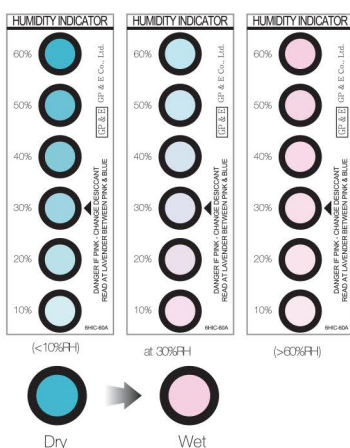
- Eco-friendly products
- Various types and designs (custom sizes and designs are also available on request)
- Meet MIL-I-8835A&IPC/JEDEC J-STD-033B.1
- Indication of warning point (option)



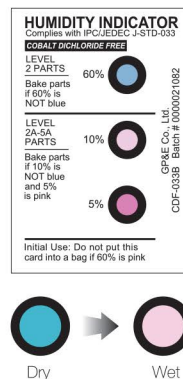
① Moisture Barrier Bag
② Humidity Indicator Card (HIC)
③ Desiccant

• Standard type (3 spots, 6 spots)

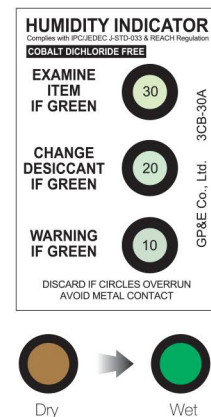
Cobalt-HIC (Regular type)



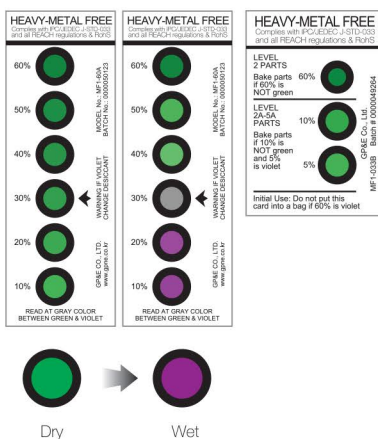
Cobalt Dichloride Free-HIC (CDF type)



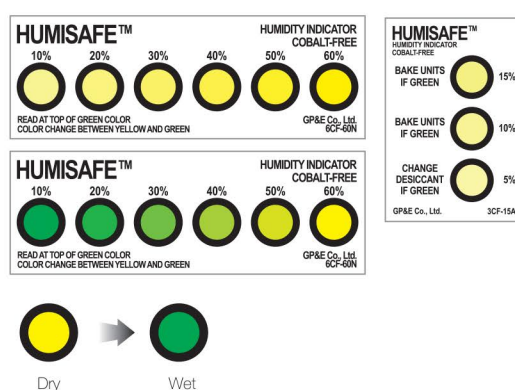
Cobalt Free-HIC (CB type)



Cobalt & Heavy Metal Free-HIC (MF type)



Cobalt & Heavy Metal Free-HIC (CF type)

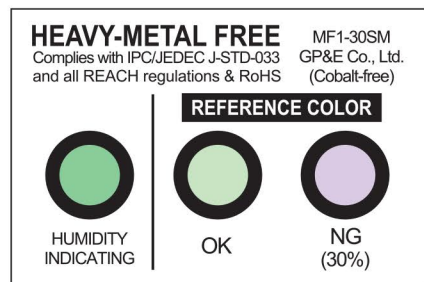


	Color Change	Cobalt Dichloride Free (CDF)	Cobalt Free (CF)	Heavy Metal Free (HMF)	Size		Indications		Packing	
					3spots	6spots	3spots	6spots	3spots	6spots
Cobalt-HIC	Blue-Pink				50×75 mm 17×51 mm 33×59 mm	40×119 mm 40×116 mm 34×116 mm	5-10-15% 30-40-50% 5-10-60%	10 ~ 60%	125 pc/tin or AMBB, 40 tins or AMBBs / carton	200 pc/tin or AMBB, 20 tins or AMBBs / carton
CDF-HIC	Blue-Pink	0								
CB-HIC	Brown-Green	0	0							
CF-HIC	Yellow-Green	0	0	0						
MF-HIC	Green-Purple	0	0	0						

Round type



One spot type



Desiccant

Product	Ultra Dry-PAK	Silica-Gel
Appearance		
Material	Bentonite (Clay)	Silica-gel
Packing	Non-woven + Paper	OPP, Paper, Tyvek, Non-woven
Unit	50 g	5, 10, 20, 30, 50, 100 g