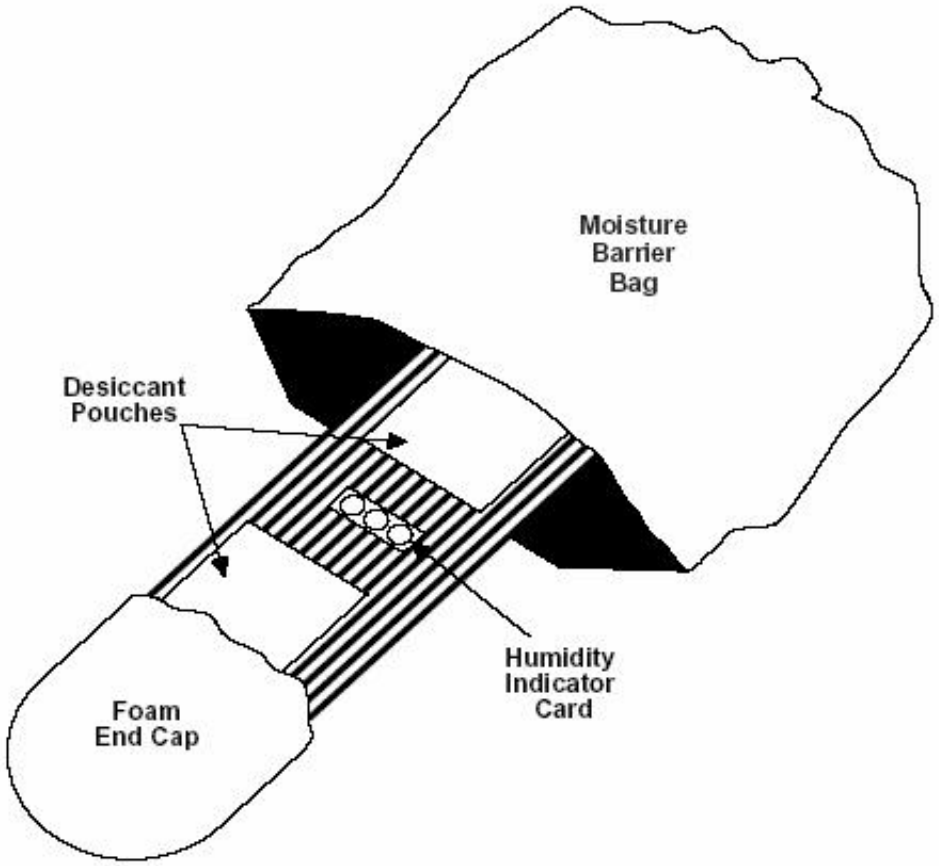
2.Dry Packs



1.Introduction/ **2.MBB**/ 3. Desiccant/ 4.HIC/ 5. MSL Label/ 6. MVTR/ 7.Advantages

2.Dry Packs

Quality of bags:

- MIL-B 81705-REV-C (Puncture resistance, gas transmission, ESD, etc.…)
- 4 layers, 150 mμ
- Water vapor transmission rate: 0,0006 g/100 inch²/day
- ESD safe

Product name: Moisture Barrier Bag
ESD-A4-6.0 mil

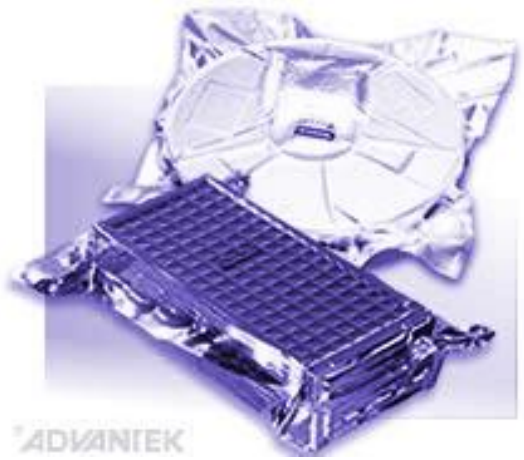
SPECIFICATION

Physical Properties		<Imperial>
Structure	Unit	ESD-PET//AL//ONY//PE-ESD
Thickness	Mil(micron)	6.0 MIL(155μ)+/-10%
Tensile Strength (ASTM D882-91 Method A)	psi	MD:10500 TD:9200
Tear Strength (ASTM D1004-66 Method A)	lbs	MD:37.02 TD:39.87
Elongation (ASTM D882-91 Method A)	%	MD:125 TD:109
Light Transmission (ASTM D-1003-92)	%	<0.001
Heat Seal Strength (FTMS D 1876-93)	lbs./in.width	>157.84
Burst Strength (FTM 191-C Method 5122)	psi	>145.04
Puncture Strength (FTMS 101-C Method 2065-1)	lbs	>197.66
MVTR (ASTM F-1249@100F, 100sq.in/24hrs.)	gms	<0.0006
Electrical Properties		
EMI Shielding (Mil-B 81705-REV-C)	DB	30
Capacitive Probe Test(High Voltage Discharge) (EIA-Std541/Appendix E-1KV)	Volts	<15
Surface Resistivity(ASTM.) D257@15%R.H. Interior Exterior Metal	ohms/sq.in ohms	<10^{8-11} <10^{8-11} 10^{2-4}
Static Decay (FTM 101C Method 4046-1, 5000V to 0 Volts)	sec.	<0.01

2.Dry Packs

Standard sizes

- 100 x 660 mm
- 250 x 500 mm
- 420 x 440 mm
- 420 x 540 mm



3.Desiccant

What is Desiccant?

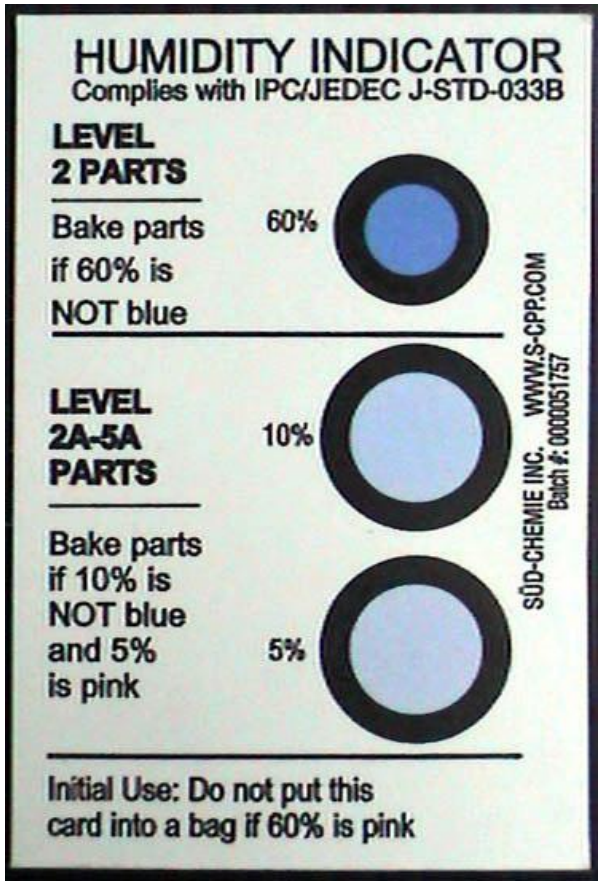
- Desiccant is a drying agent that is used to absorb moisture from the air inside moisture barrier bags. Desiccant absorbs moisture vapor (humidity) from the air left inside the barrier bag after it has been sealed. Any moisture that penetrates the bag will also be absorbed. Desiccant remains dry to the touch even when it is fully saturated with moisture vapor.

- Dust-free
- Non corrosive
- Special ESD coating < 1012 Ohms (dissipative)
- Packaging : 1 unit = 100p & ½ unit = 250p
- Storage in a dry atmosphere
- Can be reactivated at 120°C during 16 hours

4.HIC

What is an HIC?

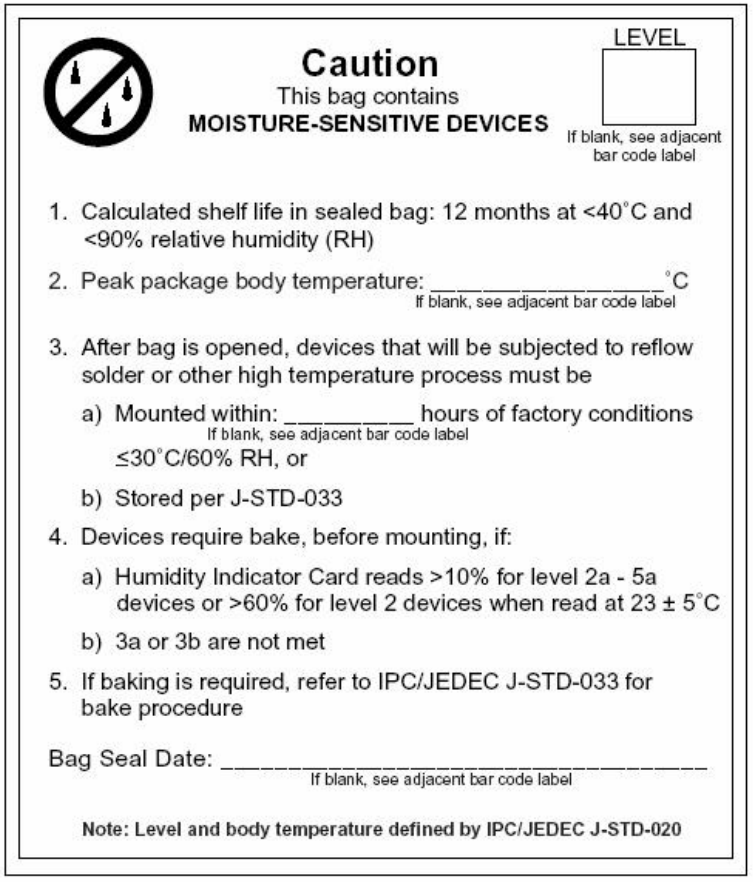
- An HIC (Humidity Indicator Card) indicates the relative humidity with moisture-sensitive, color changing chemical spots. HICs provide assurance to the user of the bag that the devices are dry when received
- Range : 5% RH, 10% RH and 60% RH
- Packaging : 125p per pint can
- Storage : keep in a dry area away from sunlight under normal temperature (10 to 40°C)



5. MSL label

Moisture Sensitive Identification

- Labels relevant to the dry pack process are the "Moisture-Sensitive Identification" (MSID) label and the Caution label as specified in JEDEC JEP113 shall be affixed to the lowest-level shipping container that contains the MBB. The Caution label shall be affixed to the outside surface of the MBB. The Caution label includes fields for the Peak package body temperature allowed during reflow soldering (the classification temperature per J-STD-020), the floor life, and the bag seal date.
- This label is already printed on all our bags as standard



Caution
This bag contains
MOISTURE-SENSITIVE DEVICES

LEVEL
If blank, see adjacent bar code label

1. Calculated shelf life in sealed bag: 12 months at <40°C and <90% relative humidity (RH)
2. Peak package body temperature: _____ °C
   If blank, see adjacent bar code label
3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be
   a) Mounted within: _____ hours of factory conditions
      If blank, see adjacent bar code label
      ≤30°C/60% RH, or
   b) Stored per J-STD-033
4. Devices require bake, before mounting, if:
   a) Humidity Indicator Card reads >10% for level 2a - 5a devices or >60% for level 2 devices when read at 23 ± 5°C
   b) 3a or 3b are not met
5. If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure

Bag Seal Date: _____
If blank, see adjacent bar code label

Note: Level and body temperature defined by IPC/JEDEC J-STD-020

6.MVTR

Moisture Vapor Transmission Rate is the rate that water vapor passes through a specific area of barrier material. As MVTR is reduced, dry storage time is increased and desiccant loading is reduced. MVTR is measured in grams of water per 100 square inches of barrier per 24 hours (grs / 100in² / 24 hours)

- Norms
  - IPC/Jedec J STD 033 (electronic application)
  - EIA 583 for storage with a known humidity level
  - MIL P116 General application
- Calculation of desiccant needed

How much desiccant do I need?

IPC/JEDEC J-STD-033

- **Application:** Dry packaging for SMDs.
- **What you need to know:** Bag size, Bag MVTR, Storage time in months desiccant capacity at 10%RH & 25°C.
- **Formula:** Units = (0.304 x Months x Bag MVTR x Bag Area) / Moisture Capacity
- **Example:** 10" x 20" inch Barrier Bag, with a 0.0006 MVTR and a12 month storage time. Find Bag Area: 10" x 20" x 2 sides = 400 inches².
- **Apply Formula:** Units = (0.304 x 400 in² x 0.0006 MVTR x 12 months) / 2,9 g/unit
- ***Units = 0.3 : use 1/2 unit of Desiccant.***

When the desiccant capacity at 10% RH and 25°C is not known the quantity needed can be estimated using the following simplified equation:

$$U = 10^{-3} A$$

- U = Amount of desiccant in UNITS
- A = Total exposed surface area of the MBB in square inches

How much desiccant do I need?

EIA 583

- **Application:** Dry packaging for SMD's. Allows adjustment of environmental conditions.
- **What you need to know:** Bag Area, Bag MVTR, Months of Storage, Maximum Interior Humidity (MIH).
- **Formula:** Units = 0.231 x Bag Area x Bag MVTR x Months / Moisture Capacity
- **Example:** 10" x 20" inch Barrier Bag, with a 0.02 MVTR, a 12 month storage time,f MIH of 20%.
- **Find bag area:** 10" x 20" x 2 sides =400 in^2
- **Select Moisture Capacity based on MIH:** 10% MIH : 3.0 g/unit 20% MIH 4.8 g/unit 30% MIH 5.8 g/unit 40% MIH 6.2 g/unit
- **Apply Formula**: Units= (0.231 x 400 in2 x 0.02 MVTR x 12 months) / 4.8 g/unit

- ***Units = 4.62 units : Use more than 4,5 units of desiccant. .EIA 583***

How much desiccant do I need?

MIL-P-116

- **Application:** General dry packaging.
- **What you need to know:** Bag Size
- **Formula:** Units = 0.011 x Bag Area in square inches.
- **Example:** 10” x 20” inch Barrier Bag
- **Find bag area:** 10” x 20” x 2 sides =400 in².
- **Apply Formula:** Units = 0.011 x 400 in² = 4.4

- ***Use 4,5 Units of desiccant.***

7.Advantages

List of items to consider when selecting a barrier bag : MVTR, Term of usage, Cost, ESD properties, Supplier reliability, etc...

- Very good MVTR (0,0006 g/100 sq inch /day)
- The lower the MVTR the longer we can store the product and less desiccant we have to use
- Very good mechanical resistance (155 µ)
- Very good purchasing price
- ESD safe
- Stock available in our distributor warehouse
- Compatible with our vacuum packaging machine (SDV)
- MSL label (JEP113) printed on the bag
- Very good quality