

## MBB (Material Barrier Bag) : extend print out warning message on shelf life

### What is the change?

#### Current condition:

Due to historical reasons, the MBB ST is providing for SMD (Surface Mount Device) products have printed advise message alerting on 12 months of shelf life in sealed bags.

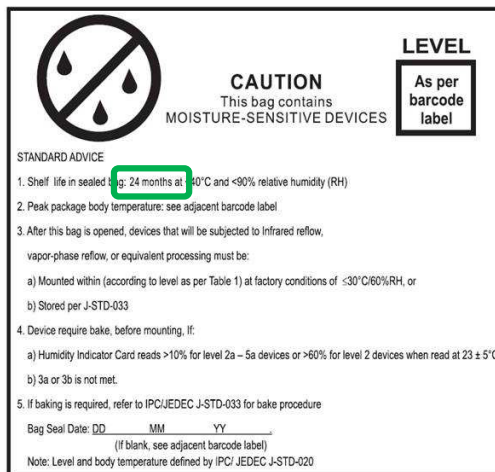
#### New condition:

To align with extended shelf life International trends, the print out advise message for SMD products and in any case all products packed with MBB will be changed alerting on 24 months of shelf life in sealed bags.

#### Current condition



#### New condition



### Why?

The main benefits are:

- Formalization that shelf life up to 24 months can be sustained
  - In any case, the advice is a general indication, while the principal MBB robustness proof remains the HIC (Humidity Indicator) control. If HIC didn't change color, this just proves that bag is still in good condition and is protecting device from possible moisture penetration.

### When?

The new MBB with 24 months print out advice will progressively replace the MBB with current 12 months advice, target to start gradually from beginning January 2021.

The overall transition period could last up to one year. Higher volumes impacted from April 2021. For very low volume products the transition period could be longer.

During the transition period, MBB with both 12 months AND 24 months warning message can be shipped to allow stock depletion. It is not guaranteed a strict adherence to FIFO during the transition period when both print out warning messages could be received.

### **How has the change been qualified?**

- Control on MVTR (Moisture Vapour Transmission Rate) parameter of the MBB used by ST internal and external plants: value in line with Jedec and ST specifications
- Compensation with higher Nb of dessicants, in few cases where MVTR value was higher than expected

### **What is the impact of the change?**

- **Form:** No change on product
- **Fit:** No change on product
- **Function:** No change on product
- **Reliability, or Processability:** NA (Not applicable).

The change is impacting many products (all the products packed with MBB Material Barrier Bar). In order to manage all the impacted products, we were obliged to split the products list in three sub-lists: Customers might receive double or triple notification letters with same content.

### **How can the change be seen?**

Change will be seen at unpacking of inner boxes and controlling the MBB print out advice.

### APPENDIX 1: RISK ASSESSMENT

#	Risks identified	Potential risk resulting from	Class (Low / Medium)	Considered action
1	MBB degradation	Humidity penetration in MBB (Material Barrier Bag)	low	HIC (Humidity Indicator) control on each box. If HIC didn't change color, this just proves that bag is still in good condition and is protecting device from possible moisture penetration.

**APPENDIX 2: QUALIFICATION PLAN and QUALIFICATION RESULTS**

Test name	Conditions	Sample size	Criteria	Results
Packing material checking	puncture/holes check	1 reel, 1 tube, 1 tray (each one with with different package)	No puncture/holes	PASS
	Over vacuum check		No over vacuum	PASS
	Seal strength		8 lbs/in (min)	PASS
	Surface resistance		Inner: 1E11 W > SR >=1E4 W; Outer: less 1E11 W	PASS
	Tensile strength		> 4,500 psi (MD/TD)	PASS
HIC	HIC control		change in color < 10%)	PASS
Dessicant	Dessicant weight control		weight after taking-out from bag (g); verify day after (if still able to absorb moisture (g)	PASS
<i>ST spec and Jedec J_STD_033C require same MVTR value (Moisture vapour Transmission Rate) for MBB/ MVTR &gt;0.0003 grms/100 sq. in./24hrs</i>				
Verification with all Subco of MVTR value in line with ST (and Jedec J_STD_033C spec) requirement				<i>IN LINE</i>