

# Guidelines/recommendations “MSL (moisture sensitivity level) of bare PCBs”

(setting parameters subject to user-specific processing operations)

## Objective:

- Clarification of contradictory statements regarding bare PCBs in accordance with MSL classification based on J-STD-033 or J-STD-020.
- Background to J-STD: Avoiding the “popcorn effect” in SMD components.

Level	Floor Life	
	Time	Conditions
1	Unlimited	30°C / 85% RH
2	1 year	30°C / 60% RH
2a	4 weeks	30°C / 60% RH
3	168 hours	30°C / 60% RH
4	72 hours	30°C / 60% RH
5	48 hours	30°C / 60% RH
5a	24 hours	30°C / 60% RH
6	„time on label“ (TOL)	30°C / 60% RH

Source: J-STD-020

## Method:

- The J-STD standard does not classify bare PCBs; it describes and requires electronic components to be classified into MS levels.
- The PCB’s shelf life (depending on the soldering surface) still applies.
- Repackaging remaining quantities of bare PCBs does not extend the shelf life.
- Drying is mandatory for hygroscopic materials used, for example, in flexible applications.
- The ZVEI’s guidelines/ recommendations regarding the drying of bare PCBs and relevant storage conditions still apply.

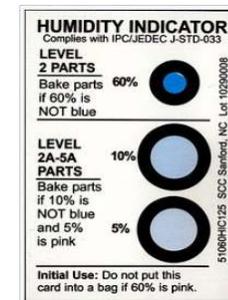
# Guidelines/recommendations

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### Application recommendation:

- Packaging in ESD-suitable, needled shrink foil is standard for inner-European transport. Bare PCBs absorb moisture until the saturation of the PCB has been reached. Bare PCBs are not dry when delivered.
- Indicating an MSL only makes sense for “Moisture Barrier Bag” vacuum packaging, in which case the use of a humidity indicator and desiccant (silica gel) is recommended.



Source: J-STD-033

- If vacuum packaging with desiccant is requested, instructions should be given (front of the PCB package, not directly on the PCB surface). These instructions should also be observed in the event of repackaging.



Source: Joytasa / Fotolia.com