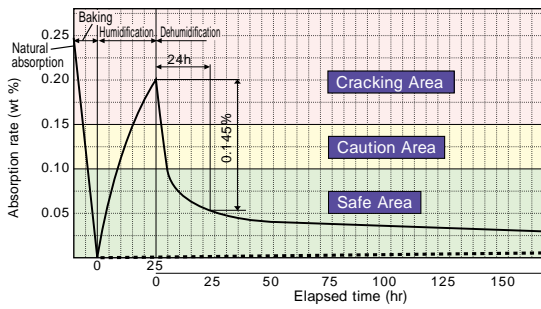


# IC package moisture absorption and dehumidification data

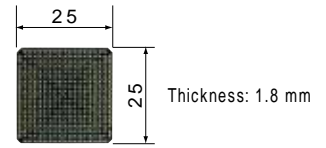


Pretreatment: Baked at 125 for 24 hours

Measurement conditions

- (1) Humidification: Exposed for 25 hours at 30 and 85% RH (using a constant temperature and humidity room)
- (2) Dehumidification: Stored in a low-humidity cabinet at 5% RH
- (3) Stored in a low-humidity cabinet at 5% RH after baking  
(Example of storage in a low-humidity cabinet at 5% RH in accordance with the new IPC/JEDEC J-STD-033C standard)

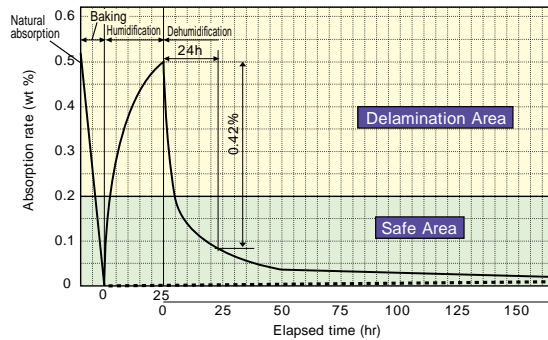
Sample: PBGA



# Low-humidity storage of multi-layer PCBs

The thinner multi-layered PCBs are, the faster they absorb moisture. If the moisture content of a PCB is 0.2 wt% or more, the heat of reflow soldering during surface mounting causes problems such as delamination and measling. Accordingly, IPC-1601 stipulates that PCBs be stored in a low-humidity cabinet at 10% RH or less.

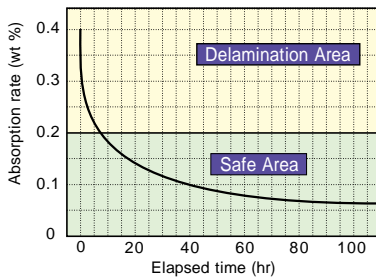
## PBGA carrier board



Measurement conditions  
Pretreatment: Baked at 125 for 24 hours

- (1) Exposed for 25 hours at 30 and 85% RH (using a constant temperature and humidity room)
- (2) After the treatment in (1) above, stored in a low-humidity cabinet at 5% RH
- (3) Stored in a low-humidity cabinet at 5% RH after baking

## PCB (glass-epoxy PCB)



Sample: Thin multi-layer PCB (6 layers)

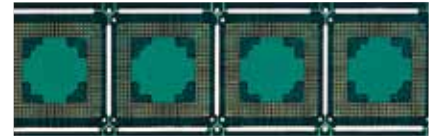
Size: 50 x 100 x 1 (t) (mm)

Measurement conditions

Pretreatment: Baked at 125 for 24 hours

Humidification: Steamed for 2 hours

Dehumidification: Stored in a low-humidity cabinet at 5% RH



# IC Package Storage Standard New IPC/JEDEC J-STD-033C (Joint Electron Devices Engineering Council)

## 5% or 10% RH storage using low-humidity cabinets

The new IPC/JEDEC J-STD-033C standard stipulates that once the moisture barrier bag for an IC package has been opened, the package is to be stored in a low-humidity cabinet at no more than 5% or 10% RH to prevent the absorption of ambient moisture. However, at sites where IC packages are surface mounted, the cabinet doors are opened frequently to put in and take out devices, allowing ambient humidity into the cabinet and raising its internal humidity. To prevent this and maintain a humidity level of 5% or 10% RH in the cabinet at all times, the cabinet must have an even lower level of humidity.

For this reason, the McDry cabinets are classified into different grades depending on the frequency with which the cabinet is opened at the work site.

IC packages are also classified by JEDEC into 7 levels according to how readily they absorb moisture, namely 5a, 5, 4, 3, 2a, 2 and 1. It is recommended that a G1 or G2 cabinet be used for level 5a, 5, 4, and 3 packages, since they most readily absorb moisture.

G2  
Standard model

Item/Grade	Minimum humidity	Frequency of opening-closing of doors	Model	Usage example	Recommended IC package storage level (JEDEC standard)
G1	1%RH	Once in approx every 10-20 min.	HM	<ul style="list-style-type: none"> <li>Moisture-proof storage for IC packages at surface-mounting sites where cabinets are frequently opened</li> <li>Moisture-proof storage for processes where low humidity is a particular requirement</li> </ul>	5 a, 5, 4, 3
G2	1%RH	Once in approx every 30-45 min.	DXU	<ul style="list-style-type: none"> <li>Moisture-proof storage for IC packages at normal surface-mounting sites</li> </ul>	5, 4, 3
G3	2%RH or 1%RH	Once in approx every 1-2 hours	MCU or MC	<ul style="list-style-type: none"> <li>Moisture-proof storage for IC packages at surface-mounting sites where cabinets are infrequently opened</li> <li>Moisture-proof long-term storage for IC packages and electronic components</li> <li>Moisture-proof storage for PCBs, etc.</li> </ul>	3, 2 a, 2, 1