

Frequently Asked Questions on Inert Dry Humidity Cabinets

1. What is a humidity cabinet?

[Ans.] A dry cabinet is a storage system (like an almirah) that allows protection of range of products against humidity problems. It is an enclosure with a supply of desiccant material which maintains an internal environment of specified RH value (could be anywhere between 1-50% RH). Desiccant dry cabinets are also called dehumidifying cabinets, desiccators, desiccating dry boxes, low humidity storage cabinets.

2. What is the benefit of the Dry Cabinet?

[Ans.] There are various advantages of using dry cabinets:

- # Prevent defects due to moisture contamination in reflow process
- # Allow compliance with IPC/JEDEC standard J-STD-033C
- # Eliminates the need for moisture barrier bags.
- # Process control with Measurable RH settings using hygrometer with digital display

3. What are the benefits of dry cabinets over moisture barrier bags (MBBs)?

[Ans.] It saves labour, cost and silica gel. User can place the electronic component trays, reels directly into cabinet without having to be placed into moisture barrier bag. It is easier, more effective than MBB. There are no problems of MBBs like improper sealing, punctures of the bags and in general much less trouble than to pack/repack materials in bags.

4. What items are typically stored in dry cabinets?

[Ans.] Component, materials classified as MSD (Moisture sensitive device) or any other materials, components susceptible to moisture related defects. Examples include electronics components, semiconductor, PCBs, Cameras, Lenses, Electronic Devices, Measuring Devices, Semiconductors, Capacitor, Battery, Sensors etc

5. Confirm typical defects related to moisture contamination of MSDs?

[Ans.] Some defects include pop-corn effect, bond lifting, die lifting in semiconductors. Also possible is corrosion due to ionic contaminants, pop corning and micro-cracking of ICs and BGAs.

6. How to identify MSD-related defects in my assembly?

[Ans.] Some defects like cracking may be observed with naked eye or under microscope. Pop corning may be heard coming from inside reflow oven. However it is normally quite difficult to detect these defects. It is better to run a test for this purpose. Allow a tray of MSDs to flow through your normal reflow process. Once finished send this tray of MSDs to an third party lab for scanning acoustic microscopy or cross-sectioning for testing. Based on results you can implement MSD control program.

7. When does IC Micro-cracking happen?

[Ans.] Micro-cracking occurs in IC packages containing moisture during the reflow process. Some IC packages are only guaranteed for 24 hours after removal from moisture barrier bags. Exposed to environment, ICs absorb moisture which results in micro-cracking. Use of dry humidity cabinets is recommended to avoid this.

8. What is IPC/JEDEC J-STD-033?

[Ans.] IPC/JEDEC J-STD-033 lists the detailed procedures for handling, packing, shipping and use of moisture/reflow sensitive surface mount devices.

9. What is desiccant, how is it important for dry cabinet?

[Ans.] Desiccant is a material that absorbs water quickly and hence is used as a drying agent. In addition the desiccant material can be easily refreshed (typically by heating) and brought back to its original state when it can again start absorbing moisture or humidity. Desiccant is thus an important material in dry humidity cabinets which are based on its absorption property.

10. Do the dry cabinets use any chemical process?

[Ans.] Dry cabinets do not use any chemical reaction. The desiccant simply absorbs moisture and is then dried using heating – water dried is released in the environment outside of the cabinet.

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11. Is N2 / Dry Air Purge needed for better drying?

[Ans.] Our cabinets work on desiccator principal with electronic control to maintain <5% RH. Our cabinets do not need any N2 or dry air. Thus the customer is saved the cost of purged gas consumption and the hassles of handling nitrogen cylinders.

12. Do you offer ESD protection on your dry cabinets?

[Ans.] Yes, our ESD Safe series has anti-static painting, glass, shelves, stands / casters plus a ground wire. We have both ESD safe and non-ESD safe versions. Please select the ESD versions if needed in your application

13. What is recovery time of dry cabinets?

[Ans.] The dry cabinets purpose is to maintain the RH inside the cabinet near to the set value on the electronic control. Once the door is opened the RH value inside suddenly increases due to exposure to outside humidity. Recovery time is the time required for the cabinet to reach the RH level inside the cabinet back to its set point after the door has been opened and closed.

14. Are your cabinets repairable in case of problems?

[Ans.] First of all the quality of our cabinets is very high due to which there are minimal operational problems. For larger companies with comprehensive maintenance plans modules are available. The design of our cabinets is extremely modular. We offer the main modules like desiccator controller, alarm module, electronic control module separately. Customer can easily plug and play these at their own end. We have the full capability to repair these cabinets at our offices in Bangalore, Delhi and Chandigarh. On-Site support is also available on charged basis.

15. Does the desiccant require replacement on regular intervals?

[Ans.] The desiccant does not require any replacement. Under normal working conditions it works for 10 years or more without replacement.

16. Do Dry cabinets require any maintenance?

[Ans.] There is very low maintenance required.

17. How about calibration of your Dry cabinets?

[Ans.] Electronic calibration feature is available in our dry cabinets. Please refer to instruction manual for the same. Normal calibration duration is once per year.

18. How to reset floor life of components?

[Ans.] According to J-STD-033B.1 the floor life of a component can be reset by storing in <5%RH or <10%RH low humidity dry cabinet for 5 times or 10 times the exposure time. Different components & exposure times will require different floor life resetting methods.

19. What is recommended RH for different products?

[Ans.] Recommended RH is different for different products. See below:

45-55%RH : Magnetic Diskettes, Magnetic Tapes, Cameras, Lenses, Video Camcorder, CDs, LD, Records, Projector Slides, Telescope, Photographs, Photonegatives, Paintings etc

35~45%RH : Sensitive Electronic Instruments, Electronic Devices, Measuring Devices, Semiconductors, Battery, Sensors

Below 35%RH : Medicine, samples, seeds, pollen, spices, tea, coffee, snacks, dried food products

Below 5%RH : ICs, Sensitive electronic components, resetting floor life of components, extra sensitive components