

Printed circuit boards consist of materials that absorb moisture; some materials absorb more than others. Due to this moisture absorption the PCB may delaminate after a heat shock. It is therefore highly recommended to dry PCBs before assembly, especially flex and flex-rigid constructions. Since the introduction of lead free the entrapment of moisture in PCBs is even more critical due to the higher solder

process temperatures. This document gives some recommendations on the best way to store and handle PCBs prior to assembly. See also IPC-2223B "Sectional design Standard for Flexible Printed Boards" Paragraph 5.3.4 "Bake out shall be standard process...."

## Conditioned storage

Use for all PCBs always sealed packaging and practice air-conditioned storage at:  
**Temperature 20-24°C, Relative Humidity of ≤ 30-40%**

## Drying recommendations prior soldering

Type of PCB	Drying temperature	Hours of drying at specified conditions				Remarks
		≤ 2 layers	≤ 6 layers	≤ 8 layers	> 8 layers	
Fr-4	120°C	-	4 hr	4 hr	4 hr	For OSP finish max. 80°C is allowed.
Flex	120°C	4 hr	4 hr	6 hr	8 hr	Consult Finline QPI for optimal surface finish selection or check Finline QPI document FLO9002.00
Flex-rigid	120°C	4 hr	4 hr	6 hr	8 hr	
Polyimide	120°C	4 hr	4 hr	6 hr	8 hr	
Teflon	-	-	-	-	-	

**Please note that every drying cycle is an aging of the finish.**

During aging the inter-metallic layer between copper and finish is growing. This may result in a bad or even non-wetting surface.

## Maximum drying cycles

Type of finish	Maximum drying cycles	Remarks
Hot air level (PbSn)	2 times	After drying the PCB's need to be processed immediately or stored in a vacuum or dry chamber where the humidity is 0%!
Hot air level (Sn)	2 times	
Hard Gold	2 times	For the second assembly it is recommended having an additional drying cycle, except for Immersion Sn, Immersion Ag and OSP.
Immersion Nickel Gold (NiAu)	2 times	
Immersion Nickel Palladium Gold (Ni/Pd/Au)	2 times	For Immersion Sn, Immersion Ag and OSP it is recommended to put the PCB in a vacuum or dry chamber after first assembly and schedule the second assembly soonest thereafter. Do not apply a second drying cycle in these cases!
Immersion Tin (Sn)	1 time	
Immersion Silver (Ag)	1 time	
Organic Surface Passivation (OSP)	1 time	

## Remarks

- Due to the low moisture absorption, PCBs from the family of Teflon materials do not have to be dried
- For hybrid PCBs and other constructions please contact Finline QPI
- For other finishes than mentioned please contact Finline QPI
- Finline QPI only guarantees soldering if PCBs are stored in the unopened original package at the conditions specified above

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