PCB Drying Recommendation

Printed circuit boards (PCBs) consist of materials that absorb moisture—some materials more than others. Due to this moisture absorption, PCBs may delaminate during the assembly process. Since the introduction of lead-free soldering, moisture entrapment in PCBs has become even more critical due to the higher processing temperatures.

It is therefore highly recommended to dry PCBs before assembly, especially for flex and flex-rigid constructions.

Recommended parameters for drying							
Single-sided and double-sided FR4	Multilayer FR4	Multilayer Hybrid	Flexible up to 2 layers	Flexible from 3 layers	Rigid-flex up to 4 layers	Rigid-flex 5 to 8 layers	Rigid-flex more than 8 layers
120°C 2 hours	120°C 4-12 hours*	120°C 4-12 hours*	120°C 2 hours	120°C 2-4 hours*	120°C 2-4 hours*	120°C 4-6 hours*	120°C 4-8 hours*
Maximum processing times after drying							
Single-sided and double-sided FR4	Multilayer FR4	Multilayer Hybrid	Flexible up to 2 layers	Flexible from 3 layers	Rigid-flex up to 4 layers	Rigid-flex 5 to 8 layers	Rigid-flex more than 8 layers
24 hours	8 hours	8 hours	8 hours	6 hours	6 hours	6 hours	6 hours

*Note: The required drying time may vary depending on several factors:

- The hygroscopic properties of materials used in hybrid structures, which may differ from standard FR4
- The presence of edge contacts and number of ground planes
- The thickness of flexible layers and acrylic adhesive on the cover layer
- The PCB layout, particularly if large copper areas are present on the outer or inner layers, as these can seal in moisture and delay evaporation

If you are unsure about the appropriate drying time, please contact AQC for advice.

Important: PCBs must be placed separately in the drying oven to allow moisture to evaporate effectively.

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	Table-3-1 Recommendations for printed Board Baking Profiles[1]		
Final Finish	**Temp.**	**Time**	**Comments**
Tin	105 - 125°C	4-6 Hours	Baking may reduce solderability. See 3.4.1.5
Silver	105 - 125°C	4-6 Hours	Silver may tarnish. See 3.4.1.4
Nickel/Gold	105 - 125°C	4-6 Hours	See 3.4.1.2
ENIG/ENEPIG	105 - 125°C	4-6 Hours	See 3.4.1.2
Organic Coating	See 3.4.1.1		
HASL/HAL/Fused Tin-lead	105 - 125°C	4-6 Hours	Final surface thickness below 0,77 µm [30.0 µin] may turn into pure intermetallics and render the printed board unsolderable
Note 1. Baking in vacuum or nitrogen atmosphere does does not accelerate emoval of moisture, but may help preserve solderability, see 3.4.1.			

Helmond, 06-08-2025