

## IPC class 3 or not?

IPC class 2 is default within the pcb business. However, in some cases there are needs for increased requirements. Will it be necessary to specify IPC class 3 then?

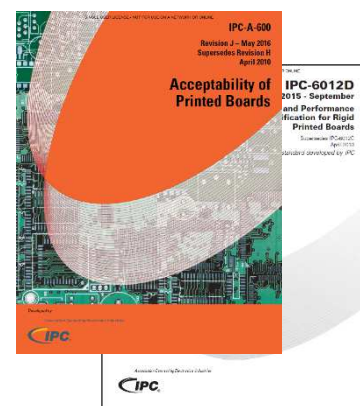
The answer is No. Strict IPC class 3 is limited to mainly aerospace, nuclear and special medical technology. Class 3 will not improve the finish, but require a large quantity of cross sections. The cost for class 3 will be much higher and supplier selection is limited.

Defence, offshore, automotive and some industrial electronics might require increased requirements and control where class 2 only is not sufficient.

### MMAB recommends

The solution is to specify class 2 and select the most important items which should be covered by class 3. This will contribute to a reasonable quality level with decreased cost and lead time with several more suppliers to choose among.

For increased requirements MMAB recommends to specify IPC class 2 with following additions according to IPC class 3, referred to in the table below.



IPC Reference	Comments
<i>Limit to two cross sections per batch (IPC-6012 Table 4-2 Sampling Plan)</i>	Two samples is a reasonable level which ensure proper verification
<i>Track distance reduction max 20% (IPC-A-600 item 2.10.1.2 Conductor Spacing)</i>	Higher requirement for increased insulation distance which require more precise etch- and plating processes
<i>Annular ring external not broken (IPC-A-600 item 2.10.3 External Annular Ring)</i>	Require unbroken annular ring on outer layer, which require improved registration and drill wander during manufacturing
<i>Plating thickness outer layer (IPC-A-600 item 3.2.3 External Conductor Th.)</i>	Reasonable requirement for minimum copper thickness after plating
<i>Plating thickness in hole min. 25 µm (IPC-6012 Table 3-4 Surface and hole copper)</i>	Increased plating thickness for increased reliability
<i>Intruding plating in hole walls max 80 µm (IPC-A-600 item 3.3.4 Wicking)</i>	Ensures higher drill quality for increased reliability
<i>Protruding adhesive leaving 360° annular (IPC-A-600 item 4.1.2.1 Adhesive Land area)</i>	Flexible pcb only. Increased requirement for adhesive, not protruding from coverlay out on solderable surfaces
<i>Protruding adhesive on connector areas (IPC-A-600 item 4.1.2.2 Adhesive Foil Surface)</i>	Flexible pcb only. Increased requirement for adhesive, not protruding from coverlay out on contact surfaces
<i>Coverlay and stiffener not affecting holes (IPC-A-600 item 4.1.3 Access hole registr.)</i>	Flexible pcb only. Increased requirement for coverlay and stiffener, and its influence on solderable surfaces

## Our factory in Sweden under development and improvement

Our plating line for copper plating is under refurbishment with new pumps and filters, increasing the filtration with 50%, one of several quality actions within our improvement program.

Recently we also installed a station for digital precision measurement of track and gap, as well as a coordinate measurement equipment for step distance, photo tools and panels.

Our strip-etch-strip line is an on going project planned to be finished during the summer and in use during the autumn. An exiting project which we will come back to with more pictures.



## Summer time at MMAB

Soon we will have summer vacation and this year market and sales are closed 17th - 28th of July.

Our logistics department and manufacturing partners are working as usual.

Our production in Sweden will be closed 17th of July - 11th of August.

More information about our products can be found at [www.mmab-pcb.com](http://www.mmab-pcb.com)

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