



ORIGINAL BUNGARD PRESENSITIZED BOARD

The name **ORIGINAL BUNGARD** stands for highest quality and processing safety of pre-sensitized laminates. Like no other comparable product, this material allows a fast, flexible and faultless production of PCBs in small series and prototypes.

We use first-choice laminates approved and certified by UL, NEMA, DIN, IEC and others.

Several types of laminates, i.e. FR2, FR3, CEM1, FR4 and PTFE are available in thicknesses of 0.5, 0.8, 1.0, 1.6, 2.0 and 2.5 mm with either 18, 35 or 70 microns Copper. The max. panel size is 510 x 1150 mm. Our cutting service provides sheets down to 50 x 50 mm min. size, with an accuracy of 0.1 mm.

PHOTORESIST

We coat the laminates with a special positive working liquid resist made according to our own recipe. The resist features highest exposure sensitivity, short processing turns and large processing latitude. The equal and dust-free coating has a defined thickness of 5 µm. The maximum spectral response is in the range of 350-400 nm. The line resolution is limited only by the type of exposure unit. Typical exposure times are less than 90 seconds on a set with fluorescent vacuum tubes. The resist allows multiple exposure.

Referring to our special developer, at 20 °C the developing time is less than 45 seconds. On the other hand, the resist is absolutely stable for more than 5 minutes in the developer. It is resistant to acid etching or galvanic chemicals and even permits alkaline etching at a pH-level less than 9.5.

The boards are protected against mechanical damage and unwanted exposure by a special, blue coloured adhesive foil. Due to this protective foil, no flitters appear when cutting or milling the boards.

Each board is subjected to chemical and physical controls and tests before and after coating.

A shelf life of more than 1 year under normal storage conditions is guaranteed. Even 10 year old boards still work.

PRE-SENSITIZING SERVICE

We can coat boards that you supply with photoresist. The max. board size is 530 x 1160 mm, the min. board thickness is 0.3 mm. Our pre-sensitizing service includes cleaning, double sided coating in dip technology, pre-aging, optical control and protection foil. Attention: dip rim 10 mm on top and drip rim of 10 mm at the bottom will reduce usable size by 20 mm on the short side (530 mm will go down to 510 mm). The rim is on request removed without charge.

STANDARD CUTTINGS FR4

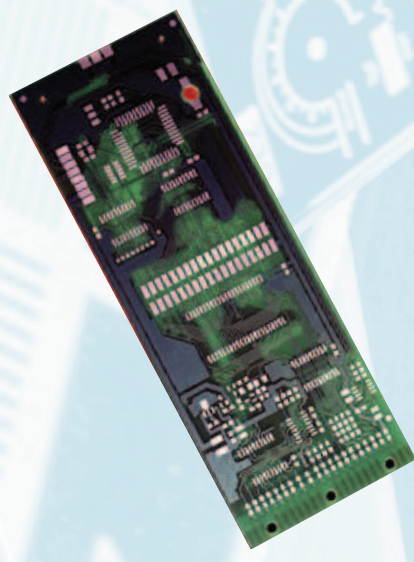
Format (mm)

1.5 mm	1.5 mm
35 µm Cu	70 µm Cu
210 x 300	210 x 300
200 x 250	200 x 250
150 x 250	150 x 250
160 x 233.4	160 x 233.4
150 x 200	150 x 200
125 x 175	125 x 175
100 x 160	100 x 160
75 x 100	75 x 100

PANELS FR4

Format (mm)

0.5 - 1.5 mm 18 µm Cu	0.5 - 2.5 mm 35 µm Cu	0.5 - 2.5 mm 70 µm Cu	1.5 mm 105 µm Cu	1.5 mm FR4 blue/black 35 µm
510 x 1150 x 0.5	510 x 1150 x 0.5	510 x 1150 x 0.5	510 x 1150 x 1.5	510 x 1150 x 1.5
510 x 570 x 0.5	510 x 570 x 0.5	510 x 570 x 0.5		
510 x 1150 x 0.8	510 x 1150 x 0.8	510 x 1150 x 0.8		
510 x 570 x 0.8	510 x 570 x 0.8	510 x 570 x 0.8		
510 x 1150 x 1.0	510 x 1150 x 1.0	510 x 1150 x 1.0		
510 x 570 x 1.0	510 x 570 x 1.0	510 x 570 x 1.0		
510 x 1150 x 1.5	510 x 1150 x 1.5	510 x 1150 x 1.5		
510 x 570 x 1.5	510 x 570 x 1.5	510 x 570 x 1.5		
	510 x 1150 x 2.0	510 x 1150 x 2.0		
	510 x 570 x 2.0	510 x 570 x 2.0		
	510 x 1150 x 2.5	510 x 1150 x 2.5		
	510 x 570 x 2.5	510 x 570 x 2.5		



PANELS FR2

Format 480 x 1000 x 1.5 mm
35 µm Cu single or double sided

PANELS FR3

Format 510 x 1150 x 1.5 mm
35 µm Cu double sided

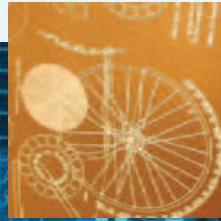
PANELS CEM1

Format 510 x 1150 x 1.5 mm
35 µm single sided



CUTTING SERVICE

We cut down all boards to non-standard sizes on request. The maximum board size is 510 x 1150 mm, the minimum size is 50 x 50 mm. Remains will be included. Boards >= 2 mm will be cut by saw. Saw cutting loss will be 3 mm per piece.



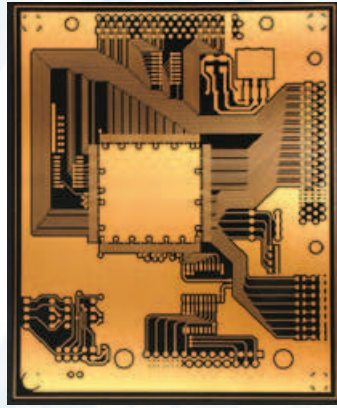
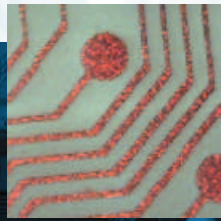
SPECIAL PURPOSE LAMINATES
Besides our ORIGINAL BUNGARD photo-positive coated base material we offer a wide range of laminates related to pcb manufacturing.

Engraving plates
for Front Panel Engraving. Size approx. 500 x 1000 x 1.5 mm. Black and nature available.

Technical glass fibre laminate
no copper clad, no photoresist, size: 510 x 1150 x 1.55 mm

Drill backing boards
Drill backing boards for drilling pcbs e.g. with the BUNGARD CCD.
in stock: 500 x 1000 x 2.5 mm
500 x 1000 x 6 mm
245 x 330 x 6 mm

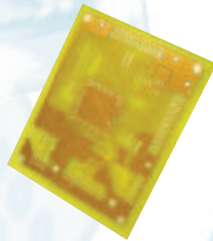
Multilayer production
Prepregs (250 x 350 x 0.2 mm)
outer layer (FR4 250 x 350 x 0.3 mm 18/00)
inner layer (FR4 250 x 350 x 0.5 mm 18/18)
separation foil
(packing size for Prepregs and separation foil 50 pcs. each)



SURFACE:

If you use ORIGINAL BUNGARD photo-positive coated pcbs, there is a simple technical alternative to protect the surface of your pcb:

- Step 1:**
Etch your ORIGINAL BUNGARD PCB as usual.
- Step 2:**
develop the photoresist after etching once again with a negative film (solder PADS open).



Copper clad laminates

FR4, CEM1, FR2, without photoresist. Approvals and standards as for pre-sensitized boards.
The copper surface is not yet brushed.

- FR4, panel size 510 x 1150 mm,**
- Thickness 0.5 mm; Copper clad 18µm, 35µm and 70 µm; single or double sided
 - Thickness 0.8 mm; Copper clad 18µm and 35µm; single or double sided
 - Thickness 1.5 mm; Copper clad 5µm; single sided; Copper clad 18µm, 35µm, 70 and 105µm; single or double sided
 - Thickness 2.0 mm; Copper clad 35µm and 70µm; single or double sided
 - Thickness 2.5 mm; Copper clad 35µm and 70µm; single or double sided

CEM1
panel size 510 x 1150 mm, Thickness 1.5 mm
Copper clad 35µm single sided

FR2
panel size 500 x 1000 mm, Thickness 1.5 mm
Copper clad 35µm single sided or double sided
FR2 is perfect for isolation milling, because routers and drills will last much longer.

ALUCOREX

This product is perfectly suitable to manufacture front panels, machine or information plates as well as tampon printing clichés. ALUCOREX consists of an aluminium alloy which is anodized in a unique treatment sequence. After anodizing we coat the boards with a specially adjusted, high-resolution and resistant positive photo-coat. To protect the coat from mechanical damage or unintentional exposure we provide the boards with a light protection foil.

Making a front panel from ALUCOREX is simple and safe. The procedure takes only minutes and you need no equipment besides an exposure unit and a developing tray. The main steps,

- exposure and
- developing

take together only 5 minutes.

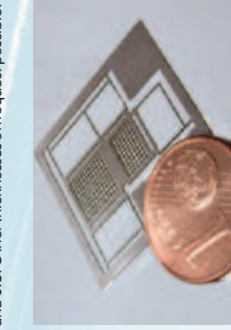
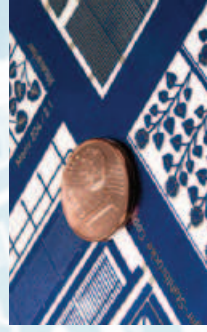
The colour of the ALUCOREX-boards is already established in the scratch, light and chemical proof anodized layer. The exposed parts of this layer are removed during the developing process.

SMD STENCILS FOR SOLDER PASTE APPLICATION

From now on, there is a quick, cheap and easy way to make your metal template on your own. With already existing machines and without interference of existing processes.

To do so we offer both positive or negative pre-sensitized metal templates in many dimensions, in different thicknesses and hardnesses.

Being coated with a chemically resistant photoresist of high line resolution and steepness, these templates offer you all the advantages already known from the pre-sensitized laminates for PCBs.



Brass boards are available in 500 x 1000 mm. Thicknesses: 0.2, 0.3, 0.4, 0.5, 0.8 and 1.0 mm. Other thicknesses on request possible. German Silver (CuNiZn) board size 280 x 1000. Thicknesses: 0.1, 0.15, 0.2, 0.3, 0.4 and 0.5. Other thicknesses on request possible.

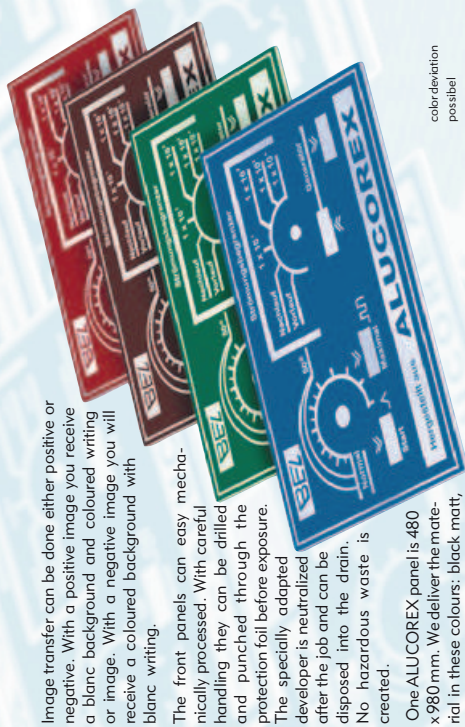


Image transfer can be done either positive or negative. With a positive image you receive a blank background and coloured writing or image. With a negative image you will receive a coloured background with blanc writing.

The front panels can be easily mechanically processed. With careful handling they can be drilled and punched through the protection foil before exposure. The specially adapted developer is neutralized after the job and can be disposed into the drain. No hazardous waste is created.

One ALUCOREX panel is 480 x 980 mm. We deliver the material in these colours: black matt, black brilliant, red, green and blue brilliant.

- Black matt is available in 0.5, 1.0, 1.5, 2.0, 2.5 and 3.0 mm thickness
- Black brilliant in 1.0, 1.5, 2.0 and 2.5 mm.
- Red and Blue brilliant (both sides are usable) is on stock in 1 mm thickness, as well as the green brilliant clichés, which is only single sided usable.

On request we cut down the boards according to your wishes till board size 50 x 50 mm. Being stored in a cool and dry condition the material has a guaranteed shelf life warranty up to one year. Tests have shown that even 10 year old material can still be processed.



color deviation possible

