

## Product description

The insulating metal substrate (IMS) consists of an aluminium basis plate on the lower surface and an ED Copper foil on the top side. The product is particularly meant for applications where dissipation of heat is important. For this reason there is an electrically isolating layer consisting of glass fabric combined with a mixture from epoxy resin and ceramic(s) between the aluminium and the copper foil. This layer guarantees a very good thermal conduction, a high dielectric strength and a continuous high temperature resistance. Processing and assembly (solder) can be accomplished with the usual processes. Aluminium basis plate is provided with a foil, which protects aluminium during the wet processes of the printed circuit board production process.

BEL Cotherm® fulfills the ROHS directive 2002/95/EC.

### STANDARD CONSTRUCTIONS

Aluminium thickness in µm	<b>1000 - 1500 - 2000</b>	Aluminium Alloy Treat	<b>5052 H18</b>
Insulation thickness in µm	<b>100</b>	Dielectric thickness tolerance µm	<b>± 10</b>
Copper thickness (ED) in µm	<b>35</b>		
Other constructions available on request			

PROPERTIES 1500 µm Al / 130 µm dielectric / 70 µm Cu	TEST METHOD	Units	TYPICAL VALUES	Guaranteed values
Time to blister at 288°C, floating on solder (50 x 50 mm)	IEC-61189	See	>120	>120
Copper Peel strength, after heat shock 20 sec/288°C	IPC-TM 650-2.4.8	N/mm	2,8	>1,8
Dielectric breakdown voltage, AC (1)	IPC-TM 650 2.5.6.3	kV	8	5
Proof Test, DC(2)	-	V	3000	3000
Thermal conductivity (dielectric layer)	ASTM-D 5470	w/m.°K	1,45	1,45
Thermal impedance (dielectric layer) x 10 <sup>na</sup>	ASTM-D 5470	°K.mVw	0,089	0,089
Surface resistance after damp heat and recovery	IEC-61189	MΩ2	10 <sup>5</sup>	10 <sup>5</sup>
Volume resistivity after damp heat and recovery	IEC-61189	MQm	10 <sup>4</sup>	10 <sup>4</sup>
Relative permittivity after damp heat and recovery, 10 kHz	IEC-61189	-	4,5	4,5
Dissipation factor after damp heat and recovery 10 kHz	IEC-61189	-	0,02	0,02
Capacitance	-	pF/cm <sup>2</sup>	<b>40</b>	40
Flammability, according UL-94, class	UL-94	class	V-0	V-0
Glass transition temperature of dielectric layer ( by TMA)	IPC-TM 650-2.4.24	°c	90	90
Maximum operating temperature	-	°c	150	150

(1) **Dielectric Breakdown test**, is a material destructive laboratory test. It is performed according to the IPC-TM-650 part 2.5.6.3., under AC voltage, raising it until electric failure.% on relative small surface area of the dielectric part, and using metal electrodes. Values should be taken as a material reference, and not as guaranteed values.

(2) Electrical proof test. 100% of our laminate production delivered has been "on line" verified at 2000 Vdc: 500 V/sec. ramp // 5sec. held at 2000 vdc.

## Availability

Standard Sheet Size mm	<b>530 x 610</b>
Tolerance in mm	<b>+5 / -0</b>
Squareness in mm	<b>3 mm max. as differential between diagonal measurement</b>
Standard size tolerance in panels in mm	<b>± 0.3</b>

The data is based on typical values of standard production and should be considered as general information. Our company reserves the right to future changes. It is the responsibility of the user to ensure that the product complies with his requirements.

Cotherm ® is registered trademark of the Bungard GmbH & Co KG

Cotherm can be processed in the same manner as our Bungard presensitized base material. The only difference: you need to cover the aluminium when developing and etching, so there is no contact between aluminium and developer/etching agent!!

