

## Safety Precautions

### Statement Content

The statement content is based on materials, data, and information currently available and no guarantee is made with respect to content, physical properties, or hazards and harmful effects. Further, as handling precautions relate to normal handling, for special handling, safety measures appropriate to the application and its method should be taken.

### WARNING Fire/high temperature caution

- Fires should be extinguished with powder, carbon dioxide, foam fire extinguisher, or water sprays.

### WARNING First-aid measure

- Eye contact: Remove from eyes quickly, and wash eyes by clean water sufficiently. If bloodshot eyes or respiratory symptoms develop, seek medical advice.
- Skin contact: Wash the skin liberally with water and soap. If you feel stimulus, seek medical advice.
- Swallow: Vomit it, wash mouth and seek medical advice.




### CAUTION Disposal

- As data relating to health and the natural environment are incomplete, the greatest care should be exercised when handling UPISEL®.
- When disposing of UPISEL®, because of pollution concerns, the material should be burned in an appropriate incinerator. This should be done in accordance with the Air Pollution Control Act and other laws and regulations.

### PROHIBITION Others

- The product is for industrial use only. If your company uses the product for medical or other special use requiring safety considerations, the determination of suitability and safety of the finished product will be the responsibility of your company.
- Do not plant and inject the material and do not use the product if it is possible that part of the product could remain in the humans body.

### Meaning of displayed symbols

 <b>WARNING</b>	Failure to observe this sign and erroneous handling of the product may cause death or grave injury to users.
 <b>CAUTION</b>	Failure to observe this sign and erroneous handling of the product may cause injury to users or a large physical loss.
 <b>PROHIBITION</b>	This sign indicates activities that are prohibited (prohibited items). The activities that are actually banned are described on or near the sign.

UPISEL® is a trademark registered in Japan No.4346943 by Ube Industries, Ltd.



UPISEL-N is non-adhesive type flexible Copper Clad Laminate based on "UPILEX-VT"

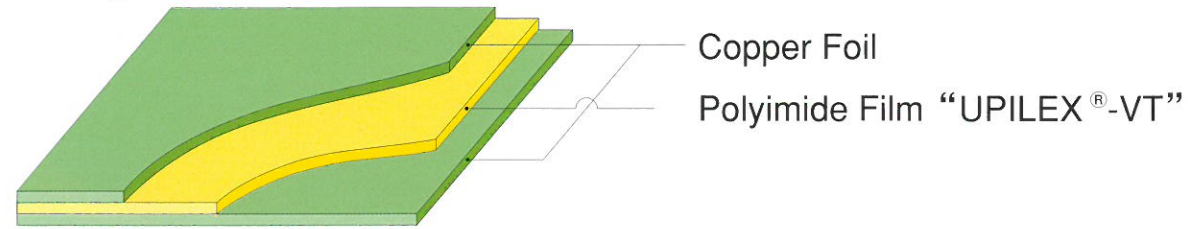
UPISEL-N has excellent dimensional stability and heat resistance.

"UPILEX-VT" performs high bonding ability without any use of adhesives by simple heat lamination.

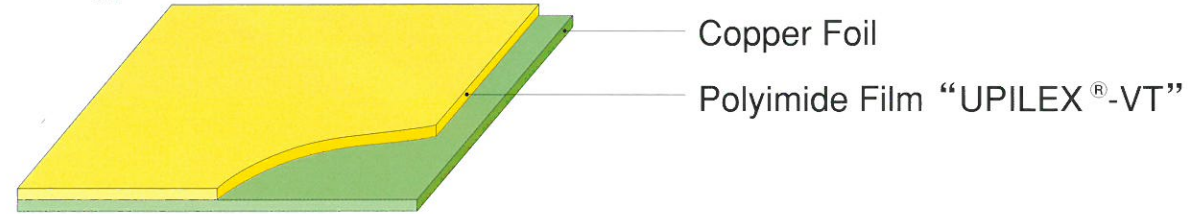
"UPILEX-VT" is an aromatic polyimide same as "UPILEX-S" which has high market share as the base film for TAB (Tape Automated Bonding).

## UPISEL-N Board Structure

### ● Double-side Type



### ● Single-side Type



## Characteristics

- Without the use of adhesives, UPISEL-N maintains high physical properties and high reliability at high temperatures.
- It performs excellent peeling strength, heat soldering resistance, chemical resistance and dimensional stability.
- The film layer of the UPISEL-N can be heat bonded with ceramics, metals and silicon chip.
- Without the use of adhesives, UPISEL-N is tender for the environment.

## Application

FPC, TCP, MCM-L, COF, Rigid flex, Multi-layer boards,  
High frequency boards, Heat-resistant boards,  
IC cards, Boards for automobile,  
Electromagnetic wave shield material and  
HDD suspension.

## UPISEL-N Properties

Properties	Test Condition		Unit	Values**	Test Method
Peel Strength	Normal		N/mm	1.5	JIS C6471 Method A
	After Heat Test	150°C, 1000hr		1.5	
	After High Humidity Test	85°C/85%RH, 1000hr		1.5	
	After Chemical Resistance Test	2N-HCl, 23°C, 5min		1.5	
		2N-NaOH, 23°C, 5min		1.5	
Dimensional Stability	After Cu Etching	MD	%	0.00	IPC-TM-650 2.2.4 Method B
		TD		0.03	
	After Heating 150°C, 30min	MD		-0.02	IPC-TM-650 2.2.4 Method C
		TD		0.02	
Solder Heat Resistance	300°C, 1min			PASS	JIS C6471
Flammability				V-0	UL94
Volume Resistivity			Ω · cm	4×10 <sup>16</sup>	ASTM D257
Surface Resistivity			Ω	1×10 <sup>17</sup>	
Dielectric Constant	1kHz			3.2	ASTM D150
Dissipation Factor	1kHz			0.004	
Breakdown Voltage			kV	6.9	ASTM D149
Water Absorption Rate			%	1.1	IPC-TM-650 2.6.2
Tensile Modulus			GPa	7.2	ASTM D882
Tensile Strength			MPa	519	IPC-TM-650 2.4.19
Elongation			%	106	
MIT Folding Endurance			cycle	>100,000	ASTM D2176

\*\* Typical values of BE1210 (PI=25 μm, Cu (ED) =18 μm)

## Grades

Copper Foil Type	Copper Foil Thickness	Type	Polyimide Thickness			
			15 μm	20 μm	25 μm	50 μm
Electrolytic Copper Foil	18 μm	Double	BE1206	BE1208	BE1210	BE1220
		Single	SE1206	SE1208	SE1210	SE1220
	12 μm	Double	BE1306	BE1308	BE1310	BE1320
		Single	SE1306	SE1308	SE1310	SE1320
	9 μm	Double	BE1406	BE1408	BE1410	BE1420
		Single	SE1406	SE1408	SE1410	SE1420
Rolled Copper Foil	18 μm	Double	BR1206	BR1208	BR1210	BR1220
		Single	SR1206	SR1208	SR1210	SR1220
	12 μm	Double	BR1306	BR1308	BR1310	BR1320
		Single	SR1306	SR1308	SR1310	SR1320

Please feel free to contact us if you need other compositions.

### UPISEL-N Standard Size (mm)

500 (W) 250 (W)