Ciba Specialty Chemicals
North America

Performance Polymers

Product Data

Kerimid® 701 A N70 US and Kerimid® 701-1 B US

General

Kerimid 701 A N70 US and Kerimid 701-1 B US are suitable for use in the manufacture of high performance multilayer printed circuit boards.

Chemical Description

Kerimid 701 is a two component modified bismaleimide resin system based on non-MDA chemistry. The product consists of Kerimid 701 A N70 US component and the Kerimid 701-1 B US component which are mixed together to make Kerimid 701.

Applications

High performance UL 94 V-O electrical laminates

Advantages

High copper peel strength
Superior performance reliability
Excellent thermostability
Field repairability
Excellent resistance to chlorinated solvents
Low coefficient of thermal expansion (CTE, z-axis)

Typical Properties

Kerimid 701 A N70 US

Gel Time @ 171°C, seconds	150 – 450
Viscosity, cps	1,500 – 4,000
Solids %	69– 71
Appearance	clear dark amber liquid

Kerimid 701-1 B US

Viscosity, cps	20 – 80
Solids %	43.5 – 45.5
Appearance	clear yellow liquid

Packaging & Storage

Limited storage stability data is available. The recommended storage condition for the Kerimid 701 A N70 US material is +6°C in a closed container. Ambient temperature storage is satisfactory for a short-term exposure of the material. Kerimid 701-1 B US can be stored at room temperature. For health and safety considerations see Material Safety Data Sheets.

Hazardous Decomposition Products

Kerimid 701 A N70 US and B US –Carbon monoxide, carbon dioxide, aldehydes; Kerimid 701 A N70 US –trace amounts of acrolein may be emitted on heating to about 80°C or higher.

Disposal

Dispose in accordance with federal, state and local regulations.

Varnish Preparation

Kerimid 701 A N70 US component is stored under refrigerated conditions at +6°C. The material should be warmed to 25°C to facilitate easier discharge from the drum. We also recommend that both Kerimid 701 A N70 US and Kerimid 701-1 B US be kept in closed containers when in storage, and /or, when not in use. This will prevent excess solvent loss during the manufacturing operations.

Kerimid 701 components should be formulated at 3 parts by weight Kerimid 701 A N70 US to 1 part by weight Kerimid 701-1 B US to make the Kerimid 701 product. The Kerimid 701 product can be further diluted with one or more of the following solvents to the appropriate viscosity for the coating of the particular glass fabric style. The recommended solvents are:

1. Methyl Ethyl Ketone. (i.e.: MEK)
2. Propylene Glycol Methyl Ethyl Ether Acetate. (i.e.:PMA)
3. Gamma Butyl Lactone (GBL)

The varnish should be stirred until a homogenous solution has been achieved. Recommended dilution's are:

Glass Style	Viscosity, cps	Zahn Cup #2,seconds	Solids %
Heavy Weight Glass (i.e.: 7628, 2116)	200 – 300	55 – 65	55 - 65
Light Weight Glass (i.e.: 1080, 106)	100 - 150	30 – 40	45 – 50

Note: The use of nitrogen solvents (i.e. DMF & NMP) is not recommended.

Prepregging

For optimum bonding between resin and glass, it is recommended that a glass fabric treated with a silane-sizing agent suitable for polyimide resins be used. Typical temperatures and residence times for impregnation are:

Target Dust Gel @ 171°C, secs	Oven Temperature,°C	Residence Time, min
60 - 70	160 – 180	2½ - 4½
90 – 110	160 – 180	1½ - 3½
130 – 150	160 – 180	1 - 2½

Typical Prepreg Properties

Glass Cloth	7628
Finish	I642 (supplier: BGF)
Resin Content, %	35 – 42
Mil Flow, %	15 – 25
Volatiles, %	0.5 - 1.0

Typical Laminate Properties

All properties measured on 8 plies 7628 glass fabric laminate as per IPC TM13949.

Thermal Properties	**Test Instrument/Method**	**Value**
Glass Transition Temperature, °C	TMA	240 – 260
CTE / z axis, ppm		
100°C → Tg	TMA	40 – 60
Decomposition, °C	TGA	350 – 360
Flammability	UL94	V0

Chemical Properties	**Test Instrument/Method**	**Value**
Water Absorption	24 hours	0.30 %
Methylene Chloride Absorption	1 hour	0.06 %

Mechanical Properties	**Test Instrument/Method**	**Value**
Copper Peel Strength, N/mm	Instron	
Initial		13 – 14
After solder shock @ 177°C		13 – 14
Storage Modulus, GPa	DMA	
@ 30°C		26.3
@ 250°C		22.1
Tg°C (inflection)		325°C
Flex Strength, MPa	Instron	436
Flex Modulus, GPa	Instron	21.4

Electrical Properties	**Test Instrument/Method**	**Value**
Dielectric Constant @ 1 MHz	Digibridge/CGTM	4.50
Dissipation Factor @ 1 MHz	Digibridge/CGTM	0.012

Handling Precautions

Warning! Flammable liquid. Can cause irritation and dermatitis.
Can cause central nervous system depression.

Keep away from heat, sparks and flames.
Ground metal containers during transfer of liquid to avoid static sparks.
Avoid breathing vapor, mist or spray.
Avoid contact with eyes, skin, and clothing.
Use only with good ventilation.
Promptly remove contaminated clothing and wash before reuse**.**

Before Using Read Material Safety Data Sheet.
For Industrial Use Only

First Aid

In case of contact:
Eyes: Rinse immediately with water for at least 15 minutes. In the case of irritation, get medical attention.
Skin: Wash with mild soap and water. Do not use organic solvents.
Inhalation: Move affected person to fresh air. Give oxygen if breathing is difficult.
Ingestion: If conscious, give water. Do not Induce vomiting. Get immediate medical attention.

Important

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Resin Systems

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