

ZENIMID™

PI Varnish



VE Series

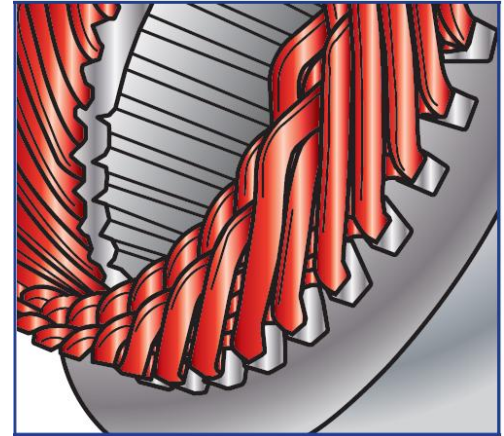
PI Varnish for EV

Signature Features

- Excellent heat stability and flexibility
- Good compatibility with Copper
- Good corona discharge resistance

Applications

- Wire for EV motors, pumps, Electrical equipment.
- Induction heating coils



Technical Properties

Properties	Unit	Mass-product			New product		
		VEH	VEC	VEA	VEP	VEB	
		General	Anti-corona	Adhesion	High Anti-corona	Self-lubricant	
Solvent		DMAc or NMP or Hydrocarbon Mixture					
Varnish	Solid contents	%	25	25	25	25	25
	Viscosity	cP	1,000 ~ 10,000				
Curing condition		110°C(20min) → 150°C(20min) → 200°C(20min) → 300°C(20min) @Air					
Film	Thickness	µm	20	20	20	20	20
	Adhesion on Cu	N/cm	3.5	3.5	5.3		
	Pulse endurance @1.5kV	min	83	207		>4,000	
	Friction Prop.	PI-PI	0.55	0.38			0.30
	Thermal conductivity	W/mK	0.28	0.26	0.23		0.47
	Tg	°C	413	389	414	401	397
	Td 5%	°C	558	544	556	573	582
	Elongation	%	80	69	63	61	47
	Tensile strength	Mpa	210	183	200	159	125

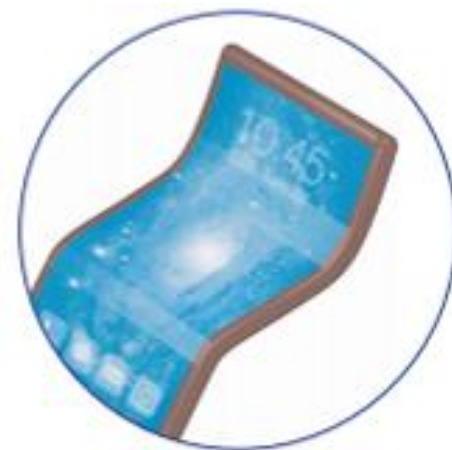
VD Series

ZENIMID™

PI Varnish for Flexible Device substrate

Signature Features

- Superior dimensional stability
- Ultra-High thermal resistance
- High mechanical strength
- NMP-free Solvent



Applications

- TFT substrate for flexible OLED display
- Substrate for flexible devices
- Ultra-high thermal resistance dielectrics

Technical Properties

Properties		Units	VDE
Varnish	Solvent		NMP-free
	Solid Content	%	10~20
	Viscosity	cP	2,000~5,000
Hard-baking Temperature		°C	470
Film	Thickness	μm	9.9
Optical	Transmittance	%	68
Mechanical	Tensile strength	MPa	450
	Modulus	GPa	7
	Elongation	%	40
Thermal	Decomposition Temp. 1%	°C	574
	Glass transition Temp.	°C	>470
	Coefficient of Thermal Expansion (@100-470°C)	ppm/°C	4

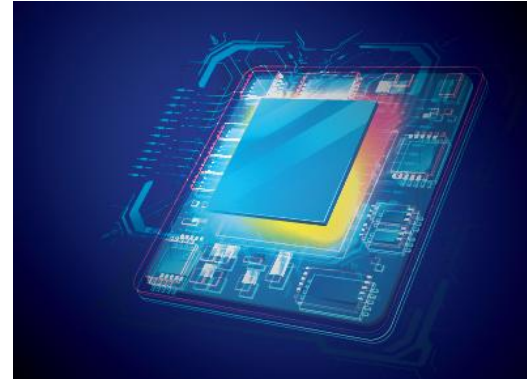
VS Series

ZENIMID™

PI Varnish for Semiconductor (Non-Photosensitive)

Signature Features

- Excellent dimensional stability
- Excellent dielectric properties
- Adhesion on various substrates
- Compatible with CMOS, MEMS process



Applications

- Passivation, Buffer layer
- Sacrificial layer in MEMS process
- Active layer in humidity sensors

Technical Properties

Item	Properties	Unit	VSS	VSF
Varnish	Solid content	%	10~20	
	Solvent	-	NMP	NMP
	Viscosity	cP	2,000	7,000
Hard-bake Temp.		°C	350	350
Film	Thickness	μm	10	10
	Tensile strength	MPa	380	131
	Elongation	%	17	20
	Modulus	GPa	8.7	2.3
	Tg	°C	400	302
	CTE	ppm/°C	5	70
	Td (1%)	°C	541	514
	Dielectric constant(@10GHz)		3.5	3.1

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