

**Durimide<sup>®</sup> 10/32**  
**Pre-imidized**  
**Polyamide-imide**

## Pre-imidized Polyimide-amide Durimide<sup>®</sup> 10/32

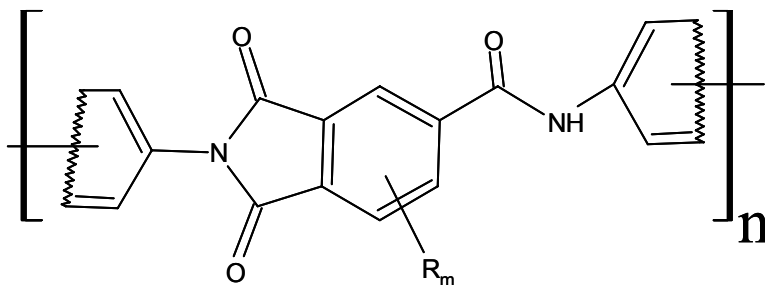
The Durimide 10/32 Series is a fully imidized polyimide-amide designed as a buffer coat especially for glob top applications. The material does not require a high temperature “cure” and many customers use final hardbake temperatures from 200-250°C. The pre-imidized structure imparts the characteristics of low shrinkage upon hardbake and formulation room temperature stability. The formulations with the “A” designation have an internal adhesion promoter built in and do not require the use of an external adhesion promoter.

Major applications for Durimide 10/32 Series include:

- Junction coating for discrete devices
- Glob top applications
- General passivation
- LCD alignment layers

### Chemistry and Characteristics

Durimide 10/32 pre-imidized polyimide-amide that has the following structure:



### Key Features

Durimide 10/32 Series pre-imidized polyimide-amide is distinguished by the following characteristics in application and use:

- Fully imidized polyimide-amide
- Storage stable at room temperature
- Low shrinkage upon cure
- No high temperature cure requirement
- Patterned using dry etch processes
- Good mechanical properties
- Reworkable; solvent soluble
- Internal adhesion promoter in the “A” formulations.
- Excellent adhesion for both externally and internally promoted formulations
- Formulation covers cured film thickness range 0.5-25  $\mu\text{m}$

The following tables list a number of parameters which indicate some aspects of the performance and characteristics of the material. These characteristics are typical values only and not for specification purposes.

### Solution Characteristics Durimide 10/32 Series

Parameter	Formulation	Unit	Range Low	Range High
Kinematic Viscosity, 25°C	Durimide 10	cS	2250	3550
	Durimide 10A	cS	2250	3550
	Durimide 30A	cS	8	16
	Durimide 32	cS	530	850
	Durimide 32A	cS	530	850
Water Content		%	0	0.4
Sodium		ppm	0	<5.0
Potassium		ppm	0	<1.0
Chloride		ppm	0	<10.0

### Product Characteristics Durimide 10/32 Series

Parameter	Unit	10&10A	30A	32 &32A
Final Coating Thickness	µm	7-25	0.5-3.0	2-11
Filtration	µm	0.5	0.2	0.5
Solids Content	% wt	28	22	5.5
Casting Solvent		NMP	NMP/Xylene	NMP/Xylene
Density(25°C)		1.09		1.07
Flash point	°C	93	32	32
Shelf life	Years	4	4	4

### Cured Film Properties Durimide 10/32 Series

Cure Condition		2 hr @ 350°C in nitrogen
Property	Unit	
Tensile Strength at Break	MPa	184
Young's Modulus	GPa	3.3
Tensile Elongation at Break	%	56
Glass Transition Temperature	°C	300
Thermal Decomposition Temperature	°C	494
Coefficient of Thermal Expansion	ppm/°C	53
Dielectric Constant 1MHz; 4%-50% RH		3.5/3.8
Dissipation Factor 1MHz; 4%-50% RH		0.013/0.024
Dielectric Strength; room temp. - 50%RH	V/μm	324

### Effect of Hardbake Temperature on Properties of Durimide 10/32

Hardbake Temperature	275°C	300°C	350°C	400°C
Tensile Strength, MPa	196	144	184	170
Young's Modulus, GPa	3.5	2.8	3.3	3.6
Elongation, %	74	60	56	35
Glass Transition Temperature, °C	283	282	300	322
Thermal Decomposition Temperature, °C	482	481	494	500
Coefficient of Thermal Expansion, ppm/°C	52	58	53	53

### Adhesion Testing Durimide 10/32 Series

90° Tape Pull Adhesion	Boiling Water, 72 hours	
	ASTM D-3359-83B	
Substrate	350°C cure, 2hr	400°C cure, 0.5hr
Silicon	5	5

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