TECHNICAL PRODUCT INFORMATION

FUJIFILM

Durimide® 200
Pre-imidized Polyimide

FUJIFILM ELECTRONIC MATERIALS

Pre-imidized Polyimide Durimide® 200

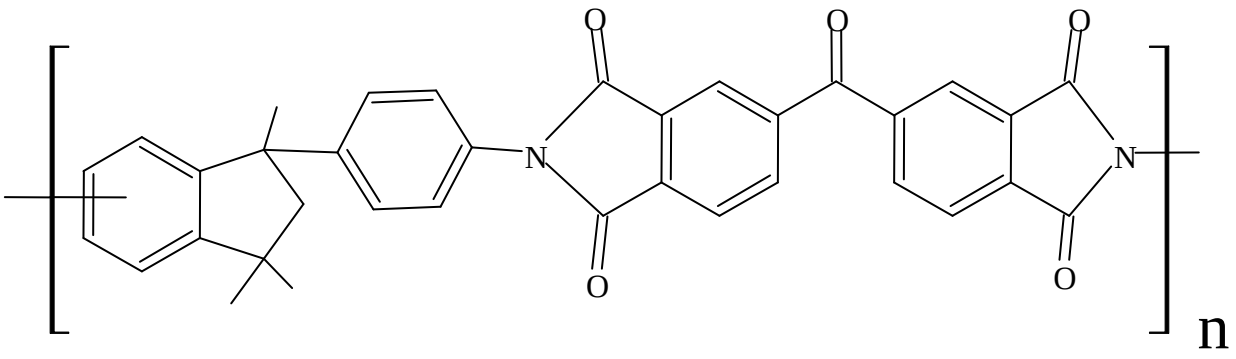
The Durimide 200 Series is a fully imidized polyimide used as a passivation coating, interlayer dielectric and as a lift off layer. The material does not require a high temperature “cure” and many customers use final hardbake temperatures from 200-250°C. The pre-imidized structure imparts the characteristics 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 200 Series include:

- Planarization layer in metal lift-off process
- Passivation
- Interlayer dielectric
- LCD alignment layers

Chemistry and Characteristics

Durimide 200 pre-imidized polyimide that has the following structure:



Key Features

Durimide 200 Series pre-imidized polyimide is distinguished by the following characteristics in application and use:

- Fully imidized polyimide
- 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.

The Durimide 200 series has several formulations that produce coatings with a final thickness from 0.5 to 3 microns. The following tables below 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 200 Series

Parameter	Formulation	Unit	Range Low	Range High
Kinematic Viscosity, 25°C	Durimide 284	cS	1000	1200
	Durimide 208A	cS		
Water Content		%	0	0.5
Sodium		ppm	0	1.5
Potassium		ppm	0	1.0
Iron		ppm	0	2.0

Product Characteristics Durimide 200 Series

Parameter	Unit	284	208A
Final Coating Thickness	mm	1.3-3.0	
Filtration	mm	0.8	0.2
Solids Content	% wt	13	8
Casting Solvent		GBL	GBL
Density(25°C)			
Flash point	°C	93	93
Shelf life	Years	1	1

Cured Film Properties Durimide 200 Series

Cure Condition		2 hr @ 350°C
Property	Unit	in nitrogen
Tensile Strength at Break	MPa	128
Young's Modulus	GPa	3.3
Tensile Elongation at Break	%	75
Refractive Index (633nm)		1.66
Density	g/cm^3	1.28
Glass Transition Temperature	°C	309
Thermal Decomposition Temperature	°C	515
Coefficient of Thermal Expansion	ppm/°C	54
Dielectric Constant 1MHz; 0%-50% RH		3.1/3.4
Dissipation Factor 1MHz; 0%-50% RH		0.006/0.1
Dielectric Strength; room temp. - 50%RH	V/µm	
Moisture Absorption @ 50%	%	1.1

Effect of Hardbake Temperature on Properties of Durimide 200

Hardbake Temperature	180°C	250°C	350°C
Tensile Strength, MPa	120	142	128
Young's Modulus, Gpa	2.4	3.7	3.3
Elongation, %	105	103	75
Glass Transition Temperature, °C		307	309
Thermal Decomposition Temperature, °C			515
Coefficient of Thermal Expansion, ppm/°C		48	54

Adhesion Testing Durimide 200 Series

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

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