NEW POLYIMIDE PRODUCT

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■ UPILEX-AD SHEET

"UPILEX-AD SHEET" is a polyimide sheet with high heat resistance that is created on the basis of our own processing technology of polyimide. It has all of the properties of "UPILEX" film and can be manufactured much thicker of the order of several millimeters. The unique molecular structure of our polyimide greatly contributes to its excellent mechanical and thermal properties at high temperatures and makes it easier to process. "UPILEX-AD SHEET" is expected to open new design and application areas to polyimide and is suitable for a variety of equipments used under severe conditions.

Features

(1) High heat resistance and high toughness.
(2) Excellent processability before and after molding.
(3) Excellent chemical resistance.

Applications

(1) Space or Aviation relational apparatus.
(2) Automobile or Ship engine around equipment parts.

Properties

1. Mechanical Properties

Item		Unit	Typical Values AD104	Typical Values AD110	Test Method
Tensile Strength	23℃	MPa	112	110	ASTM D 638
	260℃		60	50	ASTM D 638
Elongation	23℃	%	13	15	ASTM D 638
	260℃		42	88	ASTM D 638
Flexural Strength		MPa	156	170	ASTM D 790
Flexural Modulus		GPa	3.30	3.38	ASTM D 790
Izot Impact Strength(Notched)		J/m	67	73	ASTM D 256
Rockwell Hardness		M Scale	116	115	ASTM D 256

2. Thermal Properties

Item	Unit	Typical Values AD104	Typical Values AD110	Test Method
Thermal Coefficient of Linear Expansion	ppm/℃	48	48	ASTM D 696
Heat Decomposition Temperature	℃	559	560	5% Weight Loss
Glass Transition Temperature	℃	342	324	DSC
Heat Distortion Temperature	℃	335	315	D 648(18.56kg/cm²)

3. Electrical Properties

Item	Unit	Typical Values AD104	Test Method
Breakdown Voltage	kV/mm	26	ASTM D 149
Dielectric Constant(1KHz)		3.88	ASTM D 150
Dissipation Factor(1KHz)		0.0112	ASTM D 150
Volume Resistivity	Ω·cm	9.5×10^{15}	ASTM D 257
Surface Resistivity	Ω	2.7×10^{16}	ASTM D 257

■ UPILEX-FOAM

"UPILEX-FOAM" is a new type of polyimide foam that has been developed by our original technology of polyimide process. Polyimide originally has the highest heat resistance in engineering plastics. "UPILEX-FOAM" is produced from polyimide in the process of our own, making the best use of the feature of polyimide. It shows improved properties over a wide range of environmental conditions, compared to the conventional polyimide foam. "UPILEXFOAM" is applicable to a variety of use such as thermal, acoustic and mechanical vibration insulation, and weight saving for transportation systems such as aerospace vehicles, ships and automobiles, and for electric devices.

Features

(1)High heat resistance (Tg:400℃).
(2)Good thermal insulation.
(3)Good processability.
(4)Light weight (6~270kg/m³).
(5)Flame resistance.
(6)Low outgassing.
(7)Excellent resistance to radiation,UV and chemicals,and excellent electric insulation.

Applications

(1)Aircraft areas
Thermal/acoustic fuselage blanket, air-conditioning duct insulation,cockpit insulation for military aircraft, vibration damping for aircraft fuselage.
(2)Aerospace areas
Cryogenic insulation for fuel tanks on major rocket propulsion systems, thermal insulation on the louvers of communications satellites.
(3)Industrial areas
Heat insulation and acoustic insulation of car engine, heat insulation and acoustic insulation in nuclear power plants.

Properties

1. Thermal properties

Table.1 Thermal properties and flammability of UPILEX™-FOAM

Item	Unit	Typical Values				Test Method
		[illegible]	[illegible]	[illegible]	[illegible]	
Density	kg/m³	14~6	24~23	135	270	ASTM D 3574(Test A)
Tg	℃	401	401	401	401	DSC Analysis(N2)
5%Weight Loss Temp.	℃	569	569	569	569	TGA Analysis(Air)
Low Temp. Resistance	℃	<-150	<-150	<-150	<-150	
Thermal Conductivity	W/m·K	0.035				ASTM C 518
Dynamic Modulus(RT)	MPa	0.112				RSA Analysis
Flammability	—	V-0 quite	V-0 quite	V-0 quite	V-0 quite	
Oxygen Index	%	51		48		ASTM D 2863
Vacuum Degassing	Pa·m³/g	0.1(300℃)				TDS Analysis

The data are not legally guaranteed.