

Material for Powder Bed Fusion

ASPEX-PPS**ASPEX-PPS+GB****ASPEX-PPS+CF****ASPEX-PPS+GF**

Material Overview : Polyphenylene Sulfide

Description / Benefits

ASPEX-PPS: It is a powder material of polyphenylene sulfide, a super engineering plastic. It is a material characterized by high melting point (melting point 280°C) and flame resistance, and has high strength, rigidity, and fatigue resistance. It also has excellent water and chemical resistance, and is unaffected by many solvents, acids, and alkalis. Because of its low water absorbency, it can maintain its physical properties even under high humidity and has excellent dimensional stability. It also features excellent electrical properties.

ASPEX-PPS+GB: This material is mixed glass beads with polyphenylene sulfide. In addition to the characteristics of ASPEX-PPS, it has excellent long-term heat resistance, and has excellent physical properties even under high temperature and high humidity.

ASPEX-PPS+CF: This material is mixed carbon fiber with polyphenylene sulfide. It is the lightest in the PPS series and is used as an aluminum substitute.

ASPEX-PPS+GF: This material is mixed glass fiber with polyphenylene sulfide. It has high flexural strength and excellent airtightness. (0.7MPa clear at 2mm plate thickness) Little strength anisotropy, and CTI (tracking resistance) is almost the same as injection-molded products (GF40%) (100V to 125V).

Applications

< Characteristics > Flame retardant, excellent chemical resistance, excellent insulation properties (ASPEX-PPSCF Excluding)

< Example >

ASPEX-PPS : Electrical and electronic parts (DVD chassis), automotive parts (capacitors), aerospace parts etc.

ASPEX-PPS+GB: Electric and electronic parts (inverters), automotive parts (motor peripheral parts), aerospace parts etc.

ASPEX-PPS+CF: Automotive parts (substitute for cast aluminum parts),
aerospace parts (substitute for machined aluminum parts) etc.

ASPEX-PPS+GF: Electric and electronic parts (inverters), automotive parts (motor peripheral parts), aerospace parts etc.

Material properties

Properties		<i>ASPEX-PPS</i>	<i>ASPEX-PPS+GB</i>	<i>ASPEX-PPS+CF</i>	<i>ASPEX-PPS+GF</i>	Test method
General properties	Surface roughness	Top surface(Ra)21.9μm,(Rz)121.0μm	Top surface(Ra)19.0μm,(Rz)120.3μm	Top surface(Ra)13.8μm,(Rz)98.2μm	—	
	Density of parts	1.267g/cm ³	1.535g/cm ³	1.328g/cm ³	—	
	Water absorption rate	1.45%	1.05%	0.66%	—	
	Powder color	Brown	Dark Brown	Black	Brown	
	Filler compounding ratio	—	Glass Bead 40%	Carbon fiber 20%	Glass fiber 25%	
Thermal properties	Melting point	295°C	295°C	292°C	295°C	
	Recrystallization point	200°C	203°C	215°C	190°C~205°C	
	Process window	50<	50<	50<	50<	
	Load deflection temp.<0.45MPa	245°C<	245°C<	245°C<	—	JIS K7191
	Load deflection temp.<1.8MPa	122°C	202 °C	182°C	—	JIS K7191
	Linear expansion coefficient	86.89x10 ⁻⁶ /K	64.39x10 ⁻⁶ /K	107.97x10 ⁻⁶ /K	—	JIS K7197-1991
Printing temp	Thermal conductivity	0.151W/(m·K)	0.189W/(m·K)	0.239W/(m·K)	—	JIS A1412-2
	Guideline	280°C	280°C	275°C	280°C	
Mechanical properties	Maximum tensile strength	43MPa	35MPa	70MPa	62MPa	JIS K7161
	Tensile modulus	3600MPa	7000MPa	5800MPa	6000MPa	JIS K7161
	Elongation at break	1.3%	0.6%	2.4%	2.3%	JIS K7161
	Maximum bending stress	65MPa	67MPa	93MPa	87MPa	JIS K7171
	Bending strain	2.1%	1.5%	1.8%	1.8%	JIS K7171
	Bending modulus	3000MPa	6100MPa	5100MPa	5300MPa	JIS K7171
	Impact strength (with notch)	—	0.9 KJ/m ²	1.0KJ/m ²	1.2KJ/m ²	JIS K7111-1
Electrical characteristics	Volume resistivity	10 ¹⁷ Ω cm	—	—	—	IEC 62631-3-1
	Relative dielectric constant (ε _r)	3.86				IEC 62631-2-1

1. The shelf life of this material is expected to be at least 12 months under stored at

2. The data contained in this document is subject to change without notice.

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