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Schematic Grade Diagram

Position among Engineering Plastics

Available Grades

U-100 (neat polymer)
P Series
U Series
AX Series

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Precautions in molding

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U-polymer

AX Series Resins Composite Grade

(1) AXG-1500 series

Characteristics

- Glass-reinforced grades of the AX-1500 resin, excellent in heat and chemical resistances
- Favorable rigidity and dimensional accuracy

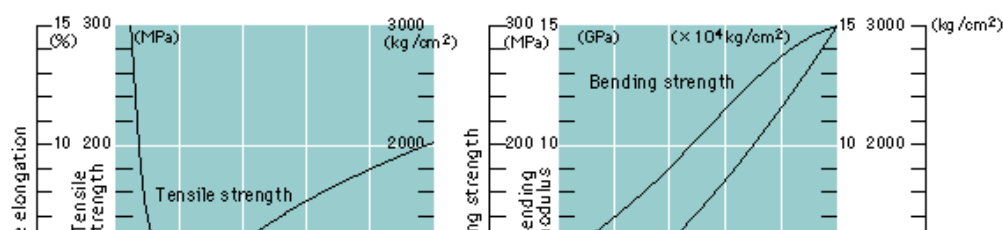
Properties

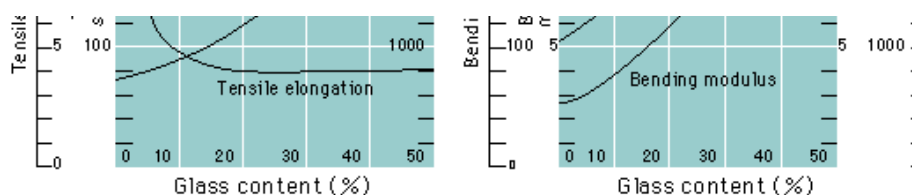
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		AXG-1500-30			
	Item	ASTM	Unit: SI (conventional)	When absolutely dry	When equilibrium moisture absorption
Mechanical Properties	Density	D-792	-	1.41	-
	Water absorption (1/8", 24hrs)	D-570	%	0.60	-
	Light transmittance (Thickness: 3mm)	D-1003	%	-	-
	Tensile strength	D-638	MPa {kg/cm ² }	143 {1,460}	112 {1,140}
	Elongation at break	D-638	%	4	6
	Bending strength	D-790	MPa {kg/cm ² }	211 {2,150}	181 {1,850}
	Bending modulus	D-790	GPa {kg/cm ² }	8.2 {84,000}	6.3 {64,300}
	Compressive strength (Yield)	D-695	MPa {kg/cm ² }	147 {1,500}	-
	Izod impact strength (1/8", with notch)	D-256	J/m {kg-Ecm/cm}	76{7.8}	103 {10.1}
	Rockwell hardness	D-785	R	121	-
Thermal properties	Deflection temperature under load 1.8MPa {18.6kg/cm ² }	D-648	°C	179	-
	Linear expansion coefficient	D-696	10 ⁻⁵ /K {10 ⁻⁵ cm/cm/°C}	4.6	-
	Dielectric breakdown strength	D-149	MV/m {kv/mm}	-	30
	Specific volume resistivity	D-257	Ωm {Ωcm}	-	1x10 ¹² {1x10 ¹⁴ }
Electrical Properties	Dielectric constant (10 ⁶ Hz)	D-150	PF/m	-	32 {3.6}
	Dielectric dissipation factor(10 ⁶ Hz)	D-150	-	-	0.04
	Ark resistance	D-495	s	-	60
	Tracking resistance	IEC	V	-	-
Other properties	Molding shrinkage (Thickness: 3mm)	-	%	0.35/0.7	-
	Flow direction, orthogonal direction				

<Technical Data>

Glass content and mechanical properties of AXG-1500 series resins





(2)AXF-1500-05

Characteristics

- Lubricant grade of AX-1500, excellent in heat and chemical resistances

Properties

[Print Table on A4 Paper](#)

AXF-1500-05				
Item	ASTM	Unit: SI (conventional)	When absolutely dry	When equilibrium moisture absorption
Density	D-792	-	1.19	-
Water absorption (1/8", 24hrs)	D-570	%	0.75	-
Light transmittance (Thickness: 3mm)	D-1003	%	-	-
Tensile strength	D-638	MPa {kg/cm ² }	67 {680}	54 {550}
Elongation at break	D-638	%	15	22
Bending strength	D-790	MPa {kg/cm ² }	100 {1,020}	78 {800}
Bending modulus	D-790	GPa {kg/cm ² }	2.6 {26,500}	1.1 {11,000}
Compressive strength (Yield)	D-695	MPa {kg/cm ² }	82 {840}	-
Izod impact strength (1/8", with notch)	D-256	J/m {kg-Ecm/cm}	54 {5.5}	147 {15}
Rockwell hardness	D-785	R	105	-
Deflection temperature under load 1.8MPa {18.6kg/cm ² }	D-648	°C	150	-
Linear expansion coefficient	D-696	10 ⁻⁵ /K {10 ⁻⁵ cm/cm/°C}	7.4	-
Dielectric breakdown strength	D-149	MV/m {kv/mm}	-	25
Specific volume resistivity	D-257	Ωm {Ωcm}	-	1x10 ¹² {1x10 ¹⁴ }
Dielectric constant (10 ⁶ Hz)	D-150	PF/m	-	32 {3.6}
Dielectric dissipation factor(10 ⁶ Hz)	D-150	-	-	0.04
Ark resistance	D-495	s	-	80
Tracking resistance	IEC	V	-	-
Molding shrinkage (Thickness: 3mm)	-	%	1.0	-
Flow direction, orthogonal direction				

<Technical Data>

Properties of lubricant materials

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Item	AXF-1500-05	POM
Deflection temperature under load 1.8MPa {18.6kg/cm ² }	150	110
Limiting PV value kPa • m/s {kg/cm ² • cm/s}	424 {432}	376 {383}
Coefficient of dynamic coefficient*	0.15~0.2	0.2~0.3
Relative abrasion* {mm ³ /km • kg}	1.46	2.13
Dimensional stability	Δ	Δ
Creep resistance	Δ	O

Rigidity	O	O
Chemical resistance	◎	◎

*Counterpart: S45C ◎: Excellent O: Good, Δ: inferior

Squeal Test Results

Counterpart		AX-1500		AXF-1500-05	
		Coefficient of dynamic coefficient	Squeal	Coefficient of dynamic coefficient	Squeal
Bare surface*	Smooth surface	0.189	X	0.182	O
	Rough surface	0.241	O	0.188	O
Unichromate plating	Smooth surface	0.228	O	0.185	O
	Rough surface	0.241	X	0.182	O
Chrome plating	Smooth surface	0.231	O	0.179	O
	Rough surface	0.228	O	0.173	O
Nickel plating	Smooth surface	0.160	X	0.167	O
	Rough surface	0.194	O	0.179	O
Teflon		0.155	O	0.154	O
Melamine coated and baked		0.179	O	0.139	O

Load:9.8MPa{100kg/cm²/s}
Peripheral speed:1.7cm/s

*Material: S10C O: None X: Generated

(3) AX-1500W

Characteristics

- A resin succeeding the advantages of AX-1500 resin and containing titanium oxide at high concentration.
- Improved drastically in light reflection and blocking properties, aimed at display devices.
- Chemical resistance

Properties

[Print Table on A4 Paper](#)

Item		AX-1500W		
		ASTM	Unit: SI (conventional)	When equilibrium moisture absorption
Mechanical Properties	Density	D-792	-	1.37
	Water absorption (1/8", 24hrs)	D-570	%	0.72
	Light transmittance (Thickness: 3mm)	D-1003	%	-
	Tensile strength	D-638	MPa {kg/cm ² }	79 {810}
	Elongation at break	D-638	%	4.7
	Bending strength	D-790	MPa {kg/cm ² }	125 {1,270}
	Bending modulus	D-790	GPa {kg/cm ² }	3.5 {36,000}
	Compressive strength (Yield)	D-695	MPa {kg/cm ² }	-
	Izod impact strength (1/8", with notch)	D-256	J/m {kg-Ecm/cm}	43 {4.4}
	Rockwell hardness	D-785	R	120
Thermal properties	Deflection temperature under load 1.8MPa {18.6kg/cm ² }	D-648	°C	150
	Linear expansion coefficient	D-696	10 ⁻⁵ /K {10 ⁻⁵ cm/cm/°C}	7.3
	Dielectric breakdown strength	D-149	MV/m {kv/mm}	-
Electrical Properties	Specific volume resistivity	D-257	Ωm {Ωcm}	-
	Dielectric constant (10 ⁶ Hz)	D-150	PF/m	-
	Dielectric dissipation factor(10 ⁶ Hz)	D-150	-	-
	Ark resistance	D-495	s	-
Other	Tracking resistance	IEC	V	-
	Molding shrinkage			-

properties	(Thickness: 3mm) Flow direction, orthogonal direction	-	%	0.9	-
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<Technical Data>

Properties of various high reflection materials

Item	AX-1500W	ModifiedPPE	PC
Heat resistance	◎	Δ	O
Chemical resistance	◎	X	X
Light blocking property	O	O	Δ
Reflection	◎	O	◎
Printability (adhesiveness)	O	Δ	O

◎: Excellent O: Good Δ: Slightly inferior X: Inferior

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