

Transparent Plastic Plate Characteristics

Characteristics of PET, Antistatic PVC, Acrylic and Polycarbonate

Provides four types of clear plates with superior transparency. In addition to the standard grade, antistatic grade with antistatic function is available. 4 colors, transparent, smoke brown, smoke gray and orange, are available.

- PET
 - It has approx. 4 times stronger impact resistance than that of acrylic. Moreover it is an environment-friendly material, which generates no poisonous gas when burned. It is also cost effective.
- Antistatic PVC
 - Excels in chemical resistance and flame resistance, and superior in cost-effectiveness among anti-static materials.
- Acrylic
 - Excels in transparency, weather resistance and machinability, and is used widely for indoor and outdoor purposes, such as covers for industrial machinery, art display cases and signboards.
- Polycarbonate
 - The level of impact strength is ranked as the highest among the transparent resin materials (approx. 30 times higher than that of acrylic plates). It excels in resistance against high and low temperatures, and is widely used.

Item	JIS Testing Method	Unit	Representative Products											
			PET			PVC		Acrylic (Cast)		Acrylic Economy (Extrusion)		Polycarbonate		
			Standard	Antistatic	Antistatic	Standard	Antistatic	Standard	Antistatic	Standard	Antistatic	Standard	Antistatic	Abrasion-resistant
			P.957	P.961	P.963	P.967		P.969						
			PYA PYBA PYDA	PYTA PYBTA	ENBT ENBBT	ACA ACBA ACDA	ACTA ACBTA	ACAE ACBAE	ACTAE ACBTAE	PCTA PCTBA PCTGA	PCTTA PCTBTA	PCTSP		
Light Transmittance (Top: Transparent) (Middle: Smoke Brown) (Bottom: Smoke Gray)	-	%	PYA:87 PYBA:28 PYDA:45	PYTA:80 PYBTA:30	ENBT:80 ENBBT:29	ACA:93 ACBA:25 ACDA:43	ACTA:79 ACBTA:32	ACAE:92 ACBAE:34	ACTAE:87 ACBTAE:25	PCTA:90 PCTBA:35 PCTGA:33	PCTTA:86 PCTBTA:35	PCTSP:91		
Tensile Strength	K-7113	MPa {kgf/cm ² }	62 {630}	52 {530}	63 {640}	75 {760}	75 {760}	67 {682}	76 {774}	73 {754}	65 {663}	65 {663}	65 {663}	
Elongation*	K-7113	%	15	-	50	2~7	5	4	5	5	83	83	83	
Bending Strength	K-7203	MPa {kgf/cm ² }	83 {850}	71 {730}	98 {1000}	117 {1200}	106 {1080}	111 {1274}	125 {1244}	122 {918}	90 {918}	90 {948}	93 {948}	
Flexural Modulus	K-7203	MPa	2.4×10 ⁵	2.0×10 ⁵	3.4×10 ⁵	3.2×10 ⁵	3.3×10 ⁵	3400	3500	3300	2300	2300	2300	
Compression Strength	K-7181	MPa {kgf/cm ² }	-	60 {610}	83 {850}	124 {1270}	-	120 {1200}	-	-	78 {795}	78 {795}	-	
Yield Point				-	-	-	-	-	-	-	-	-	-	-
Izod Impact Strength	K-7110	kJ/m ²	10	-	2.9	2.7	-	2.5	1.5	2	15	15	-	
Rockwell Hardness	M Scale	-	59	46	-	100	100	100	99	97	67	70	-	
Continuous Use	-	°C	-15~55	-15~55	-30~60	-30~80	-30~80	-30~70	-30~70	-30~60	-30~100	-30~100	-30~100	
Deflection Temp. Under Load	0.45MPa	°C	70	69	-	100	85	90	110	92	135	135	135	
Linear Expansion Coefficient	K-7140	°C ⁻¹	6.8×10 ⁻⁵	7.5×10 ⁻⁵	7.0×10 ⁻⁵	7.0×10 ⁻⁵	5.9×10 ⁻⁵	7.0×10 ⁻⁵	7.0×10 ⁻⁵	7.0×10 ⁻⁵	6.5×10 ⁻⁵	5.2×10 ⁻⁵	6.5×10 ⁻⁵	
Thermal Conductivity	-	W/m·K	-	-	0.16	0.21	-	0.21	0.21	-	0.24	-	-	
Specific Heat	-	J/g·K	1.3	1.35	1.12	1.46	1.46	1.46	1.47	1.5	1.3	1.2	-	
Surface Resistivity	K-6911	Ω	>10 ¹⁰	10 ⁶ ~10 ⁸	10 ⁷ ~10 ⁸	>10 ¹⁵	10 ⁶ ~10 ⁸	>10 ¹⁵	>10 ¹⁶	10 ⁷ ~10 ⁸	>2.0×10 ¹⁶	10 ⁶ ~10 ⁸	>2.0×10 ¹⁶	
Specific Volume Resistivity	K-6911	Ω·cm	>10 ¹¹	>10 ¹⁷	-	>10 ¹⁵	>10 ¹⁷	>10 ¹⁵	>10 ¹⁵	>10 ¹⁵	>10 ¹⁷	>10 ¹⁷	>10 ¹⁷	
Insulation Breakdown Voltage	K-6911	kV/mm	-	-	-	20	-	20	20	-	20	-	20	
Dielectric Constant	10 ⁶ Hz	K-6911	-	3.2	-	3.2	2.9	3.1	4	-	3	3	3	
Dissipation Factor	10 ⁶ Hz	K-6911	-	-	-	0.06	0.032	0.06	0.06	-	0.009	0.06	-	
Specific Gravity	-	-	1.27	1.27	1.4	1.2	1.2	1.2	1.19	1.19	1.2	1.2	1.2	
Water Absorption Ratio	K-7209	%	-	-	0.03	0.4	0.18	0.4	0.3	0.4	0.24	0.15	-	
Flame Resistance	-	-	-	-	Self-extinguishing	×	×	-	-	-	Self-extinguishing	-	-	
Chemical Resistance	Oil	-	-	○	○	○	○	○	○	○	○	×	○	
	Acid	-	-	×	×	○	○	○	○	○	×	×	△	
	Alkali	-	-	×	×	○	○	○	○	○	×	×	×	
	Organic Solvent	-	-	×	×	×	×	×	×	×	×	×	×	

* Listed values are for reference, not guaranteed.

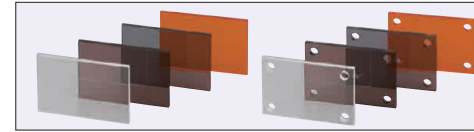
* Values of elongation of polycarbonate and PET are % values measured by JIS K-7162-1B/50.

Characteristics of Acrylic Cast Plates and Extruded Plates

As for Acrylic Plates, cast plates made by cell-cast method and extruded plates are available. Cast plates have better heat resistance and stronger mechanical strength than extruded plates. Extruded plates are more inexpensive than cast plates.

When extruded plates have contact with vaporizing liquid such as methanol and methylene chloride after they are thermal-processed such as laser machining, they may have cracks. Also, extruded plates may have deflection at high temperature.

Transparent Plastic Plates



MISUMI provides clear plate of four materials superior in transparency. In addition to the standard grade, antistatic grade with antistatic function is available. 4 colors, transparent, smoke brown, smoke gray and orange, are available. Often used as a cover, and variety of options for mounting hole alterations are available. Use MISUMI Transparent Plastic Plates.

Material	PET		Vinyl Chloride (Antistatic)	Acrylic (Cast)		Acrylic Economy (Extrusion)	Polycarbonate		
Page	P.973	P.957~	P.961	P.973	P.963~	P.967	P.973	P.969~	
Size	Width (B)	20~300	20~1000	100~ 900	20~300	20~1000	300~ 900	20~300	20~1000
	Length (A)	20~300	20~2000	100~1100	20~300	20~2000	300~1100	20~300	20~2000
	Plate Thickness (T)	0.5, 1.5	1, 2, 3, 4, 5, 8	3, 5	0.5, 1, 1.5, 2	3, 4, 5, 6, 8, 10, 15, 20, 25	3, 5, 8	0.5, 1, 1.5, 2	3, 4, 5, 6, 8, 10
Drilling Method	Circular Sawing		Circular Sawing	Circular Sawing - 4-side Milling		Circular Sawing	Circular Sawing		
Drilling Alterations	Through Hole, Countersink, Keyhole, Threaded Insert								
Alterations	See below.								

Alterations

Alterations	Notching for Blind Joints of Aluminum Extrusions	Relief at Four Corners	Corner Radius	Corner Cut
	Code	F□□, E□□, J□□, K□□	CN	CRA, CRB, CRC, CRD
Spec.	Machines relief for blind joints of aluminum extrusions. * Margin against thermal expansion of the plate is not taken into account. * Longitudinal direction of notching is all on A dimension side. * Applicable to T3 and T5 only. Ordering Code: F S 6 Extrusion Type Joint Type Notching Position (See the diagram above.) * Applicable to standard sizes only.	CN=1mm Increment Machines relief at four corners. * 5≤CN≤50 Ordering Code: CN=25 → CN25 * Applicable to standard sizes only.	Adds radius to any corner. * Applicable to T3 and T5 only. R = 5mm Increment * 10≤A(B)-R(2R) * 5≤CRA, CRB, CRC, CRD≤100 Ordering Code: (Ex.) Adds R10 at the corner of A and C. CRA10-CRC10 * Applicable to standard sizes only.	Cuts any corners. 5 ≤ Corner Cut ≤ 50 5mm Increment Ordering Code: (Ex.) When the corners of A and D are cut by C5→ CCA5-CCD5 * Applicable to standard sizes only.

See below for details.

Part Number - A - B - T - Corner F - Corner E - Corner J - Corner K
 ACAE - 800 - 600 - 3 - FS6 - ED6 - JS6 - KD6

Notched Shapes for Various Joints	Simple Joint Kits (P.604)	Single Joint Kits (P.609)		Pre-assembly Double Joint Kits (P.611, 663, 709)		Center Joints (P.553, 605, 662, 708)	Post-assembly Double Joints (P.554, 607, 664, 710)
	Single Joint Kit Standard Type	Single Joint Kit Standard Type	Single Joint Kits Narrow Type, Screw Joint Kits	Standard Type	Eccentric Nut Type		
(Ex. 1)							
(Ex. 2)							
	For Ex. 2, panel notching is not required.		The figure above shows Single Joint Kit Narrow Type.				
HFS5 Series 5							
HFS6 Series 6							
HFS8 Series 8							
HFS9-45 Series 845							

* For how to select panels, refer to P.803, 804.

* Dimensions above include a margin of 1mm at the groove part.

Make the margin larger for engineered plastic plates and etc., because it expands or shrinks largely by the temperature fluctuation.

Ex.) When the temperature rises or falls by 10°C, the Acrylic Plate Economy Type (Extruded) with 1m length expands or shrinks by 0.7mm. The margin of approx. 2mm is necessary in the case of temperature difference of 30°C.