Extruded Acrylic Sheet

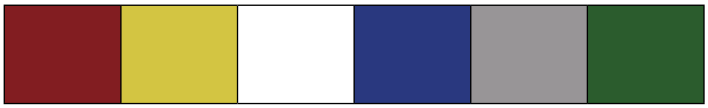
100% recyclable product

MADE IN

YPP's Standard, Medium (YPP50), and High (YPP100) Impact Acrylic Sheet is extruded in compliance with international standards, and is suitable for both internal and external use. Manufactured in clear, opal, tints and colours, YPP Acrylic Sheet offers good impact and excellent weather resistance, is rigid and lightweight, and has several times the breakage resistance of standard glass yet is half the weight.

Applications

Due to the exceptional weathering and impact characteristics of acrylic, YPP Acrylic Sheet is the ideal material for a wide variety of external applications: skylights, sidewalk signs, signage protectors, and thermoformed and fabricated outdoor components.



Colour and Finish

YPP Acrylic Sheet can be supplied in clear, opal or tints, and in a range of standard colours. Special colours can also be manufactured through custom matching. Coloured sample chips are available on request.

Dimensions

Standard stock sheet range is 1270mm x 2540mm and 1550mm x 3050mm. Custom sizes can be supplied to a maximum width of 1550mm x any length subject to handling, transport, and quantity. Sheet thickness can range from 2mm to 6mm

Weather Resistance

YPP Acrylic Sheet will withstand exposure to blazing sun, extreme cold, sudden temperature changes, salt water spray, etc. Due to the stability of acrylic resins it will not deteriorate even after years of service – a quality of its performance further emphasized by our warranties.

Chemical Resistance

Excellent resistance to ammonia, diluted acids, aliphatic hydrocarbons, and many-other chemicals.

Light Transmission

Clear YPP Standard Acrylic Sheet has a light transmission of 92% Clear YPP High Impact Acrylic Sheet has a light transmission of 90%.

Protective Masking

Unless specified all sheet comes with YPP branded film. Alternate masking to protect sheets during handling and fabrication is available in Loose PE Film, Cling PE Film, Adhesive PE Film or Paper Masking.

Warranties

Range from 2 - 10 years depending on product. Available on request.

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Product Data

The following values are typical for 3mm clear acrylic sheet at nominal 24C temperature. Tests were conducted in the extrusion direction.

Physical Properties	**Test Method**	**Std. Impact**	**Medium Impact** *YPP50*	**High Impact** *YPP100*
Refractive Index	ASTM D-542	1.49	1.49	1.49
Specific Gravity	ASTM D-792	1.19	1.17	1.15
Light Transmission	ASTM D-1003, Total Light %	92	91	90
Haze	ASTM D-1003, %	<2	<2	<3
Rockwell Hardness	ASTM D-785, (M scale)	91	68	45
Mechanical Properties				
Tensile Strength	ASTM D-638C, 0.1cm/cm/min Initial strain rate, Max. kgf/cm^2	720	490	390
Elongation at Break	ASTM D-638C, %	5.5	35	50
Flexural Strength	ASTM D-790C Span-depth ratio16, Maximum kfg/cm^2	1050	1010	720
Flexural Modulus	kfg/cm^2	32,000	27,000	19,000
Notched Izod Impact Strength	ASTM D-256C Kgf-cm/cm of notch	1.2	3.2	5.9
Falling Dart Impact Strength	ASTM D-638C (15.2cm x 15.2cm x 0.3cm) 1.4kg dart w/0.64cm radius), kg-cm	14	95	136
Water Absorption	ASTM D-570, %	0.3	0.4	0.4
Thermal Properties				
Deflection Temperature				
Under Load, Annealed	ASTM D-648, 2C/min, 18.6 kgf/cm^2	93	89	79
Vicat Softening Point	ASTM D-1525, Unannealed, C			
	50C/hr, 1kg	103	100	98
	50C/hr, 5kg	97	92	86
Glass Transition Temperature	ASTM D-348, C	104	N/A	N/A
Continuous Service				
Temperature Range	C (Dependent on part "molded-in" stresses)	74-88	74-85	71-82
Shrinkage from Mold Dimension	ASTM D-955 (cold mold to cold piece), %	0.2-0.6	0.3-0.6	0.3-0.8
Longitudinal Orientation				
Shrinkage (150 C/20min)	K-LRT1, %	5	5	5

Tolerances

All dimensions are measured at 22 - 24ºC.

Physical Properties	Length	Width	Thickness
Sheet length up to 1.5m	+3/-1.5mm	+1.5/-1.5mm	+5%/-5%
Sheet length 1.5m to 4m	+10/-0mm	+5/-0mm	+5%/-5%
Special sizes over 4m	+20/-0mm	+5/-0mm	+5%/-5%

These figures report reliable and accurate information to the best of our knowledge, however, guarantees cannot be given due to the conditions of use being beyond our control. Sheeting applications should be considered on their merits and, if in doubt, contact YPP.

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Storage
YPP Acrylic Sheets are shipped on pallets. It is recommended that on delivery the sheets are unpacked and stored vertically at approximately a 10˚ angle. The vertical storage rack should have a particle board or ply board or plywood back panel to completely support the material.
If the material must be stored flat, a solid support board must be put underneath the sheets to prevent distortion.

Cutting
YPP Acrylic Sheet can be easily cut using most standard fabricating equipment. It is best to keep the masking adhered to both surfaces of the sheet to protect the material from scratching.

Circular Saws
YPP Acrylic Sheet is generally cut with panel saws or table saws. To efficiently cut material, the saw must be properly aligned and have a minimum of vibration. A carbide tipped, triple chip design, 112 tooth 350mm diameter blade is recommended for general cutting.

Jig Saws
Jig saw should be used with a blade having 3 to 5 teeth per cm. It is recommended that jig saws be used only for inside or short cuts. Cut at a slow, steady speed and be sure the material is clamped to avoid cracking.

Band Saws
Blades should have approximately 6 teeth per cm. Be sure to cut slowly and with even pressure. When cutting thicker material it is better to reduce the blade speed.

Laser Cutting
YPP Acrylic Sheet can be successfully cut using laser equipment.

Routing
Router bits may have one to four flutes; single and double fluted bits are most commonly used. Carbide tipped bits produce the best results. The router should be of sufficient size with no load resulting at 20,000 rpm. Routing edges of acrylic before polishing or solvent gluing will produce a better finished product.

Drilling
Several manufacturers make drill bits especially for plastics. You may, however, make your own high speed metal bits. To make your own bits:
- grind the tip between 60˚ and 80˚
- grind the cutting edge flat - approximately a 2˚ rake angle
- the surface behind the cutting edge should be a clearance angle of approximately 12˚.

When drilling, the material should be clamped or held firmly in place to prevent chipping or cracking. Use a slow feed rate. DO NOT FORCE THE DRILL BIT. Back the material up with a piece of wood to prevent chipping when exiting the back of the material. Holes of 25mm or larger should be cut with hole saws.

Forming
The forming range of YPP Acrylic Sheet is between 150˚ C and 165˚ C. Over-heating the material will cause bubbles and/or excessive shrinkage. When forming sheets, it is recommended that a clamp type frame be used on all four sides of the sheet to assist with uniform mouldings. Shrinkage up to 5% in the direction of extrusion can be expected. YPP Acrylic Sheet expands and contracts with changes of temperature and humidity. A minimum shrinkage or orientation will occur in the direction of extrusion when heating to forming temperature.

Heat Resistance
YPP Acrylic Sheet can be used in temperatures from 0˚ to 88˚ C depending on the application. It is recommended that temperatures not exceed 71˚ C for continuous service, or 88˚ C for short duration, intermittent use.

Bonding
Solvents such as methylene chloride and ethylene dichloride can be used. It is best to cement acrylic via capillary action using a syringe or needle-type applicator. It is recommended to test bond fabrication specimens for possible crazing.

Flame Polishing
YPP Acrylic Sheet can be polished using this technique. It is recommended you discuss this process with YPP.

Flammability
YPP Acrylic Sheet is a thermoplastic and supports combustion. Do not store or install material next to high heat sources or direct flame.

Service
The YPP experienced technical and sales staff are available, should further information be required.

Care and Maintenance
YPP Acrylic Sheet offers an easy-to-care-for surface. Wash with mild soap or detergent and plenty of lukewarm water or use a soft cloth with commercial plastic-cleaner. Rinse with clear water and dry by blotting with a damp cloth or chamois. Grease, oil or tar my be removed with a good grade hexane, aliphatic naptha or kerosene. These solvents are available in most hardware stores and should be removed immediately by washing.
DO NOT USE: Window cleaning sprays, scouring compounds or solvents such as acetone, petrol, benzene, carbon tetrachloride or lacquer thinners.

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General Comparison Between:

• Extruded Acrylic • ASA • ABS• HIPS • Polycarbonate • Cast Acrylic • PETG.

Categories	Properties	ACRYLIC			ASA (Luran / acrylonitrile Styrene acrylate)	ABS (acrylonitrile butadine styrene)	Polycarbonate	Standard Cast Acrylic	PETG (indoor grade)	HIPS (high impact polystyrene)
		Standard	Impact modified	High impact						
Toughness	*Impact Resistance*	Fair	Good	Excellent	Superior	Superior	Superior	Fair	Superior	Good
	Breakage Resistance	Fair	Good	Excellent	Superior	Superior	Superior	Fair	Superior	Good
	Scratch Resistance	Excellent	Very Good	Fair	Fair	Fair	Good	Excellent	Fair	Fair
	Stiffness	High	Medium	Low	Low	Low	Medium	High	Medium	Medium
Visual	*Light Transmission*	Superior	Superior	Superior	N/A	N/A	Superior	Superior	Superior	N/A
	Edge Colour	Colourless	Pale Blue	Light Blue	N/A	N/A	Violet / Grey tint	Colourless	Grey tint	N/A
Weathering	*Yellowing*	Superior	Excellent	Excellent	Very Good	Fair	Fair	Excellent	Poor	Poor
	Gloss Retention	Superior	Excellent	Excellent	Very Good	Fair	Fair	Excellent	Poor	Fair
	Clarity	Superior	Superior	Excellent	N/A	N/A	Fair	Superior	Poor	N/A
Machining	*Routing / Sawing*	Good	Superior	Superior	Superior	Superior	Excellent	Good	Good	Superior
	Shearing / Punching	No	Yes if warm	Yes if warm	Yes	Yes	Yes	No	Yes	Yes

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