



Acrylic Polymethyl Methacrylate (PMMA)

Description

An amorphous plastic with excellent clarity, often used as a glass replacement. Acrylic components are rigid, dimensionally stable and easy to decorate. Used extensively in the sheet market.

Applications

Lenses, indoor and outdoor light fitting covers, car rear light clusters, dials.

Types of grade available

High impact modified grades
General Purpose Injection Moulding

Optical Properties

Transmission	93%
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General Processing

Drying Time	2 to 4 hours
Drying Temperature	80C to 100C
Type of Drier	Hot Air
Purging	DYNAPURGE C
Moisture Absorption	0.3%
Other Considerations	Avoid contamination with other polymers, even smallest trace will affect clarity.

Processing Injection Moulding

Barrel Settings	170C to 275C
Injection speed	High for thin walled parts, slow for thick sections
Injection Pressure	Medium to High
Back Pressure	Low
Screw Speed	Low
Tool Temperature	40C to 80C
Melt Temperature	130c
Processing Stability	Residence time should not exceed 10 minutes
Gate Considerations	Edge, fan and tab produce parts with best appearance
Sprue & Runner Considerations	Size and length of sprue important to avoid premature freezing off. Full round runners preferred.

Processing Extrusion

Barrel Settings	200C to 250C
Screw Speed	Increase for improved finish and correct sizing
Screen Packs	Fine screen

Haul-off / Cooling	Water bath chilled 10c
Calibration	Suitable for use with a vacuum calibrator or sizing plates.
Mechanical Properties	
Shrinkages	0.4% to 0.8%
Flexural Strength	81 -138 MPa
Tensile strength at Yield	55 MPa – 85 MPa
Physical Properties	
Density	1.18
Cold Bend	N/A
Cold Flex	N/A
Elongation at Yield	4-5%
Tensile Modulus	2.2 – 3.8 MPa
General Impact Strength	Good - Standard grades High – Impact Modified
Material Finish	Excellent clarity with 93% light transmittance
Thermal Properties	
Vicat Softening Temperature	100C
Heat Deflection Temperature	80-103c
Flammability	
Flammability Rating	HB
Weatherability	
Suitability for outdoor use	PMMA displays very good weathering properties
Fillers & Additives	
	Impact modifiers
Chemical Resistance	
Resistant to	Dilute acids and alkalis, hydrochloric acid, fats, oils
Not resistant to	Nitric and sulphuric acids, esters, ketones
Food Contact Status	
	Suitable
Colouring	
	As the natural colour of the material is clear, then a wide colour range is possible, this includes both transparent and opaque colours. Colour on the machine by dry colouring, masterbatch and liquid colouring. Universal type masterbatches are suitable for many colouring requirements.
Bonding	
	Superglue (Cyanoacrylate) or Liquid Trichloromethane

REACH & ROHS Compliance	Grades available
Bonding	Material may be joined to itself using solvents such as chloroform or by using solutions of PMMA in methylene chloride.
Welding	Commonly welded using techniques such as ultrasonic welding, hot plate friction.

This information has been provided as a general guide and we suggest that you carry out your own specific tests to be sure that this material is suitable for your application.