Altuglas International
Automotive
Acrylics

Processing Technology and Support

Altuglas International acrylic resin processing technology offers:

- Cost reduction.
- Increased process yields.
- Reduced development time.

Injection molding resins must be capable of meeting the increasing complexity of automotive component part design demanded by today's styling trends. PLEXIGLAS acrylic resins have been developed to meet these increasing requirements. From conventional single shot injection to insert and multicolor processing, Altuglas International has the material and technical expertise to make your concept a reality.

PLEXIGLAS acrylic resins are available with varying flow characteristics. This provides molders the flexibility to balance performance requirements with the processing characteristics demanded by the application.

PLEXIGLAS acrylic resins provide excellent molded part surface quality; ideal for decorative parts critical to vehicle appearance. Their durable, high gloss finish can eliminate the need for costly decorating and protective coating process steps.

Standard and impact modified PLEXIGLAS acrylic resins are compatible with each other. Various grades may be combined in multi-shot or insert molding operations to optimize process yields and minimize part cost.

All Altuglas International resin production facilities carry the QS 9000/ISO 9002 certification. This assures that when PLEXIGLAS resins are specified, you receive the quality your application demands.

The PLEXIGLAS acrylic resin product line is supported with a staff of technical service engineers ready to assist you with design, material selection and processing recommendations. Altuglas International OEM experience, on-site technical service and joint design efforts with tier 1 and tier 2 suppliers reduces development time lowering overall introduction costs.

For more information on PLEXIGLAS acrylic resin, call **1-215-419-7506**

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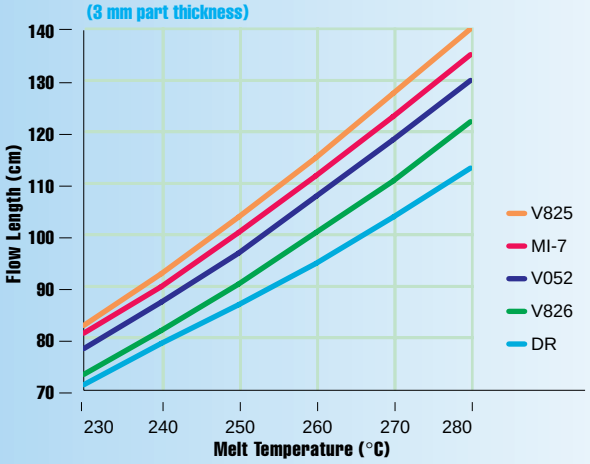
Melt Flow

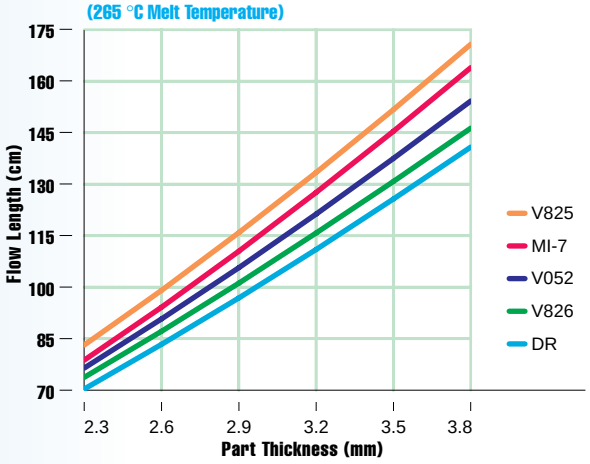
I Flow Length* vs. Melt Temperature

(3 mm part thickness)



II Flow Length* vs. Part Thickness

(265 °C Melt Temperature)

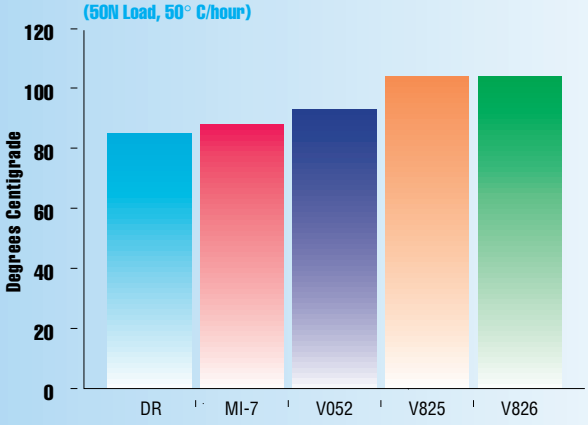


*Flow data generated using mold filling analysis simulation. Constants of 70° C mold temperature, 15,000 psi cavity pressure and 1.0 inch³/second fill rate were used for all runs.

Heat Resistance

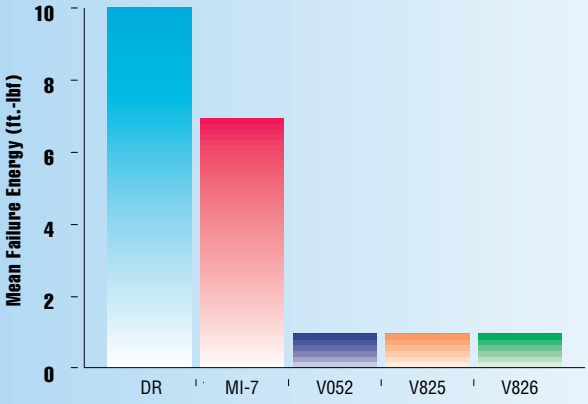
III Vicat Softening Temperature

(50N Load, 50° C/hour)



Toughness

IV Falling Dart Impact

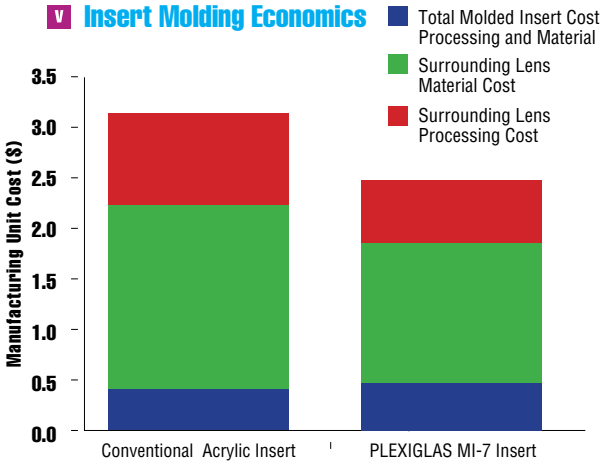


I Injection molding of PLEXIGLAS acrylic resins is readily accomplished with most injection molding machines. Their flow characteristics are superior to that of most other thermoplastics with which they compete. Their broad melting range and high temperature thermal stability provide for an extended processing window permitting efficient part production.

II Flow path length is a practical measurement of polymer viscosity. The flow length of each PLEXIGLAS acrylic resin grade is dependent on melt temperature, injection pressure and part thickness. Part flow requirements often dictate which PLEXIGLAS resin should be used.

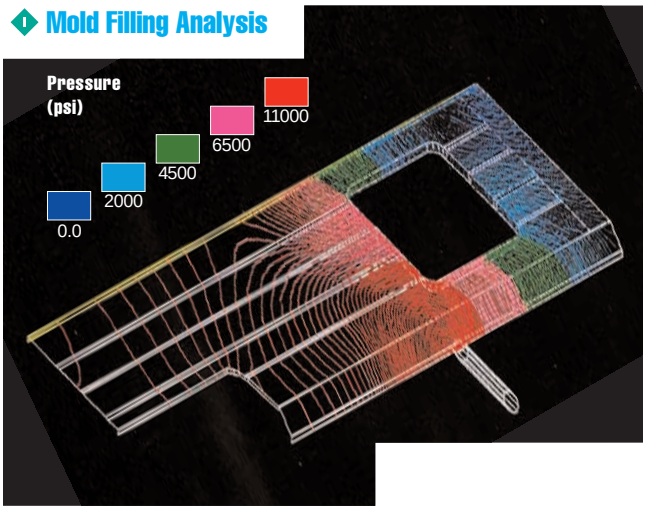
III IV PLEXIGLAS acrylic resins are differentiated by three primary characteristics; melt flow, heat resistance, and toughness. Individual grades have been formulated with varying combinations of these characteristics to meet specific application needs.

V Insert Molding Economics



20% cost savings realized due to the elimination of part cracking during insert molding. Process yields increased from 66% to 97+%

I Mold Filling Analysis



V Cracking problems can be solved by selecting the proper PLEXIGLAS resin grade. PLEXIGLAS MI-7 medium impact acrylic resin is particularly well-suited for insert molding operations where its toughness reduces cracking and increases process yields lowering overall part production costs.

I Part performance is maximized by minimizing the stress induced during the molding process. The polymer processing and design experience of Altuglas International technical service engineers can be a valuable resource for optimizing your process efficiency and part performance. For complicated designs, mold filling analysis may prove useful for material selection and tool design.

PLEXIGLAS acrylic resin regrind can be used at levels up to 100% under certain processing conditions. A maximum use level of 25% is recommended when regrind is not repelletized prior to use. The use of regrind does not harm mechanical properties but care should be taken to avoid contamination and the development of excessive heat history which may effect part appearance. PLEXIGLAS acrylic resins may also be blended with other polymers such as ABS and SMA for efficient use of sprues, runners, and defective parts. Application specific experiments should be run to determine practical use levels.

Table II is a general guide for PLEXIGLAS acrylic resin usage in automotive applications. Unique application demands may require special consideration. Contact an Altuglas representative for further assistance.

II PLEXIGLAS Resin Application Guide

	Resin Grade				
Application	**PLEXIGLAS V052**	**PLEXIGLAS V825**	**PLEXIGLAS V826**	**PLEXIGLAS MI-7**	**PLEXIGLAS DR**
Exterior lenses	•		•	•	•
Interior lenses	•	•		•	
Exterior trim	•		•	•	•
Interior trim	•	•		•	
Instrument cluster lenses	•	•			
Light guides	•	•			
Subdials	•	•			
Reflex reflectors	•		•	•	•
Insert molding	•		•	•	•
Inner lenses	•	•	•		

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Plexiglas resins are combustible thermoplastics. Observe fire precautions appropriate for comparable forms of wood and paper. For building uses, check fire code approvals. Impact resistance is a factor of thickness. Avoid exposure to heat or aromatic solvents. Clean with soap and water. Avoid abrasives.

Plexiglas acrylic plastic is a combustible thermoplastic. Observe fire precautions appropriate for comparable forms of wood and paper. For building uses, check code approvals. Impact resistance is a factor of thickness. Avoid exposure to heat or aromatic solvents. Clean with soap and water. Avoid abrasives.

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