Altuglas International
Automotive
Acrylics

High Performance Reflex Lenses

PLEXIGLAS® DR® and PLEXIGLAS® MI–7 impact modified acrylic resins offer:

- **Excellent reflex over a broad processing window.**
- **Reduced part cost.**
- **Styling freedom.**
- **Long term performance.**

PLEXIGLAS DR and PLEXIGLAS MI–7 impact modified acrylic resins from Altuglas International offer a combination of toughness, clarity, and excellent weatherability making them ideal materials for reflex lenses.

PLEXIGLAS DR and PLEXIGLAS MI–7 are characterized by high light transmission and low haze. They offer excellent processability providing for an expanded "molding window". Their optical properties and processing flexibility permit the molding of complicated signal lighting lenses while maintaining high reflex values.

The toughness of these impact modified acrylics makes them more resistant to stresses and strains imposed during insert molding and assembly operations. Increased yields are achieved through reduced part breakage.

The excellent retroreflectance properties of PLEXIGLAS DR and PLEXIGLAS MI–7 minimize the lens area which must be dedicated to reflex to meet the SAE J594 requirements for reflex reflectors. This allows greater freedom with lens color, size, and shape during design. Styling preferences can be met with a variety of AAMVA listed colors which meet the requirements of FMVSS108.

PLEXIGLAS DR and PLEXIGLAS MI–7 formulations conform to the 3 year exposure requirements of SAE J576c. This outdoor durability ensures long-term performance without the need for costly weather resistant coatings.

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.

Altuglas International offers a staff of engineers ready to assist you with design, material selection and processing recommendations.

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

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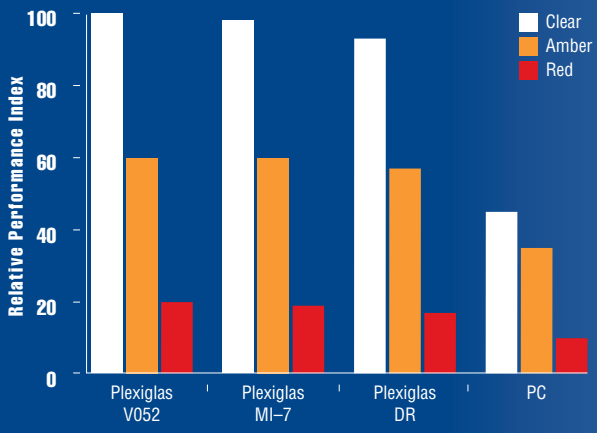
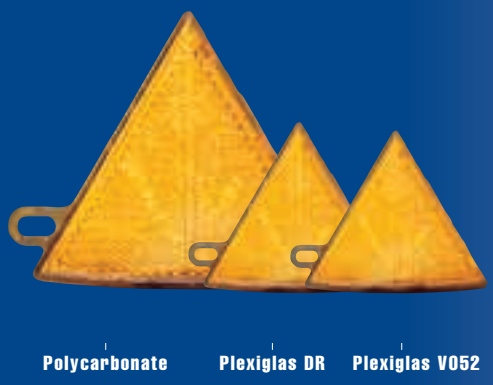
I Reflex Performance Relative to Plexiglas V052



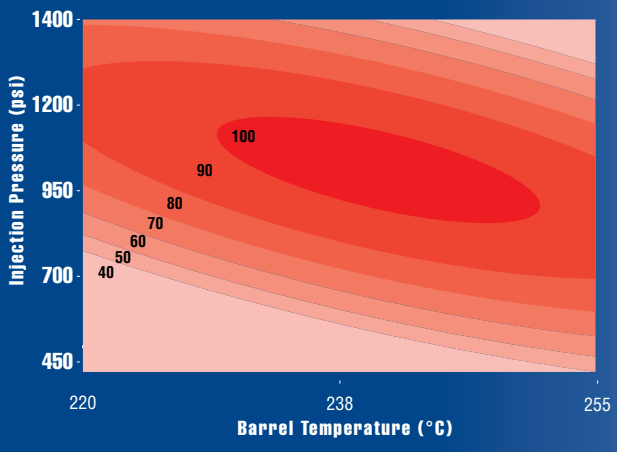
Note: Actual application performance will depend on mold design and processing conditions.

II Required Reflex Area for Equivilent Reflex



III Plexiglas MI–7 Reflex Reflector Performance vs. Processing Conditions

(75° C Mold Temperature)



I The optical clarity and cleanliness of PLEXIGLAS resins provide excellent reflector performance. PLEXIGLAS V052 acrylic is recognized as the bench mark against which reflex performance is measured. PLEXIGLAS MI–7 and PLEXIGLAS DR impact modified acrylic resins supply added toughness with little compromise in reflex.

II The superior optical and processing properties of PLEXIGLAS impact modified acrylic resins result in reflex values significantly higher than coated polycarbonate. Higher reflex values allow more styling freedom as less lens area needs to be dedicated to reflex to meet the requirements of SAE J594.

III PLEXIGLAS impact modified acrylic resins have a large processing window in which excellent reflex values can be attained. This processing window gives molders the flexibility they need to economically produce lenses free of flow lines, sink, and other defects while maintaining high reflex properties.

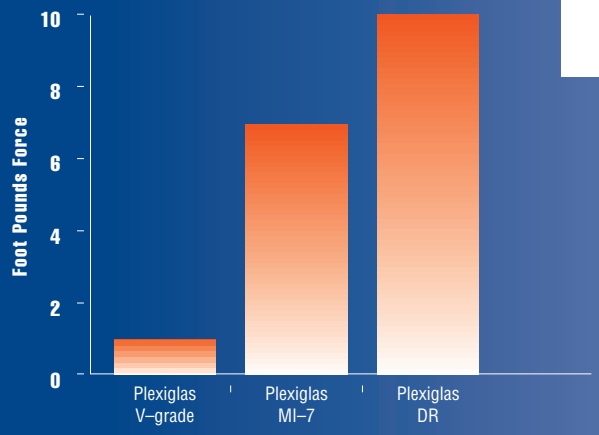
Standard acrylics can be blended with PLEXIGLAS MI–7 and PLEXIGLAS DR without affecting optical properties. This allows more flexibility in the use of sprues, runners, and damaged parts.

IV PLEXIGLAS MI–7 and PLEXIGLAS DR impact modified acrylic resins have 7 to 10 times the impact strength of standard acrylic. These resins are particularly well-suited for insert molding where their added toughness increases process yields by reducing part breakage. In addition, this resistance to breakage results in reduced field failures of large, wraparound lenses as well as lenses used in rugged off-road, light truck, and sport utility vehicles.

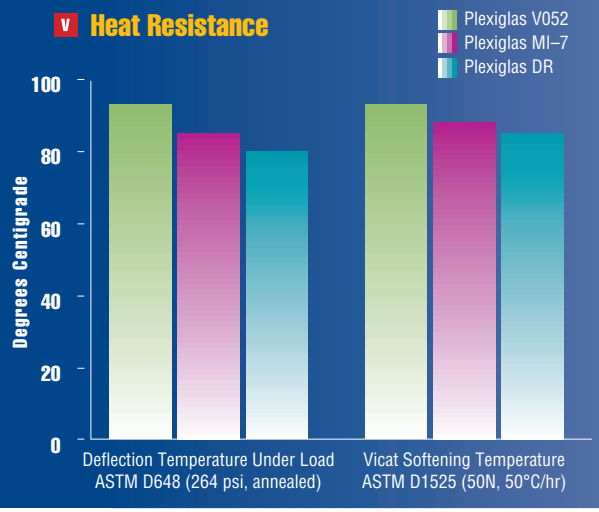
V Deflection temperature under load and vicat softening point are thermal properties used to estimate the ability of a material to perform at elevated temperatures. The actual service temperature of a reflex lens will depend on the degree of stress present. Maximum service temperature is obtained through good design practice and low stress molding conditions.

Tables I, II and III are provided as general guidelines for use in signal lighting design. For more specific information or design assistance, contact an Altuglas International representative.

IV Falling Dart Impact



V Heat Resistance



I Welding Compatibility

Material	PLEXIGLAS V052	PLEXIGLAS MI-7	PLEXIGLAS DR	PC
PLEXIGLAS V052	Excellent	Excellent	Excellent	Fair
PLEXIGLAS MI-7	Excellent	Excellent	Excellent	Fair
PLEXIGLAS DR	Excellent	Excellent	Excellent	Fair
PC	Fair	Fair	Fair	Excellent
ABS	Excellent	Excellent	Excellent	Poor

III Design Information

Property	PLEXIGLAS V052	PLEXIGLAS MI-7	PLEXIGLAS DR	PC
Light Transmission, %	92	92	90	88
Haze, %	2	2	3	2
Refractive Index, N_D	1.49	1.49	1.49	1.59

II Mechanical Assembly of Plexiglas Resin

Type	Plexiglas V052	Plexiglas MI–7	Plexiglas DR
Screw Assembly			
Preferred Screw Type	Thread Cutting	Thread Cutting/Forming	Thread Cutting/Forming
Boss Outside Diameter	≥ 2x OD of Screw	≥ 2x OD of Screw	≥ 2x OD of Screw
Pilot Hole Diameter	≥ 0.90x OD of Screw	≥ 0.85x OD of Screw	≥ 0.85x OD of Screw
Snap Fit Assembly			
Permissable Deformation	2% in Flexure	3-4% in Flexure	4-5% in Flexure

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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.

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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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