

For over 60 years, Altuglas® acrylic resin has been providing the automotive market with outstanding colour and gloss retention for demanding exterior applications. Today, process economics, manufacturing emissions, and vehicle weight concerns are driving the use of mould-in colour for exterior trim parts on vehicles. The new line of Altuglas® opaque grades allows increased design versatility, styling distinction and vehicle weight reduction, while eliminating the cost and emissions problems and post-consumer recycling problems associated with painting.

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# Technology for Brilliant Designs

ALTUGLAS® ACRYLIC RESIN

## Weatherable High Gloss Exterior Trim

### Altuglas® opaque acrylic resin:

- Impact-modified and unmodified grades
- Brilliant colour and high gloss without painting
- Proven appearance retention
- Manufacturing flexibility



Altuglas®

## Innovative Solutions. Outstanding Products.

With Altuglas® opaque grade acrylic resin, you can achieve high gloss, "Piano Black" and vivid colours that will be retained in harsh UV outdoor environments for many years. There is no need to paint or coat the surface, or to design to mask the loss of gloss associated with other plastics. High gloss surfaces can be used for styling, while chalking and fading can be avoided. Applications include roof pillars, exterior mirror shell assemblies, exterior mirror shell sails, cowl vent grills, rear deck appliqués, roof trims and side window belts.

All Altuglas International resin production facilities carry the ISO 9001:2000 Registration and comply with applicable operational elements of TS 16949 to assure high quality and consistent manufacturing. The Altuglas® acrylic resin product line is backed by a team of Altuglas International engineers and scientists, available to provide support in design, colour and appearance, material selection, melt processing and fabrication. An on-site technical service and joint project effort with tier 1 and tier 2 suppliers reduces development time and product introduction costs.



## 1 Grade Property Comparison

Altuglas® opaque acrylic resin is available in a variety of formulations: V grades, a grade with very high surface hardness and thermal properties under the reference HT 121, and impact-modified grades based on new RB technology. In addition to outstanding aesthetic and weathering performance, Altuglas® opaque impact-modified RB grades possess an attractive balance of physical properties: hard surface for increased scratch resistance, high heat resistance to withstand heat build-up in dark colours, and high modulus and flexibility for ease of assembly and fixing.

Note: Complete physical property information can be obtained from Altuglas International.

GRADE PROPERTY COMPARISON						
GRADE	MELT FLOW RATE	ROCKWELL HARDNESS	VICAT SOFTENING TEMPERATURE	HEAT DEFLECTION TEMPERATURE	TENSILE ELONGATION	FLEXURAL MODULUS
	ASTM D 1238	ASTM D 785	ASTM D 1525	ASTM D 648	ASTM D 638	ASTM D 790
	230°C / 3.8 kg	M Scale	50N, °C	1.82 Mpa, °C	Ultimate %	Mpa
MEDIUM & LIGHT-IMPACT RB GRADES - "PIANO BLACK"	1,8 - 3,2	70 - 86	101 - 103	95 - 97	18 - 35	2,400 - 2,900
HT 121 - "PIANO BLACK"	2	102	121	110	5	3,450
EXAMPLE OF ONE V GRADE: V825T - "PIANO BLACK"	2,8	97	108	100	6	3,300

## 3 Visual Comparison

Like the clear grades of unmodified and impact-modified Altuglas® acrylic resin, used to maintain colour and appearance in tail-light lens applications, Altuglas® opaque acrylic resin consistently outperforms competing materials containing styrenics or polycarbonate. In visual evaluation of exposed materials, other polymers fade noticeably within 1-2 years, while Altuglas® impact-modified acrylic resin remains unchanged even after 5 or more years of exposure.



After 3750 kJ exposure, the Altuglas® sample still provides a deeper, Piano Black appearance than is attainable at the outset with competing materials.  
Photographs are of actual exposed panels. Printing variations may affect appearance. Contact an Altuglas International representative to view actual panels.

## 5 Secondary Processes & Attachment

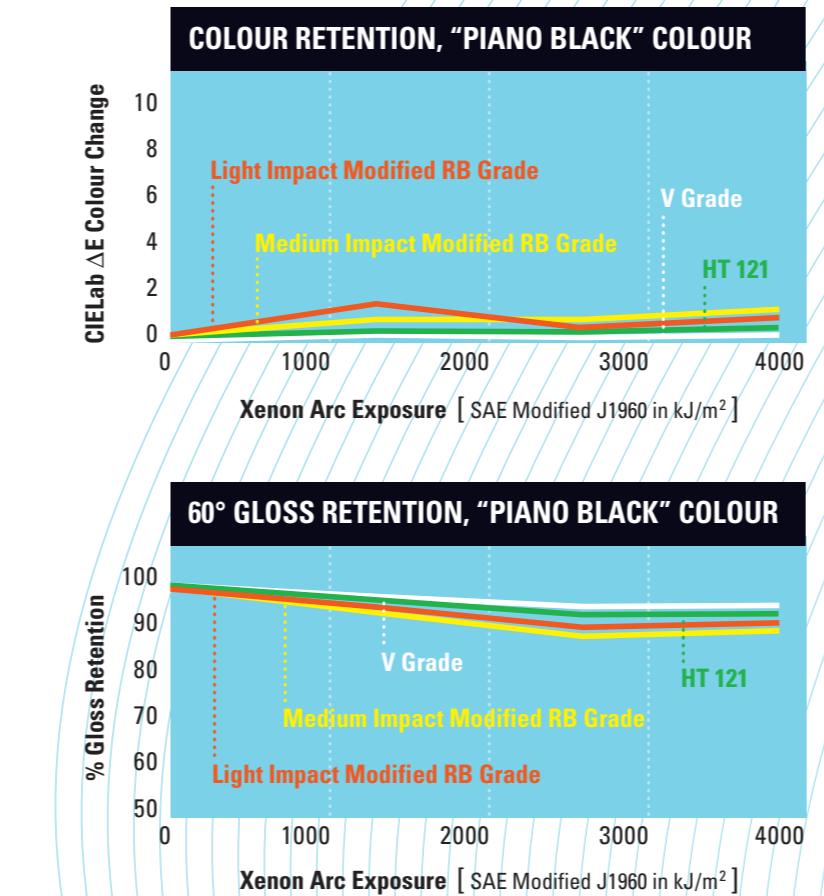
Unlike other polymers, Altuglas® acrylic resin does not require costly coatings to maintain its appearance, weathering resistance, chemical resistance or surface hardness. Altuglas® acrylic resin is conducive to secondary processing and multiple attachment methods, including all welding techniques, solvent welding and screw attachment. Because of its excellent thermal stability, Altuglas® acrylic resin can be recycled on its own or with other plastics.

Note: Although not required or normally practised, Altuglas® acrylic resin can be coated with acrylic approved systems. For complete technical information or a dedicated brochure on multiple attachment methods, contact Altuglas International.

## 2 Appearance & Durability

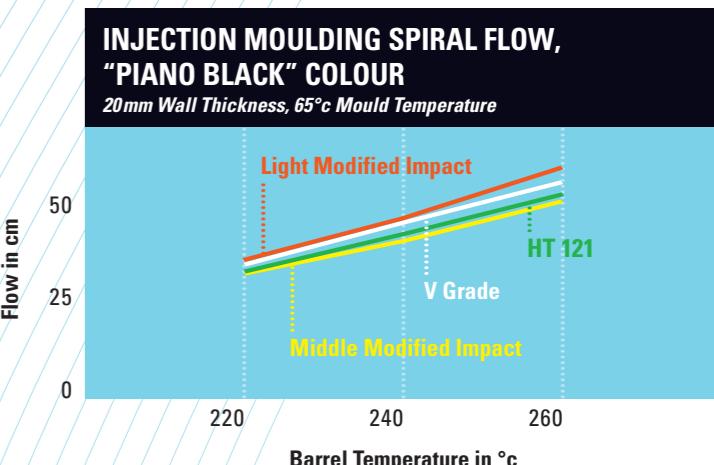
The inherent transparency of all Altuglas® grades, including impact-modified RB acrylic resin, provides excellent depth of colour and gloss for an outstanding "Piano Black" appearance. Altuglas® acrylic resin is approved to Automotive OEM clear coat paint standards. And unlike other materials, Altuglas® acrylic resin exhibits virtually no visible change in colour or gloss when exposed to nearly 4,000-kJ/m<sup>2</sup> radiation per modified SAE J1960 procedures. This exposure represents a 50% longer duration than the 2,500-kJ/m<sup>2</sup> typically specified per SAE J1960.

Note: Altuglas® acrylic resin can meet current OEM exposure test requirements without polishing or "cleaning" the surface prior to gloss and colour measurement.



## 4 Process Versatility

For years, Altuglas® acrylic resin has been moulded into intricate automotive parts, such as tail-light lenses, badges, cluster lenses and light guides. Injection moulding of Altuglas® acrylic resin is readily achieved with standard injection moulding machines, as well as most specialized systems such as hot runner. The broad temperature flow range, plus excellent high temperature and high shear stability, provide an extended processing window, while the melt processing versatility allows options to eliminate flow defects such as visible knit lines.



Exceptional colour and gloss retention provides efficiency and flexibility for mould-in colour.



WELDING COMPATIBILITY FOR ALTUGLAS®			
POLYMER	ULTRASONIC	VIBRATION	HOT PLATE
PMMA	GOOD	EXCELLENT	EXCELLENT
ABS	GOOD	EXCELLENT	EXCELLENT
ABS/PC	GOOD	VERY GOOD	VERY GOOD
PC	GOOD	VERY GOOD	VERY GOOD
OLEFINS	POOR	POOR	POOR

Weld Strength Ratings based on weld % tensile strength of weaker material:  
Excellent = 90 - 100%, Very Good = 70 - 90%, Good = 50 - 70%, Poor = < 50%