



TECHNICAL BULLETIN 162

## General Properties Acrysteel® IGP

### General:

Aristech Surfaces Acrysteel® IGP is made by the Continuous Sheet Casting process, unlike other impact materials that are made by the extrusion process.

### Acrysteel® IGP Advantages For The Customer:

1. Acrysteel® IGP is an engineered thermoplastic acrylic sheet designed to give a "preferred balance" of physical properties and performance.
2. All the advantages of a proven thermoforming acrylic sheet like Aristech Surfaces GPA (General Purpose Acrylic), but with greater impact resistance.
3. A high gloss, hard surfaced sheet available in custom and standard sheet sizes plus continuous reels.
4. Proven color technology without special surface protection or UV barrier coatings, and no blue hiding agents for clear sheet.

### Physical And Performance Properties:

#### 1. Impact Resistance:

Acrysteel® IGP has been engineered to have sufficient impact strength to reduce sheet breakage in the fabricator's plant and during field installation. The drop ball impact strength of unformed Acrysteel® IGP has been engineered to have 5 to 6 times greater impact strength than our General Purpose Acrylic (GPA). Acrysteel® IGP appears to become even better after uniform stretching during thermoforming.

#### 2. Weather Resistance:

Acrysteel® IGP has excellent resistance to outdoor weathering, and is covered by a limited ten year warranty against yellowing. Laboratory and outside field exposure testing indicates that Acrysteel® IGP has remarkable non-yellowing and retention of impact properties.

#### 3. Abrasion Resistance:

Acrysteel® IGP is more abrasion resistant than uncoated polycarbonate or "DR®". The higher barcol hardness of Acrysteel® IGP offers better resistance to abrasion caused by airborne dirt and dust particles.

	Polycarbonate	"DR®"	IGP	GPA
Barcol Hardness	20	25	40	48

#### 4. Stiffness:

Acrysteel® IGP is stiffer than "DR®" and thus, less likely to bow or pull out of a retaining frame.

	Polycarbonate	"DR®"	IGP	GPA
Flexural Strength	13,500 psi (93 MPa)	10,500 psi (72 MPa)	13,500 psi (93 MPa)	15,000 psi (103 MPa)
Flexural Modulus	340,000 psi (2,344 MPa)	286,000 psi (1,972 MPa)	380,000 psi (2,620 MPa)	450,000 psi (3,102 MPa)

5. Deflection Temperature Under Load: (DTUL)

The higher heat deflection temperature of Acrysteel® IGP offers excellent resistance to sheet sagging during exposure in hot environments.

	Polycarbonate	"DR®"	IGP	GPA
DTUL @264 psi (1.82MPa)	270°F (132°C)	170°F (77°C)	180°F (82°C)	190°F (88°C)

6. Thermoforming:

Acrysteel® IGP has a very wide thermoforming temperature range of 350 to 390°F (177 - 199°C). This property provides the flexibility necessary to form difficult parts with good detail at high temperatures or to form at lower temperatures for faster production rates. Acrysteel® IGP has a tendency not to hot stick to itself or heating equipment. Acrysteel® IGP will turn milky white at high temperatures during thermoforming, but will return to its original clarity.

7. Re-forming:

Acrysteel® IGP has a remarkable ability to forgive operator errors and equipment irregularity. A part formed from Acrysteel® IGP can be reheated and reformed into an acceptable part. Mold mark-off from a prior forming can be reduced by subsequent forming at a higher temperature. This property is extremely valuable for proto type work, thermoforming start-up, short production runs, night shift operations and trouble-shooting.

8. Shrinkage:

Acrysteel® IGP has less unrestrained shrinkage than polycarbonate or "DR®" after thermoforming. Thus, pre-silk screen painting is easier to control and yields less variation from batch to batch of sheet. Acrysteel® IGP can be heated in sheet hanging ovens and free formed without concern for excessive draping or shrinkage.

9. Sheet Preparation:

Acrysteel® IGP does not require pre-drying to remove moisture prior to thermoforming, thus, permitting easier scheduling for production and custom thermoforming work.

10. Paint Cleaning:

Acrysteel® IGP can be cleaned with the same sign shop acrylic sheet paint removers that are recommended for use on Aristech Surfaces acrylic sheet. Aromatic solvents (like xylene) should not be used on GPA or Acrysteel® IGP products. General maintenance cleaning should be done with soap and water; avoid the use of abrasives.

11. Painting:

Acrysteel® IGP can be painted with regular acrylic sheet sign paints. Both Spraylat Corp. and Wyandotte Paint Products Co. have approved Acrysteel® IGP for their paints and cleaners.

12. Cementability

Acrysteel® IGP can be cemented with the same products recommended for use on GPA acrylic sheet.

13. Fabrication:

Acrysteel® IGP can be fabricated with the same techniques used for GPA including gang cutting, hot bending, flame polishing, and cold bending.

DR® is a registered trademark of Rohm & Haas Company for an extrusion grade of impact resistant acrylic plastic.

*For cautions and other information relating to handling of an exposure to this product, please see the applicable material safety data sheet published by Aristech Surfaces*

These instructions are based upon experience with Aristech Surfaces products only. Experience with products of other manufacturers is specifically disclaimed. For most uses, check for local code approval and test for application suitability. These procedures, techniques and suggested materials should only be used by personnel who are properly trained in the safe handling of the chemicals and the equipment with which they are working. Avoid aromatic solvents, clean with mild soap and water, avoid abrasives. These suggestions are based on information believed to be reliable, however, Aristech Surfaces makes no warranty, guarantee, or representation and assumes no obligations or liability as to the absolute correctness or sufficiency of any of the foregoing, or that additional or other measures may not be required under particular conditions or circumstances.

