



GATGARD® AR POLYCARBONATE MIRROR

GAT Technologies is the exclusive supplier of the GATGARD® range of hardcoated polycarbonate mirror, which is suitable for safety and security applications.

This range of polycarbonate mirror is virtually unbreakable at approx. 250 times stronger than glass eliminating the hazards associated with broken glass, has the inherent strength and fire resistance of the base optical grade polycarbonate sheet, along with the excellent chemical, solvent and abrasion resistance that is built into the best in class hardcoat surface treatment. This surface treatment gives similar abrasion resistance to glass, but only weighs half of the equivalent thickness glass. The product can also be cut to size and fabricated, using standard wood working tools. It has a very durable coating protecting the rear mirrored surface, making it easy to fabricate and install. It comes with heavy duty masking on both sides protecting it during shipping, handling and fabricating.

The product is available in the traditional mirror Silver colour with reflective properties similar to Glass mirror, but we also offer one way mirror (interview rooms) and two way mirror (reflective on both sides).

GATGARD AR® Mirror polycarbonate sheet has a five (5) year Limited Product Warranty against breakage. The terms of the warranty are available on request.

We also offer aircraft grade mirror sheeting, which meets FAR25.853(a) flame retardant requirements. Made of specially engineered lightweight polycarbonate resin, this aircraft grade polycarbonate mirror will not support continuous combustion, which makes it an ideal choice for commercial aircraft applications.

APPLICATIONS

- Prisons
- Youth Detention Centres
- Correctional Facilities
- Security Buildings
- Public Buildings
- Police Stations
- Mental Health Facilities
- Aircraft
- Sports Stadiums
- Gymnasiums
- Aircraft
- Amusement Parks
- Public Transport
- Mass Transit
- High Traffic Areas
- Abusive Environments

Typical Properties*

| Property | Test Method | Units | Values |
|--|-------------|-------------------------------|-------------------------|
| PHYSICAL | | | |
| Specific Gravity | ASTM D792 | - | 1.2 |
| Poisson's Ratio | ASTM E132 | - | 0.38 |
| Taber Abrasion @ 100 Cycles, Delta Haze CS-10F Wheel @ 500 g load | ASTM D1044 | % | 4** |
| MECHANICAL | | | |
| Tensile Strength, Ultimate | ASTM D638 | psi | 9,500 |
| Tensile Strength, Yield | ASTM D638 | psi | 9,000 |
| Tensile Modulus | ASTM D638 | psi | 340,000 |
| Elongation | ASTM D638 | % | 110 |
| Flexural Strength | ASTM D790 | psi | 13,500 |
| Flexural Modulus | ASTM D790 | psi | 345,000 |
| Compressive Strength | ASTM D695 | psi | 12,500 |
| Compressive Modulus | ASTM D695 | psi | 345,000 |
| Shear Strength, Ultimate | ASTM D732 | psi | 10,000 |
| Shear Strength, Yield | ASTM D732 | psi | 6,000 |
| Shear Modulus | ASTM D732 | psi | 114,000 |
| Instrumented Impact @ 0.118" | ASTM D256 | ft-lbs/in | 30 |
| THERMAL | | | |
| Coefficient of Thermal Expansion | ASTM D696 | in/in/°F | 3.75 x 10 ⁻⁵ |
| Coefficient of Thermal Conductivity | ASTM C177 | BTU-in/hr-ft ² ·°F | 1.35 |
| Heat Deflection Temperature @ 264 psi | ASTM D648 | °F | 270 |
| Heat Deflection Temperature @ 66 psi | ASTM D648 | °F | 280 |
| Brittleness Temperature | ASTM D746 | °F | -200 |
| FLAMMABILITY | | | |
| Horizontal Burn, AEB | ASTM D635 | in | <1 |
| Ignition Temperature, Self | ASTM D1929 | °F | 1022 |
| Ignition Temperature, Flash | ASTM D 1929 | °F | 824 |

Chemical Resistance

| Test Method* (soft cloth soaked with...) | Result |
|---|-------------------|
| Ammonium Hydroxide (100%) | |
| Hydrochloric Acid | |
| Acetone | 0% change in haze |
| Kerosene | |
| Toluene | |

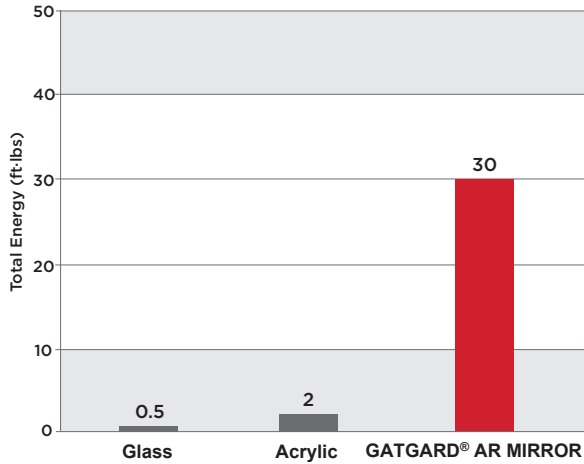
Vigorous rub for 2 minutes

*Typical properties are not intended for specification purposes

**Taber Performance of the abrasion resistant coating measured on clear sheet

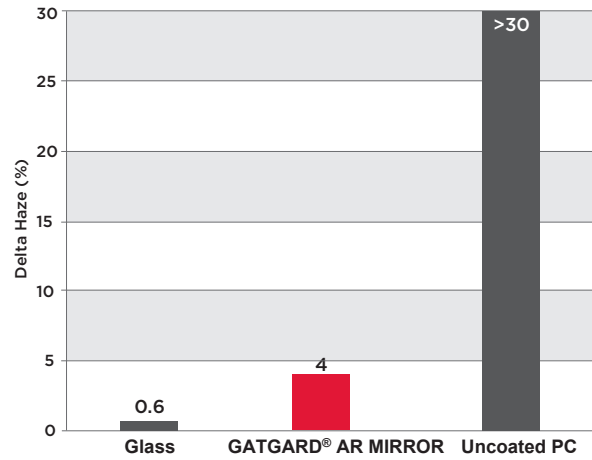
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Impact Resistance*



*Instrumented Impact per ASTM D3763, sample thickness is 0.118" nominal

Abrasion Resistance*



*Taber Abrasion per ASTM D 1044, 100 cycles using CS-10F wheels at 500 g load

FIXING GATGARD® AR MIRROR SHEETING

Mirrored polycarbonate is a reflective film surface applied to a substrate. When the substrate is affixed to another surface, both of these materials will in time conform to the irregularities of the supporting surface. A non-smooth, non-planar surface will cause localized bending of the mirrored sheet and distortion in the reflective image. For best results, mirrored sheets should be mounted to a smooth, rigid, sturdy flat backing such as 16mm MDF, Plywood or a similar flat rigid substrate. The surface of pulp or timber based products should be coated with a high quality paint or sealant to cover pockets and seal out moisture. The entire surface should then be covered with a mastic or another type of pressure sensitive adhesive.

Fixing of a mirror sheet with a hard-coated surface is not readily accomplishable due to the chemical resistance of the coating. Another option is to drill oversized holes in the mirror and hold it to the wall using screw fasteners. Do not over tighten the screw fasteners. Over tightening will cause dimpling and distortion.

Visual distortion is a function of viewing distance and material thickness. A thicker piece of material will be less flexible and therefore maintain better optical integrity. Correct installation and sufficient material thickness can reduce visual distortion but may not completely eliminate it.

Ceiling and overhead installations are not recommended unless the mirror is mounted in edge-engaging frames such as T-bar suspended ceiling frames or mechanical mounting. Some adhesives may contain solvents such as toluene, ketones and hexane that can attack the back coating. Adhesives with solvents of 5% or more are not recommended. Since numerous adhesives, cements and mastics are available, they should be tested on expendable pieces prior to application. All tests should be applied at least 72 hours in advance to determine compatibility to the back coating, the reflective coating and the polycarbonate itself. The following companies manufacture adhesives that are suggested for use with GATGARD® AR mirror:

3M Brand product suggestions: Fastbond #4323 / VHB tape / 560 polyurethane / Super 77 Spray GE product suggestions: GE-57 Silicone

GAT Technologies product suggestions (available from GAT): XT2000 Mastic Adhesive System (Water Based, Non-flammable, minimal VOC content) / Spray Lock Spray Adhesive System (Water Based, 0% VOC content)

Again we stress, before using any adhesives, cements or mastics, please test expendable samples for at least 72 hours to determine suitability.

HANDLING

All GATGARD® Polycarbonate mirror sheets are furnished with a protective masking on the top side of the sheet. Do not slide GATGARD® Polycarbonate mirror sheets when transporting. The masking should be left on the sheet during storage and fabrication to prevent damage. GATGARD® Polycarbonate mirror is shipped in "ready-to-store" condition. Keep away from excessive and warm area with the original packing intact. However, this is not always practical as all or part of the shipment must be unpackaged for the customer to use. In these cases, the following guidelines should be followed:

Vertical Storage: If the mirror sheets are to be stored on end, care must be taken to avoid warping. Sheets must stand with an angle of no more than 10 degrees from the vertical. A-frame racks made of plywood can be made to give full support to the materials.

Horizontal Storage: If the mirror is to be stored flat, care must be taken to avoid warping, slipping and scratching. If different sizes are to be stored together, make sure the largest pieces are at the bottom, the smallest on top. This will prevent overhang which can lead to warping and reduce the risk of scratching if a slip occurs, or while unpacking. Pallets are packaged with a heavy poly overwrap which protects the sheet from dirt and moisture. The overwrap should be intact during storage.

MAINTENANCE

Masking: Each mirrored product is well protected by a durable paint backing and a removable masking on the front. This masking should remain in place to protect the sheets during all phases of fabrication and installation. GATGARD® Polycarbonate mirror sheets should be handled mirror side down, with the masking left on. Care should be taken not to slide sheets against each other.

Removing Masking: If there is difficulty in removing the masking, use aliphatic naphtha, kerosene, or distilled alcohol to moisten the adhesive. Do not use other chemicals or sharp objects to remove the masking.

CLEANING

Washing: Use a mild soap and a damp soft cloth to wipe the surface of the sheet with light pressure, avoiding the edges of the sheet. To remove the grease, oil, or tar deposits on the material, use hexane or kerosene to remove them. Do not use any chemicals on a painted print design. Do not use window cleaning sprays, kitchen scouring compounds, or other chemicals to clean mirrored sheets.

WARRANTY

We warrant that the Goods will conform (subject to variations acceptable within the industry) to the specifications provided. Polycarbonate mirror is provided where high impact and fire resistant characteristics are essential and is considered to have a "General Purpose" mirror quality. We warrant product will be free from any defects in material or workmanship and will meet design life of 10 years when properly applied and installed with recommended adhesives. If in the sole opinion of GAT Technologies, a product covered by this warranty is defective, GAT will replace it free of charge.