

Mirrorworld Acrylic Two Way Mirror

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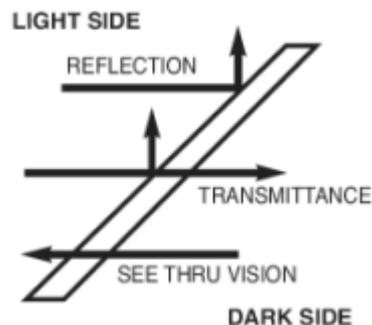
Mirrorworld Plaskolite delivers flawless quality sheet and resin to customers worldwide. ISO 9001:2008 quality standards are maintained throughout, including a fully integrated manufacturing system that converts acrylic monomer into acrylic resin and then into acrylic sheet. To better serve customers, sheet can be ordered in customized "Run-to-Size" dimensions and special patterns and thicknesses.

Two-way mirror is a semi-transparent film of aluminium deposited on an acrylic or polycarbonate substrate. This allows a percentage of incident light to pass through while reflecting the remainder. From the illuminated side, it is a mirror. From the darkened side, it becomes transparent. You can only see through the mirror when the area you are looking from is darker than the area you are looking into. Works best when there is no light on the viewing side. When the light is equal on both sides it appears as a mirror but you can also see through to the other side.

Two way mirror has been used successfully in monitoring and surveillance operations in such places as retail stores, prisons, police stations, hospitals, casinos, film studios and psychiatric institutions.

Two way Mirror is also used to make infinity lights and multiple image devices. It can be used in advertising and for special theatrical props and effects.

Two way mirror can be supplied in 3mm or 6mm thickness and samples can be supplied on request.. Camcorders and infrared remotes work through the mirror. Two way mirror can work over some LCD and plasma TV's but needs to be tested by the consumer prior to purchase.



Two way Acrylic Mirror is supplied with a protective plastic film on one side. This mirror is not suitable for external use. Please note: Acrylic mirror is not as rigid as glass and, as with all acrylic mirror, visual distortion can occur. Correct installation and sufficient material thickness can reduce visual distortion but will not completely eliminate it.

Mirrorworld's Plaskolite products are strong, lightweight thermoplastic materials that have developed a wide use as a replacement for glass mirror, especially where the risk of higher stresses is greater, and where safety is a concern.

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DO'S AND DONT'S

1. Because acrylic has a relatively soft surface and is flexible, some imperfections or distortions may occur. It should not be used for precise image reflection. An appropriate thickness should be determined well in advance of cutting.
2. Acrylic mirror cannot be thermoformed but can be cold formed.
3. Some adhesives attack the mirrored surface. Please test expendable pieces at least 72 hours in advance to determine suitability.

4. Mirror products are not recommended for glazing but may carefully be used for outdoor applications.
5. Acrylics tend to absorb moisture. High humidity levels may cause temporary warping to the material. The warping is characteristic of the material and should be considered in the design of the product or application.
6. Solvent based glues and adhesives may cause crazing and irreversible damage and should not be used.
7. Mirrorworld's Plaskolite acrylic sheet is a combustible thermoplastic. Precautions should be used to protect the material from flames and high heat sources.
8. Acrylic mirror cannot be die cut, but can be router, saw, or laser cut.
9. Materials should be stored in a cool, dry area. Acrylic sheets will warp if exposed to variable temperatures. Changing humidity levels cause the greatest variation. Material should be stored flat and overwrapped with plastic to minimise absorption of water vapour.
10. Check peripheral areas for suitability before cutting.
11. Protective masking should not be removed until fabrication is complete. Exercise care during fabrication and handling of both sides of mirror.
12. Do not use in shower doors, window applications or rooms where humidity could cause the thermoplastic sheet to expand or contract.
13. These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale.
14. Acrylic mirror can intensify and concentrate the sun's rays and, like a magnifying lens, generate focussed heat spots. Care should be taken when positioning near to combustible materials

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PRODUCT ADVANTAGES OF MIRRORWORLD'S PLASKOLITE MIRRORED ACRYLIC

Reflectivity Approximately 85-90% over the 400-700 nanometer visual light spectrum.

Lightweight Less than one half the weight of glass in the same size and thickness.

Break Resistance Can be ten times more break resistant and has seventeen times greater impact resistance than glass of equal thickness.

Heat Will tolerate continuous service up to 1600 F, and can withstand occasional short-term exposure up to 1900 F.

Easy Fabrication - Various shapes and sizes can be obtained by cutting with conventional power saws and routers, using the proper blades and cutters. Mirrored acrylic can be cold bent for curved shapes or strip heated for a sharp bend. State-of-art laser systems can produce accurate, complex designs.

Economical Low fabrication and installation costs.

Quality Highly reflective surfaces for use in display, decoration, or other mirror applications.

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HANDLING

All Mirrorworld's Plaskolite mirrored sheets are furnished with a protective masking on the top side of the sheet. Do not slide mirror sheets when transporting. The masking should be left on the sheet during storage and fabrication to prevent damage.

The mirror is shipped in "ready-to-store" condition. Keep away from excessive heat, paint overspray and vapors from solvents and other chemicals.

The materials should be stored in a clean, dry, 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 100 from the vertical. A-frame racks made of plywood can be made to give full support to the materials.

Horizontal Storage: If the acrylic 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 slipping during movement. Preventing chips or dirt from settling between the sheets will 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.

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MAINTENANCE

Masking: Each mirrored product is well protected by a durable paint backing and a removable masking on the front. Care should be taken to protect both surfaces of the material from scratches.

Plastic 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 dish soap, water and a soft cloth to wipe the surface, apply only light pressure. To remove grease, oil, or tar deposits on the material, use hexane, kerosene or aliphatic naphtha 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 mirrorized sheets.

Polishing: A surface gloss can be maintained by occasionally using a flannel cloth and good plastic cleanser or polish, such as Johnson's Pledge. Follow the instructions for polishing on the container.

Removing Fine scratches can be removed by hand polishing with a plastic scratch remover or Surface Scratches: compound cleaner. Remove all residue and polish with a flannel cloth. Deep scratches need to be lightly sanded, using a 400 grit "wet or dry" sandpaper.

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CUTTING

Scribing and Breaking:

This method is used to achieve a quick, straight line cut of single sheets of Plaskolite acrylic mirror less than 3mm thick. Mark the line to be scribed (scored) on the Plaskolite mirror with a commercial scribe. Firmly place a straight edge along the line and use it as a guideline for the scribe or knife. Scribe the mirror along the line using several firm, evenly pressured strokes. Then, overhand the end of the mirror off the work table. Break the mirror with sharp downward pressure,*

Circular Table and Panel Saw Cutting:

These saws are used to achieve a precise, straight line cut of one or more sheets of Plaskolite mirror. Because vibration is minimal, this method of cutting is recommended. The best way to avoid vibration and unwanted runout is to install a stiffener 1/2 to 2/3 the saw blade diameter and mount it against the outside of the blade. To prevent back cutting, the saw arbor, the saw table and the table fence must be properly aligned. Also, the throat plate (table kerf) must be kept to a minimum. A 10", 80 tooth carbide tipped blade is recommended for all-purpose cutting. The blade's teeth should be the triple-chip design, where every other tooth has a beveled cutting edge to help clear away saw chips,. For best results, the teeth should have a clearance angle of 10 to 15". Material should be cut with masked side down. Any paper interleaf should be kept intact between sheets to protect paint back coat during cutting. Use enough power to make the needed cuts, using a smooth and even feed rate. Uneven feed rates may produce gumming or chipping of the mirror.*

Saber Saw Cutting:

Saber saws are generally used for cuts involving a frequent change in direction. Maintaining adequate support is important to prevent vibration which may cause chipping. To achieve this, clamp a straight board on the sheet near the cutting line. This may also be used as a saw guide. Set the saw to full speed before cutting the mirror. Without feeding too fast, press the saw shoe firmly against the mirror while cutting." Blades for saber saws should have at least 14 teeth per

inch.

Jig Saw

Cutting: Jig saws should be used primarily for inside cuts and intricate letters. Since the stroke is short, the blade heats up quickly and tends to soften and fuse the mirror. To avoid this, use a fast and steady feed rate." Blades for jig saws should have at least 14 teeth per inch.

Band Saw

Cutting: Band saws are used for cutting curved sections or trimming thermoformed parts." Blades for band saws should have at least 10 teeth per inch.

Laser Cutting:

Lasers may be used to cut virtually any image on a mirror with minimal material waste. The CO2 laser operates by focusing a large amount of energy on a small defined area and melting and vaporizing the material. It produces a clean, polished edge without any saw chips. An average of 200 inches per minute may be accomplished by using about 200 watts from a 1200 watt laser. Annealing the sheet is recommended after cutting, especially when cementing is anticipated. Caution: lasers can create stresses along cut areas. Be sure to use a test piece before fabrication.

*CAUTION: A cool air mist should be in contact with the blades of all cutting devices before and during penetration of the plastic.

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ROUTING

Many routers are available for use in the fabrication process. The router should have a minimum of one horsepower and a no load speed of about 20,000 RPM. Routers are normally used with a single or double fluted bit, but may consist of one to four flutes. Router bits can be carbide tipped, high-speed steel, solid carbide, or diamond tipped. They may be one piece piloted, non-piloted, straight cutting, multiple part, forming or speciality bits."

Hand Routing: A hand router is generally used when making a prototype or a replacement part, by using a precut template pattern clamped to the mirror, the hand held router may be smoothly guided around the pattern. Move clamps whenever necessary."

Circle Routing: A circle router would be used when a 3600 piece of Plaskolite mirror is needed."

Pin Routing: Pin routers are very flexible. A double-backed tape or vacuum holds the mirror in place. Using the mounted overarm router to hold the cutter over a guide pin in the table, feed the mirror and pattern into the cutter and rotate 3600 to form finished product."

Contour Routing: By using a contour jig on a pin routing machine, multiple parts can be manufactured. Cut the desired pattern on the base of the jig to follow the base guide pin. To secure several mirrors at one time, clamps should be mounted on the top of the work. Be sure to raise and lower clamp holders as necessary when the jig is rotated."

CNC Routing: CNC routers are used in the manufacture of high volume production. This type of router is designed for maximum use of the Plaskolite mirror. Mirrors may be designed for stacking which eliminates much of the waste normally produced."

Direction of Travel: This router is designed to rotate counterclockwise for external cuts, and clockwise for routing the inside edges of the mirror. When properly fed in the direction necessary, a smooth cut will result.

When operating a router, several precautions are necessary to avoid mistakes to the mirror

or the tool in use. First routers are designed with a small diameter and must be operated at high speeds. Avoid vibrations, even the slightest vibration can cause crazing and fractures in the mirror during routing. Second, watch RPM speeds, higher RPM rates allow for faster feeding of the mirror, resulting in a smoother finish. Recommended RPM speeds are 18,000 to 28,000 RPM. Third, for maximum production, operate the feed rate just below chipping speed. Do not overload the motor. Fourth, maintaining a sharp cutter is very important to avoid chipping and decreased production. Finally, use a 1/2" or larger diameter cutter whenever possible, this larger diameter provides a better surface with less tendency to chip."

***CAUTION:** A cool air mist should be in contact with the blades of all cutting devices before and during penetration of the plastic.

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DRILLING

Mirrorworld's acrylic mirrors may be easily drilled with any commercial power-driven drill available. (Included are: Portable drills, drill presses, lathes, or automatic multiple-spindle drilling units.)

Before drilling a hole in a mirror, it is recommended to use a bit offered especially for plastics. If a drill bit for plastics is not available, a metal-working drill bit with a high-speed twist may be used with some modification.

Since metal-working drill bits are designed to push through metal the following modifications must be made to ensure no chipping or other damage to the mirror:

1. The tip angle is usually about 120°, this is too flat to cut through Plaskolite mirror products without damage and must be ground to a sharp angle of 60-90° to allow the bit to enter and exit easily without chipping.
2. The cutting edge must be ground to a rake angle of 0-40°. This "flat" cutting edge will scrape the Plaskolite mirror without gouging it.
3. The surface behind the cutting edge must be ground away to clearance angles of 12-15°. This will allow back relief for reduced metal to plastic contact and heat build-up.

Drill bits with tips larger than 5/8" should be ground to a point to reduce the amount of force required to start a hole. Drill bits must be true, or melting, burning and chipping may occur. Correctly modified drill bits will create two

continuous spiral strips as the bit passes evenly through the mirror, when operated at the proper speed. When drilling the actual mirror it would be wise to back up the surface with a durable surface, such as plywood, so the drill bit will continue into a solid material, this will prevent chipping on the opposite side of the mirror. A slow feed rate should be used when the bit enters or exits the mirror. Holes of 1" or more may be cut with a circle cutter. To accommodate the material properties of mirror, the cutter bit must be modified so the tip scrapes the material without gouging it. Use a cool air mist system to avoid heat build up, leaving the walls of the hole with a smoother cutting edge. Use a drill press for uniform pressure and constant vertical positioning.

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EDGE AND SURFACE FINISHING

The extent of finishing needed to produce a smooth, transparent edge is based upon the quality of the cutting tool

used to machine the edge. A properly designed cutting tool with a sharp cutter will reduce the amount of finishing needed. Finishing is also reduced when a spray coolant is used along with the cutting tool to reduce excess heat build-up.

Polishing: A polished edge is the best possible finished edge, but requires the most preparation. Prior sanding is necessary if the edge is shaped from a saw-cut, sanding is not necessary when there is a well milled edge. A jointer, shaper, or hand-scraped edge can be used in place of sanding. A stationary polishing head produces the best polished surface. Bleached muslin wheels with a diameter of 8" to 14" with bias strips is recommended. This gives the buffing wheel a pleated appearance, and runs cooler than a stitched buffing wheel design and will also do a fast job.

Polishing Compounds: The finished quality of the polished edge is determined by the polishing compound used. To produce a high luster finish, the use of a fast cutting compound first will remove all sanding marks, followed by a high luster compound for the final buffing. To achieve a fairly good finish in one operation, a medium cutting compound would be best.

Polishing Surface: Prior sanding is not necessary when the scratches or machining marks are not too deep. A surface polishing wheel should be from 6" to 12" in diameter, built up to a width for 1 1/2" to 2". For the initial polish, use a soft, bleached muslin wheel, followed by a soft flannel wheel for the finishing.

Depending on the depth of the scratches, use a medium-course polishing compound or a fine compound.

Be sure to keep the mirror in motion at all times during the polishing procedure.

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CHEMICAL RESISTANCE

Like all plastic materials, Plaskolite mirrored acrylic will react when exposed to many chemicals. Below is a partial list

of chemicals known to react with Plaskolite acrylic mirror, exposure to them should be avoided, Factors such as fabrication stresses, exposure to loads or changing temperatures and the method of application can all influence the possible reaction. In all cases, dry chemicals or solvents should not be used.

KNOWN CHEMICALS THAT ATTACK PLASKOLITE MIRRORED ACRYLIC:

BENZENE	ETHYL ALCOHOL
LACQUER THINNERS	KETONES
ESTERS	METHYL ALCOHOL
CARBON	
TETRACHLORIDE	ETHERS
TOLUENE	

WEATHER RESISTANCE

Mirror products, although not generally recommended for exterior use, can be carefully used in outside applications.

It is important to seal perimeter with silicon sealant to keep moisture out and protect mirror paint backing.

We recommend the use of Mirror Mate (solvent free) adhesive for sealing. Salt spray can also begin to degrade mirror.

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CEMENTING

Mirrored acrylic is a reflective film 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 reflected image.

For best results, mirrored sheets should be mounted to a smooth, rigid, sturdy flat backing such as 5/8" or 3/4" plywood. The surface should be coated with a high quality paint or sealant to cover pockets and seal out moisture.

The entire surface should then be covered, according to manufacturer's instructions, with a mastic or another type of Solvent cementing 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 mirrored acrylic 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 mirrored acrylic 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 backcoat. Adhesives with solvents should not be used.

We recommend using Mirror Mate (solvent free) adhesive for gluing to common substrates (eg timber, brick, plaster)

MIRROR BENDING

Line or strip bending is best accomplished by applying an intense narrow band of heat approximately 3mm away from the mirror substrate. 1.15mm nichrome (nickle-chrome) resistance wire is a commonly used heating element.

- Place the mirror face toward the heating element. Do not attempt to heat the paint side. Doing so will prolong heating times and cause blushing, a dulling of the mirrors reflective finish.
- Adjust your power source so that the wire becomes a medium to bright red color.
- Peel all masking several inches away from the bend area. Masking left in place, either poly or paper, will increase heating time and yield poor results.
- Acrylic will become bendable at 143 degrees C to 163 degrees C. Bending should be done at the coldest possible temperature requiring gentle force to make the bend. 3mm mirror should become pliable enough to bend within 20 to 25 seconds.
- Timing is critical. Under heating will cause warpage along the bend line and undue stress which may lead to cracking. Overheating will cause blushing.
- Cooling should be done as quickly as possible by air circulation.

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FLAMMABILITY INFORMATION

Acrylic mirrored sheet is a combustible thermoplastic. Precautions normally used to protect wood and other combustibles from flame and high heat, should be observed with this material. It is recommended that appropriate building codes be followed to ensure proper and safe use.

IMPORTANT NOTICE: Careless handling of the product can result in injury. The same precautions should be exercised when using acrylic mirror that are taken when fabricating glass, plastic, or wood to prevent accident or ingestion.

CONSULTATION & ADVICE

We have many years of experience working with mirrored acrylic in a multitude of varied applications. We cannot guarantee that we will always have a solution to a particular problem, but our working knowledge is quite extensive and available to you without cost.

Cutting To Size: Cost Savings can sometimes be realised by using our "cut to size mirrors found at <http://www.mirrorworld.co.uk/catalogue/precutacrylicmirror.asp> We have both the skilled people and precision equipment to meet your needs.

This manual is a general guide for working with MIRRORWORLD'S PLASKOLITE FABBACK® acrylic mirror, polycarbonate and PETG mirror sheet products. Because actual results vary with differences in operating conditions, thickness, color and composition of the mirror sheet, nothing contained herein can be construed as a warranty that mirrors will perform in accordance with these general guidelines.

Importance Notice: Our recommendations, if any, for the use of this product are based on tests believed to be reliable. The greatest care is exercised in the selection of raw materials and in the manufacturing operations. However, since the use of this product is beyond the control of the manufacturer, no guarantee or warranty expressed or implied is made as to such use or effects incidental to such use, handling or possession of the results to be obtained, whether in accordance with the directions or claimed so to be. The manufacturer expressly disclaims responsibility therefore. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing laws and/or patents covering any material or use.

DISCLAIMER This product sheet does not constitute an offer to sell by Company. The Company sells ONLY under its current Terms and Conditions of Sale which appear on its acknowledgments and invoices. A current copy of the Company's Terms and Conditions of Sale will be supplied upon request. The details provided are believed to be accurate at the time of publication; however, no description is a warranty that the product is suitable for any particular application. THE COMPANY MAKES NO WARRANTIES, AND UNDERTAKES AND ACCEPTS NO LIABILITIES, EXCEPT ONLY AS SET FORTH IN ITS CURRENT TERMS AND CONDITIONS OF SALE.

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PRODUCT COMPONENTS

COMPONENTS CAS REG. NO. WEIGHT (%)

1. Polymethyl methacrylate (PMMA) 9010-88-2 98.0 (MIN)
2. Methyl methacrylate (MMA) 80-62-6 0.5 (MAX)
3. Aluminum 7429-90-5 0.1 (MAX)
4. Paint 1.5

3. PHYSICAL PROPERTIES

Appearance: Solid mirrored sheet

Odor: N/A

Viscosity: N/A

Melting Point: 150° C/300° F

Boiling Point: N/A

Vapor Pressure: N/A

Vapor Density: N/A (Air =1)

Specific Gravity: 1.19 (Water =1)

pH: N/A

Solubility in Water: Negligible
Volatility: Negligible (Weight %)
Evaporation Rate: Negligible (Butyl Acetate = 1)

4. FIRE AND EXPLOSION HAZARD INFORMATION

Flash Point: N/A
Auto Ignition Temperature: 445° C/833° F
Upper Explosion Limit (%): N/A
Lower Explosion Limit (%): N/A
Extinguishing Media: Carbon dioxide, dry chemical, or water.
Fire Protection Equipment: Wear self-contained, positive pressure breathing apparatus (MSHA/NIOSH approved, or equivalent) and full protective gear.
Unusual Fire and Explosion Hazard:
Product is combustible thermoplastic material that burns vigorously with intense heat.

5. WORKPLACE EXPOSURE LIMITS

OSHA ACGIH COMPONENTS PEL STEL TLV STEL

1. PMMA None None None None
2. MMA 100 ppm None 100 ppm None
3. Aluminum
- Total 15 mg/m³ None 10 mg/m³ None
- Respirable 5 mg/m³ None None None
4. Paint None None None None
5. Nuisance dusts (as particulates)
5 mg/m³ None 10 mg/m³ None MMA: 100 ppm = 410 mg/m³

6. HAZARD INFORMATION

Hazard Scale: 0 = Insignificant, 1 = Slight, 2 = Moderate, 3 = High, 4 = Extreme
Health Designation: 1
Fire Designation: 1
Reactivity Designation: 0
Inhalation: Inhalation of vapors from heated product can cause nausea, headache, dizziness as well as irritation of lungs, nose, and throat. headache, dizziness as well as irritation of lungs, nose, and throat.
Eye Contact: Vapors from heated product can irritate the eyes.
Ingestion: Low hazard associated with normal conditions.
Skin Contact: Possible skin irritation. Contact with molten material can result in burns.
Carcinogenicity: N/A

7. EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Move subject to fresh air.
Eye Contact: Flush eyes with plenty of water for at least 15 minutes. Call a doctor.
Ingestion: This material is not expected to be absorbed within the gastrointestinal tract, so induction of vomiting should not be necessary.
Skin Contact: If molten material contacts skin, cool rapidly with cold water and obtain medical attention for thermal burn.

8. REACTIVITY INFORMATION

Stability: Stable
Conditions to Avoid: Temperatures over 300° C/570° F.
Hazardous Decomposition
Products:
Thermal decomposition or combustion may emit vapors, carbon monoxide, or carbon dioxide.
Incompatible Compounds: Acids, bases, and strong oxidizing agents.

9. SPILL OR LEAK INFORMATION

Sweep or scoop up and remove.

10. WASTE DISPOSAL

Landfill or incinerate at a facility that complies with local, state and federal regulations.

11. EXPOSURE CONTROLS/PERSONAL PROTECTION MEASURES

Respiratory Protection: None required under normal conditions. See Section 12. Hand Protection: Canvas or cotton gloves.

Eye Protection: Safety glasses with side shields (ANSI Z87.1 equivalent).

Other Protection: N/A

Ventilation: Local exhaust ventilation systems should be constructed and installed in accordance with ANSI Z9.2 or ACGIH guidelines to control potential emissions near the source.

12. STORAGE AND HANDLING INFORMATION

Maximum Storage Temperature: 99° C/210° F (softening temperature).

Storage Measures: If material is stored under ambient temperature conditions, it is not hazardous. However, extensive storing at higher than the maximum temperature will emit vapors, carbon monoxide or carbon dioxide.

Handling Measures: Processing of the material under high temperatures will cause hazardous emissions of vapors, carbon monoxide or carbon dioxide.

Blower collecting and local exhaust ventilation systems should be installed to prevent contaminant dispersion into the air. Sawing of this product generates particulates regulated as "inert" or "nuisance" dusts. To minimize dust emissions, engineering controls should be employed, such as baghouse filters and cyclone separators.

13. REGULATORY INFORMATION

This material is manufactured in the USA in accordance with the Environment Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):

Under section 102(a) of the Act, this product is NOT designated as hazardous. In addition, no reportable quantities and no notification requirements to the National Response Center in Washington, DC are set forth for its release from a vessel, an offshore or an onshore facility (40 CFR Part 302).

Resource Conservation and Recovery Act (RCRA):

When this product becomes a waste, it is identified as solid but NOT hazardous waste under RCRA criteria (40 CFR Part 261). Toxic Substances Control Act (TSCA):

The components of this product are on the TSCA inventory list. Any impurities present in this product are exempt from listing.

Superfund Amendment and Reauthorization Act of 1986 (SARA) Title III:

This product may be considered an immediate (acute) health hazard due to potential MMA emissions. However, reporting of thresholds for the material is not required because the concentration of its MMA component is below the de minimis concentration (40 CFR Part 370).

Transportation

DOT Hazard Class: Not regulated.

DOT Shipping Name: N/A

Labor Awareness

This product as supplied is non-hazardous under the OSHA Hazard Communication Standard (29 CFR 1910.1200). However, under processing conditions it may become a health hazard to employees because vapors and/or particulates could be released. See Section 12 for Storage and Handling Information.

14. GLOSSARY

ACGIH American Conference of Governmental Industrial Hygienists

CFR Code of Federal Regulations

DOT United States Department of Transportation

mg/m³ milligrams per cubic meter (concentration)

MMA Methyl methacrylate

MSHA Mine Safety and Health Administration

N/A Not Applicable or Not Available

NIOSH National Institute for Occupational Safety and Health

OSHA Occupational Safety and Health Administration (Department of Labor)

PEL Permissible Exposure Limit (time-weighted average)

PMMA Polymethyl methacrylate

ppm parts per million (concentration)

STEL Short-Term Exposure Limit (15-minute)

TLV Threshold Limit Value (time-weighted average)

The information presented herein is believed to be factual and reliable. It is offered in good faith, but without guarantee, since conditions and methods for the use of our products are beyond our control. We recommend that

the prospective user determine the suitability of our products and these suggestions before adopting them on a commercial scale.

Please direct comments and questions to MirrorWorld at sales@mirrorworld.co.uk

MIRROR ACRYLIC SHEET PROPERTIES

Physical Properties	ASTM Test Method	Units	Values
Specific Gravity	D-792		1.19
Optical Refractive Index	D-542		1.49
Light Transmittance Total Haze	D-1003	% %	92 2
Sound Transmission	E 90 E 413	db	27
Water Absorption	D-570	% By Weight	0.40
Shrinkage	D-702	% Shrinkage	<5%

Mechanical			
Tensile Strength - Max. Tensile Elongation - Max. Tensile Modulus of Elasticity	D-638	psi % psi	11,030 5.8 490,000
Flexural Strength - Max. Flexural Modulus of Elasticity	D-790	psi psi	17,000 490,000
Izod Impact Strength - Molded Notch Izod Impact Strength - Milled Notch	D-256	ft-lb/in Notch ft-lb/in Notch	0.4 0.28
Tensile Impact Strength	D-1822	ft-lb/in ²	20
Abrasion Resistance Change in Haze 0 cycles 10 cycles 50 cycles 200 cycles	D-1044	Haze, % Haze, % Haze, % Haze, %	0 11.2 24.0 24.9
Rockwell Hardness	D-785		M-95

Thermal	ASTM Test Method	Units	Values
Maximum Continuous Service Temperature		°F	170-190
Softening Temperature		°F	210-220
Deflection Temperature 264 psi 66 psi	D-648	°F °F	203 207
Coefficient of Thermal -30 to 30°C	D-696	in/(in-°F)	2.3
Flammability	D-635	(hr-ft ² -°F) in/minute	1.019
Smoke Density Rating	D-2843	%	3.4
Self-Ignition Temperature	D-1929	°F	833
Flame Spread Index	E-84		115

Chemical			
Critical Crazing Stress to: Isopropyl Alcohol Lacquer Thinner Toluene Solvesso 100	modification of MIL-P-6997	psi psi psi psi	900 500 1,300 1,600

Mirror products are not recommended for glazing but may carefully be used for outdoor applications. Please note that the product life may significantly be reduced and physical affected when used externally.

Acrylic mirror can intensify and concentrate the sun's rays and like a magnifying lens, generated focussed heat spots. Care should be taken when positioning the mirror near combustible materials. These suggestions and date are based on information supplied by the manufacture that we believe to be reliable. They are in good faith, but without guarantee, as conditions and methods of use are beyond our control. We suggest that the prospective user determine the suitability of our materials and suggestions before adopting them.