

ACRYLITE® LED sign grade chrome Extruded Sheet



ACRYLITE® LED sign grade chrome

ACRYLITE® LED sign grade chrome is a thermoplastic sheet developed specifically for the sign industry. It is based on ACRYLITE® LED sign grade substrate sheet with a chrome treated surface. The ACRYLITE® LED sign grade substrate is produced utilizing innovative polymers and the same proprietary technology used when manufacturing ACRYLITE® extruded sheet. ACRYLITE® LED sign grade chrome combines light weight and high optical quality with outstanding ease of fabrication. It has 10x greater impact strength than standard acrylic sheet.

Characteristics

Specifically designed for the sign industry, ACRYLITE® LED sign grade chrome is ideal for use in thermoformed signs, as well as in channel letters. ACRYLITE® LED sign grade chrome offers the look of chromed acrylic with the impact strength required for fabrication, handling, shipping and sign installation.

ACRYLITE® LED sign grade chrome is a versatile thermoplastic sheet that is rigid, tough, lightweight, and offers ease of fabrication and machining. Fabrication operations such as cutting, routing, laser cutting, drilling, and thermoforming can be performed on ACRYLITE® LED sign grade chrome.

Product Specifications

Color	Color Number	Appearance	Size	Thickness	Transmission
Colorless	ORA65 CHR	Chrome	48" X 96" 51" X 100"	.118" (3mm) .177" (4.5mm)	5%

NOTE: The 51" sheet will have 48-49" of chrome coverage. The 48" sheet will have essentially full coverage.

Custom thicknesses, sizes, and colors (such as white) are available upon request.

Masking: All sheets are protected with poly masking on both sides. The masking on the chromed side is specially designed for protecting that surface during thermoforming.

Impact Strength

ACRYLITE® LED sign grade chrome is a modified acrylic sheet with much higher impact strength than glass or standard acrylic sheet (testing per ASTM D 5420). The base sheet is our ACRYLITE® LED sign grade and it's a great choice for applications such as signage that demand high impact strength.

Lightweight

ACRYLITE® LED sign grade chrome weighs about half as much as glass.

Rigidity

ACRYLITE® LED sign grade chrome is more rigid than many other plastics including polycarbonate, co-polyester and vinyl.

ACRYLITE® LED sign grade chrome Extruded Sheet

ACRYLITE®

Weather Resistance

ACRYLITE® LED sign grade chrome offers excellent weatherability. It will withstand most outdoor conditions for several years without significant deterioration of clarity, color or physical properties. Actual results will vary due to differences in exposure to sunlight, moisture, heat and environmental pollutants.

Strength and Stresses

Tensile strength of ACRYLITE® LED sign grade chrome is 8,800 psi at room temperature (ASTM D 638). Continuous loads well below 8,800 psi will lead to stress crazing and eventual failure. For applications subject to continuous loadings, the design should allow for a load that will not exceed 600 psi at 23 °C (73 °F).

Expansion and Contraction

Like most other plastics, ACRYLITE® LED sign grade chrome will expand and contract due to temperature changes. Its co-efficient of thermal expansion is about three times greater than that of metal and about eight times greater than that of glass. The fabricator must be aware of this and make appropriate provisions. A 48" panel will expand and contract approximately 0.002" for each °F change in temperature. In outdoor use, where summer and winter conditions differ as much as 100 °F, a 48" sheet will expand and contract approximately 1/4".

Heat Resistance

ACRYLITE® LED sign grade chrome can be used at temperatures up to 160 °F. When the colorless base sheet is exposed to temperature extremes, as in the case of thermoforming, it will take on a white, translucent appearance. Once the sheet returns to room temperature, it will return to its original, high light transmitting clarity. Typical outdoor temperature variations encountered in use will cause little or no visible changes in the material's appearance.

Light Transmission

ACRYLITE® LED sign grade chrome is not fully opaque, it has a light transmittance of about 5%. This makes it suitable for applications such as backlit signage.

Cutting & Machining

ACRYLITE® LED sign grade chrome has outstanding cutting and machining properties and can be cut by a variety of methods. Cutting and machining operations that are used with standard acrylic sheet, such as saw-cutting, routing, laser cutting, and drilling, can be performed on ACRYLITE® LED sign grade chrome. Since it is a laminated product, these operations should be performed such that the sawblade or drill bit enters the sheet on the chrome side, otherwise it may slightly pull the edges of the treated surface away from the base sheet.

Formability

To avoid damaging the treated surface, do not remove the masking protecting the chrome side of the acrylic during the thermoforming process. ACRYLITE® LED sign grade chrome will soften as the temperature is increased above 220°F. As the temperature is increased, the sheet passes through a thermoelastic state to the thermoplastic state. The change is gradual rather than sharply defined. Forming temperatures range from 270°F to 320°F. Because the sheet gradually becomes thermoplastic, certain procedures should be considered during thermoforming. If the sheet is to be hung in an oven, it is necessary to use a continuous clamp rather than several individual clamps. This will prevent permanent deformation of the sheet between the clamps. If the sheet is heated by infrared heaters supported in a horizontal frame, it may be necessary to have control of the heaters positioned over the center of the sheet. This will prevent overheating in the center of the sheet, which could cause an excessive amount of sagging of the sheet. Shrinkage will occur in the machine direction when heating is performed without clamping. Shrinkage will range from 1-5%, depending on the thickness and forming temperature. Expansion can be expected in the cross machine direction. This will range from 0-2%, depending on the thickness and forming temperature.

ACRYLITE® LED sign grade chrome Extruded Sheet

ACRYLITE®

Cementing

Common solvent cements or polymerizable cements will typically attack the chrome surface and noticeably affect its appearance in the area of the joint. If you want to cement an edge of ACRYLITE® LED sign grade chrome to an unlaminated surface, note that the cement may still wick onto the edge of the treated surface and affect its appearance. As with general cementing guidelines, care must be taken to provide a sheet edge that is machined properly and that contains low stress. Avoid cement contact with polished edges.

Annealing

ACRYLITE® LED sign grade chrome may be annealed at 180°F with the heating and cooling times dependent on the thickness of the sheet. An approximate guideline is as follows: annealing time in hours equals the sheet thickness in millimeters, and the cool down period in hours also equals sheet thickness in millimeters.

Flammability

ACRYLITE® LED sign grade chrome is a combustible thermoplastic. Precautions should be taken to protect this material from flames and high heat sources. ACRYLITE® LED sign grade chrome usually burns rapidly to completion if not extinguished.

The products of combustion, if sufficient air is present, include carbon dioxide and water. However, in many fires, sufficient air is not available and toxic carbon monoxide will be formed, as it will when other common combustible materials are burned. We urge good judgement in the use of this versatile material.

Property	ASTM method	Typical Value 3.00 mm Thickness
Mechanical		
Specific Gravity	D 792	1.17
Tensile Strength	D 638	8,900 psi
Elongation, Yield	D 638	4.8%
Modulus of Elasticity (tensile)	D 638	350,000 psi
Flexural Strength	D 790	14,000 psi
Modulus of Elasticity (flexural)	D 790	33,000 psi
Rockwell Hardness (acrylic side)	D 785	70 "M" scale
Impact Strength Izod milled notch	D 256	0.63 lbs/in of notch
Gardner Impact (B)	D 5420	20 in-lbs
Instrumented Dart	D 3763	4.6 ft. lbs (total energy)
Optical		
Light Transmission	D 1003	4%
Thermal		
Forming temperature	-	270-320 °F (135-160 °C)
Deflection Temperature Under Load, 264 psi	D 648	199 °F (93 °C)
Vicat Softening point	D 1525	223 °F (106 °C)
Maximum Recommended Service Temperature	-	160 °F (71 °C)
Coefficient of Linear Thermal Expansion	D 626	.00004 in/in °F
Water Absorption		
24 hours at 73°F	D 570	0.3%

Roehm America LLC
Acrylic Products

1796 Main Street
Sanford, ME 04073
USA

www.acrylite.co
www.roehm.com

1-855-202-7467
info@acrylite.co

Röhm GmbH and its affiliates are a worldwide manufacturer of PMMA products sold under the PLEXIGLAS® trademark on the European, Asian, African and Australian continents and under the ACRYLITE® trademark in the Americas.

Fire Precautions

ACRYLITE® sheet is a combustible thermoplastic. Precautions should be taken to protect this material from flames and high heat sources. ACRYLITE® sheet usually burns rapidly to completion if not extinguished. The products of combustion, if sufficient air is present, are carbon dioxide and water. However, in many fires sufficient air will not be available and toxic carbon monoxide will be formed, as it will when other common combustible materials are burned. We urge good judgement in the use of this versatile material and recommend that building codes be followed carefully to assure it is used properly.

Compatibility

Like other plastic materials, ACRYLITE® sheet is subject to crazing, cracking or discoloration if brought into contact with incompatible materials. These materials may include cleaners, polishes, adhesives, sealants, gasketing or packaging materials, cutting emulsions, etc. See the Tech Briefs in this series for more information, or contact your ACRYLITE® sheet Distributor for information on a specific product.

This information and all further technical advice is based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether expressed or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technical progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products should be used.