

# PERFORMANCE PLASTICS

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## PLASTICS FABRICATION IN SIGNAGE APPLICATIONS



# SELECTING A SUBSTRATE FOR HIGH-END PERMANENT SIGN FACES

## FABRICATION IN SIGNAGE

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It's no secret that the number of choices can be overwhelming to even the most educated consumers. Even those looking to select a substrate for their signage needs can easily fall into choice paralysis as there are numerous options. Sign makers can choose from acrylic, polycarbonate, corrugated polypropylene, polyvinyl chloride (PVC), aluminum and more, but the fact is that not all these materials are suitable for cost-effective, quality signage solutions.

However, acrylic has proved its worth to many sign manufacturers in creating quality sign faces over time. Other materials may not be weath- erable, have undesirable surfaces and/or are limited by color or opacity. Below are a few points to consider when choosing an acrylic substrate for cost-effective signage.

### Determine the type of sign

Three common sign types include flat face, thermoformed and push-through. Acrylic can be used in all three types, but different types of acrylic provide unique advantages. Acrylic comes in a number of varieties, which include but are not limited to extruded, cell cast and impact modified extruded (better known as sign grade) acrylic. Each provides benefits that should be considered when it comes to the substrate's fabrication process and life span.

### Consider fabrication requirements

For many sign applications, a big cost component is labor. Therefore, time and money savings in the fabrication process is worth considering when choosing a substrate.



ACRYLITE® LED sign grade white acrylic is backed by a 30-year warranty and is ideal for flat signs.

Routing shapes is common when fabricating flat signs. With up to twice the feed rates of other materials, acrylic can be routed with ease and tends to result in better surface qualities. Flat signs can be customized by picking a color, adding vinyl graphics or screen printing.

For thermoformed signs, there are some significant differences in material properties to consider. On average, acrylic can heat and form twice as fast as other substrates. Unlike other substrates that require heating to temperatures as high as 350°F/176°C, impact modified acrylic can thermoform at lower

temperatures — even as low as 270°F/132°C, reducing cycle times by half in some cases, with lower energy costs. Cell cast and continuous cast acrylic are heated to slightly higher temperatures than extruded acrylic (but less than polycarbonate) and have a higher melt strength at thermoforming temperature while extruded acrylic, with its lower melt strength, provides higher part definition.

Sign makers considering making the switch to acrylic from materials that require higher heat temperatures will likely have no issues, as their heaters should be able to drop to the appropriate lower temperatures that work better and allow for quicker fabrication of acrylic. However, the opposite cannot always be said, as some conventional ovens may not be able to reach the high temperatures necessary to form those substrates. It's always best to consult with experts to determine the exact requirements when dealing with each material.

Acrylic may also reduce thermoforming costs since drying time is rarely necessary. Other substrates may require pre-drying and will bubble if not dried properly, which can take many hours at lower temperatures and require extra ovens.

## SIDEBAR: Minimize Yield Loss

Sign grade acrylic is offered in reel form and can minimize your yield loss. When using reels, you can cut off the exact length needed for each sign without worrying about waste. Additionally, reels come in various widths, including 30" and 39" widths, which are standard sizes for cabinet signs in certain markets.



ACRYLITE® LED sign grade acrylic is available in reels of various widths and impact strengths and is backed by Roehm's warranty.



ACRYLITE® LED sign grade acrylic (SG 65) is a high impact modified acrylic. It's Miami-Dade County Product Control approved. The rigorous product and quality system evaluations carried out by Miami-Dade County Product Control also meet Florida's state-wide requirements for product approval.

### Set weatherability expectations

The necessary durability and weatherability of a sign are critical factors to review when deciding which substrate fits the job best. No matter the type of sign, thinking through the expectations of its life span can help in choosing a substrate.

Unlike other substrates, acrylic will not show signs of weathering and deterioration in its impact strength. Often, other plastics yellow and become hazy after only a few years of UV exposure, even those that have been pre-treated with UV-protection. Acrylic is UV stable and, therefore, is much less susceptible to yellowing over time.

## SIDEBAR: Letter Block Cast Acrylic

“Letter block” cast acrylic is particularly useful for push-through letters and signs as it offers excellent light diffusion, transmission and daytime visibility for letters that pop. Other materials could also be used in this type of application but have thickness limitations. “Letter block” is available in 1.181" thickness which allows backlit letters, shapes and designs to display a significant contrast against an opaque background. While the bright white color is attractive on its own, color can be added either with RGB LED sources or by applying colored vinyl to the face before routing.



ACRYLITE® LED optimized letter block cast acrylic has been optimized to offer maximum transmission and light diffusion while eliminating hot spots and fluctuations in luminance.

Replacing a piece of domestic acrylic produced by a manufacturer that guarantees its product is a simple process and requires no color matching as the old sheets are just as vibrant as the new. This quality keeps signs looking uniform and color consistent for many years.

### Determine strength requirements

Extra durability and impact resistance may be required in specific markets and geographical areas to protect against vandalism or to provide increased weather resistance. The strongest impact-modified acrylic can offer the required protection in these circumstances.

Impact-modified acrylic comes in many different grades with various levels of protection against breakage. You can choose a high, medium or lower impact strength acrylic and save on material costs.

### Conclusion

When considering a substrate, it's important to look beyond the cost of the substrate itself and consider the savings that could be gained through labor, energy efficiency and longevity. Acrylic works well in creating long-lasting quality signs, but depending on the specific needs of the project, one grade may show more advantages over others. An in-depth analysis of the signage project is always recommended to make the best decision.

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# Yellowing Can Be Quite Unsightly...



**ACRYLITE®**  
**30 YEAR**  
**NO YELLOWING**  
**GUARANTEE**

## But You Don't Have to Worry About Premature Yellowing with ACRYLITE® LED Sign Grade Acrylic

Our **30-Year** industry leading **warranty\*** allows customers to buy with confidence. ACRYLITE® LED sign grade acrylic withstands most outdoor conditions for decades without deterioration of color, clarity, or strength.

### Advantages of ACRYLITE® LED sign grade acrylic:

- Up to ~20x stronger than standard acrylic. Available in several impact strengths (SG 30, 45 & 65).
- Reduces labor & energy costs when fabricating.
- Miami-Dade County Product Control Approved. See product listing document for details.
- Available in sheet and reel form.

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Traditionally innovative  
for over **85 years.**



\*Warranty covers ACRYLITE® LED sign grade ORA45, ORA65, WRT30, and WRT31.