

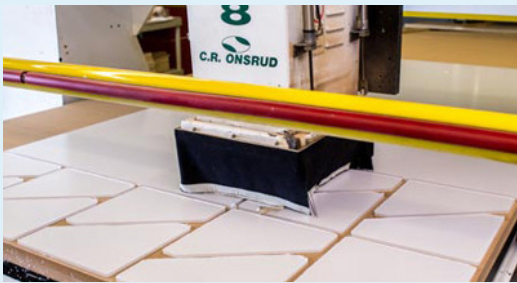
## BUYER'S GUIDE

*High-Precision Plastics Fabrication*



## Introduction

Synthetic polymers, or plastics, have been a staple in product designs since their invention more than 100 years ago. The light weight, durability and alternative to metal substrates make them the go-to choice for OEMs in nearly every industry. With so many plastics in the market today, choosing the right materials and processes to achieve your finished design can be daunting. And if not done accurately, you may be faced with changing your specifications later—a challenge no designer or sourcing expert wants to endure.



When it comes to custom plastic fabrication, there are several factors to consider to ensure you're getting the best possible results. This buyer's guide will walk you through considerations to keep in mind when choosing a fabricator for your product.



## Material Selection and Availability

First, you want to find a supplier with expertise in a variety of plastic types and fabrication methods. Not every plastic is ideal for every application, so having choices can assure your product performs to spec. Additionally, different plastics react differently to various machining methods. For example, some elements of your design may need laser cutting to achieve the desired results, but some plastics can be toxic when exposed to a laser. If your product requires additional hand assembly, you need a fabricator who can complete that task, as well. Further, a material may not be compatible with certain cleaning agents, amount of UV exposure or environments.

A qualified fabricator will understand how different plastics perform when exposed to processing, chemicals, extreme temperatures, etc. They will engage with you to understand how your product will be used, its environment, strength requirements, wear resistance, and the aesthetics you require.

While many companies carry just a handful of plastic types, the quality and performance of your finished product can be compromised by this limitation. To mitigate that risk, look for a supplier that carries more than just the standard acrylic, polycarbonate and PVC materials. This type of supplier will be able to offer you alternate materials that could increase your product's performance, improve production repeatability, or reduce cost.

Finally, be sure to engage a qualified fabricator early in the design process. They will be able to guide you through your design and assist with the proper material selection to get your desired results faster and avoid future complications.



For more design tips, read our **Design Guide for Plastic Fabrication**

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## Custom Finishes

Another important element to consider when selecting a custom plastic fabricator is its ability to create custom finishes for your product. Many of the plastics we see and use every day have a custom finish. We've become so accustomed to seeing a certain type of product in white, for example, that we assume the raw materials must be white. But not so—the resin pellets used to extrude plastic sheeting or tubing come in a range of inherent colors; painting and texturing can be done in-house to achieve a seamless look to an already existing color or texture.

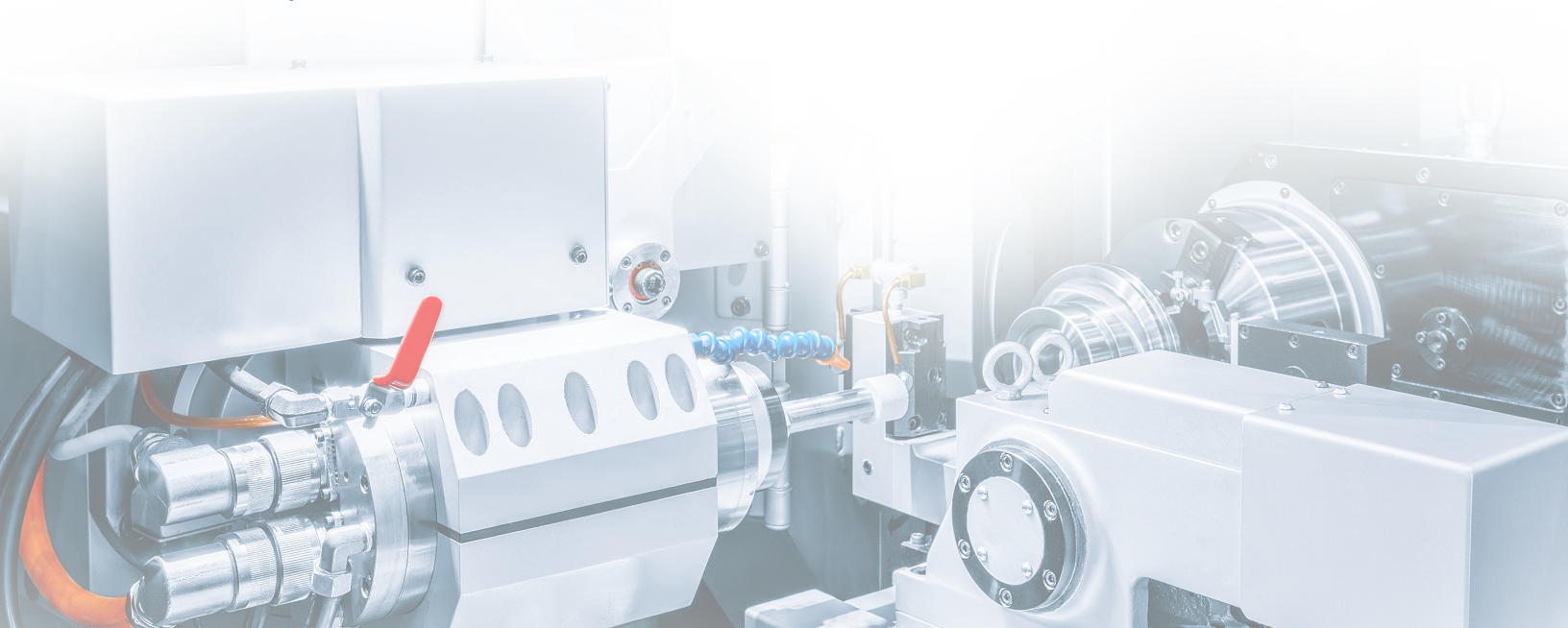
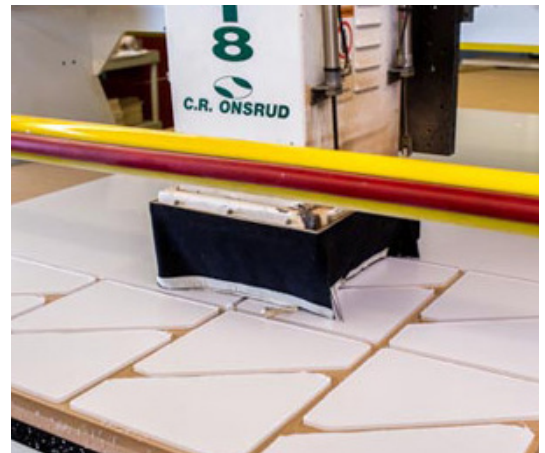
Look for a fabricator who can paint, apply texture, color match, and polish the plastic in-house, so you don't have to job out a portion of your contract manufacturing. The same is true if you want to brand or label your part in any way. A custom fabricator that also engraves or silk-screens plastic can complete the entire project for you, which saves you money and time.



## Fabrication Equipment

You want to work with a fabricator with the latest machine technology. There are three main types of CNC machines used for plastic fabrication: milling machines, lathes, and routers. Milling machines can work on varied materials to create incredibly complex shapes and features. Lathes are most useful when creating cylindrical objects, while routers are well-suited for shaping, carving, and drilling. All this equipment comes in assorted sizes and styles, and using the right equipment for the job ensures the greatest speed, accuracy, and repeatability.

Economies of scale also come into play when your fabricator has more machining capabilities. With the proper equipment in place, your product is made faster and more cost-effectively. If your fabricator is limited to a smaller mill, for example, production time is extended because fewer pieces can be produced simultaneously. Make sure you choose a fabricator that can meet your demand now and in the future.



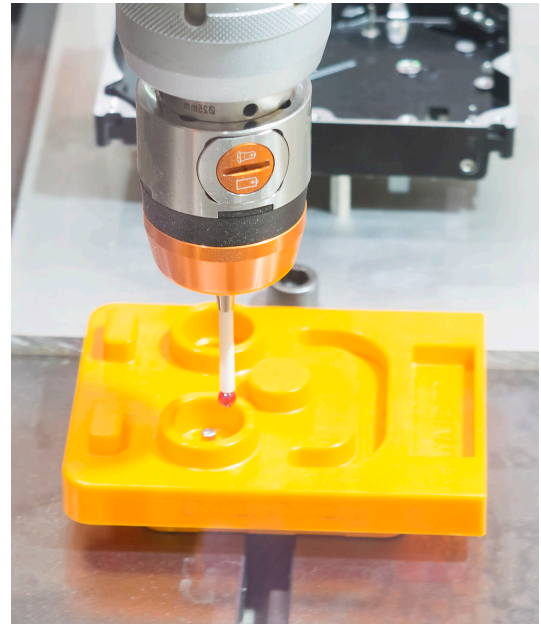
## Quality and Regulatory Requirements

CNC machining is an inherently accurate automation process but requires experienced operators and set-up technicians to maintain compliance with your design parameters. You also need a fabricator with the Quality Management Systems (QMS) to control every step in its production process, so it's repeatable and certified to ISO 9001.

Custom plastic fabrication often involves some sort of hand assembly, as well. If that's the case with your design, ask your supplier about the tenure, training, and certification of its operators and assemblers.

Many industries require BOM traceability, Certificates of Conformance, REACH and RoHS compliances. But even if your application doesn't require such guidelines, knowing that your fabricator can meet them adds the assurance that your product is made to the utmost quality standards.

Inspecting your product before it is shipped is another crucial element of quality. Technology, such as Coordinate Measuring Machines (CMMs), measures an object's geometry after production. CMM inspection guarantees your product is made to your exacting specifications and tolerances. A robust fabricator will have CMM equipment in place and offer First Article Inspections, as well.



## Product Availability and Fabrication Capacity

When hiring any contract manufacturer, the size of its operation, staffing levels, and available manufacturing capacity can make or break your new product introduction.

When searching for a plastics fabricator, first look for one with the raw materials to get your product to market as planned. A custom fabricator with a range of common as well as engineered plastics in stock and who is ready to machine is your best bet for meeting your production scheduling. But your fabricator also needs a reliable supply chain and the vendor relationships required to source the sheeting, tubing, rods, and film needed to meet your demand.

Ask your fabricator about its production capacity, flexibility, and the skill and tenure of its operators and assemblers. With the right equipment, processes, and personnel in place, you'll get your parts on time, which eliminates the risk of a work stoppage on your manufacturing line. And if you need to start with a prototype, choosing a supplier with the ability to scale to your needs is an invaluable asset.

As mentioned before, a qualified custom fabricator will have the knowledge to advise you on alternate materials should the one you specify be temporarily out of price range or unavailable. Finally, ask your supplier to work with you on forecasting and scheduling for on-time delivery.



## Advantages of Reshoring Plastic Fabrication

Managing availability and capacities has become complex during the past few years, as supply chain considerations have rippled through the manufacturing sector. Initially, lower wages and material costs sent many U.S. manufacturing jobs to China and other eastern regions. While some manufacturing powerhouses still rely on their operations in Asia to supply goods to the U.S. and abroad, issues with rising labor costs, high transportation costs, and long lead times are forcing businesses to re-think their global strategies. Reshoring has, thus, become a popular term among OEMs. And there are plenty of reasons why:



### Better Quality Control

Simply put, other countries do not have to meet the regulatory requirements of U.S. manufacturers. Sourcing your plastic fabrication with domestic companies gives you more control and oversight of product quality and easier traceability.



### Shorter Lead Times

Any importer knows that it can take several months to transport goods by ship from Asia. This slows the time it takes for you to get your plastic fabrication and causes lost production time. Using a domestic fabricator reduces your downtime and gets your product in the hands of its consumers faster.



### Lower Landed Cost

The rising cost of freight on imported goods is driving up your total BOM cost. By bringing your plastic fabrications onshore, you reduce those shipping costs. And when your costs are lower, you can be more competitive while also remaining profitable.



### Bringing Jobs Back to America

Supply chain disruptions have many multi-national companies re-thinking their import strategy. Apple, for example, has committed to investing hundreds of millions of dollars to bring more manufacturing back to the U.S., thereby creating tens of thousands of new jobs. Similarly, the semiconductor industry has a broad initiative to build new chip manufacturing facilities in America. That manufacturing growth results in job growth in other sectors as well, such as the service industry, to support these or expanded new employers.



### Made in the USA

As consumers become more aware of the geopolitical and economic influence of offshore manufacturing, they are creating demand for products made in the USA. Products made in the USA are often perceived to be higher quality and build brand loyalty among consumers.



### Improved Communication

Time zones and language barriers can create complications when you need to get a hold of a representative. By onshoring your plastic fabrication, it's easier to get the help you need when you need it.

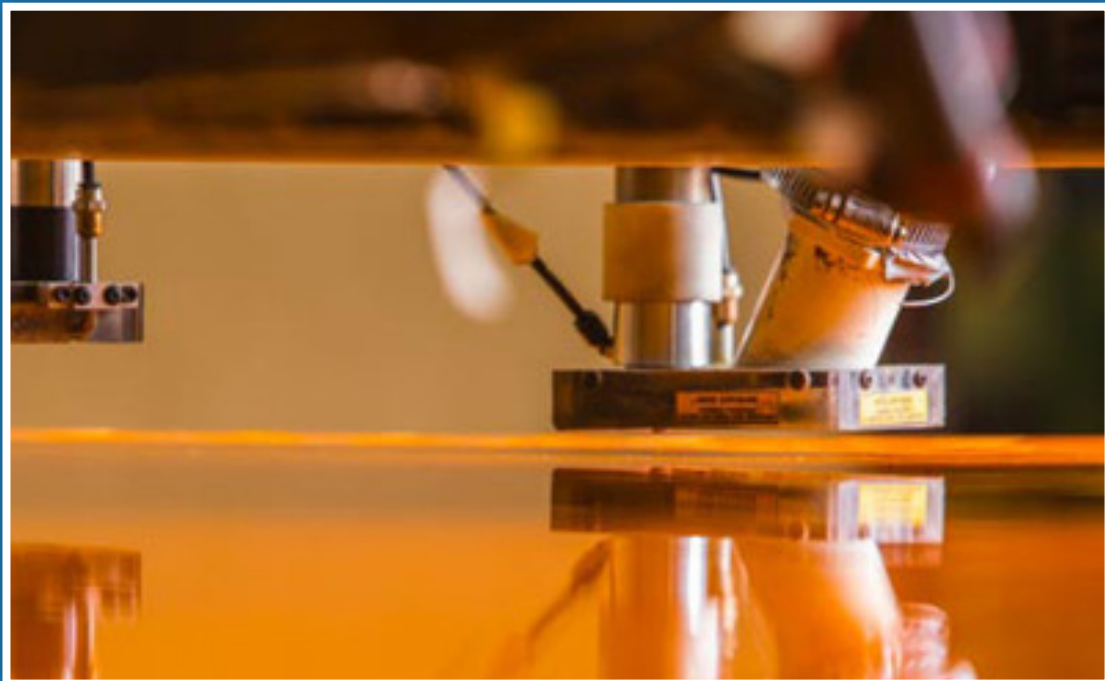
## Why Choose HP Manufacturing for Your Custom Plastics Fabrication?

At HP Manufacturing, we understand the importance of delivering components with the utmost precision and quality. We have more than eight decades of experience serving customers in transportation, industrial equipment, healthcare, aerospace, and retail. We know what it takes to get your product to market quickly while meeting the design and regulatory requirements of each industry we serve.

Our vast range of services means you can get your fabrication needs under one roof without jobbing out certain processes. We implement best practices in Designing for Manufacturability so you can be sure your product is repeatable and cost-effective.

HP's Quality Management System is certified to ISO 9001. Our mechanical and design engineers, applications experts, and assembly technicians are professionally trained, certified, and experienced in a plethora of applications – and partner with you to ensure you get the exact product you need – where and when you need it.

Let us help you with your next plastics fabrication project. Contact an Applications Specialist today.





*Fabrication and distribution of custom  
precision machined plastic components,  
assemblies, and displays.*

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