

HOW TO CHOOSE THE RIGHT ENCLOSURE



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Leading Provider of Cable Management Solutions

TABLE OF CONTENTS

<input type="checkbox"/>	INTRODUCTION	03	<input type="checkbox"/>
<input type="checkbox"/>	TYPES OF ENCLOSURES	04	<input type="checkbox"/>
<input type="checkbox"/>	ENCLOSURE MATERIALS	05	<input type="checkbox"/>
<input type="checkbox"/>	ENCLOSURE APPLICATIONS	07	<input type="checkbox"/>
<input type="checkbox"/>	RATINGS & DEGREES OF PROTECTION	08	<input type="checkbox"/>
<input type="checkbox"/>	ENCLOSURE MARKETS	09	<input type="checkbox"/>
<input type="checkbox"/>	FINDING THE RIGHT SUPPLIER	10	<input type="checkbox"/>



INTRODUCTION

Choosing the right enclosure is essential for protecting vital system components from elements in the environment. Despite the important role enclosures play in ensuring protection and proper performance of controls, enclosure selection is often not given adequate consideration.

Though enclosure selection is often treated as an afterthought, an overall system design can be improved with the right enclosure.

New and enhanced manufacturing features have been designed to protect equipment and save space, while saving on costs. In many cases, assembly complications can be avoided with specific integration services that ensure dependability in your process.

The purpose of this eBook is to guide you in choosing the right enclosure for your specific system or process. Topics discussed include:

- Types of Enclosures
- Enclosure Materials
- Enclosure Applications
- Ratings & Degrees of Protection
- Enclosure Markets
- Finding the Right Enclosure Supplier

As a leading supplier of cable management solutions, Sealcon has extensive experience in providing customers with reliable enclosures. We hope that this guide will assist you in finding the best enclosure solution for your application.



TYPES OF ENCLOSURES

The primary purpose of an enclosure is to protect electrical components that may be vulnerable to environmental elements and conditions. In order to achieve its purpose, an enclosure should be specifically suited to the application.

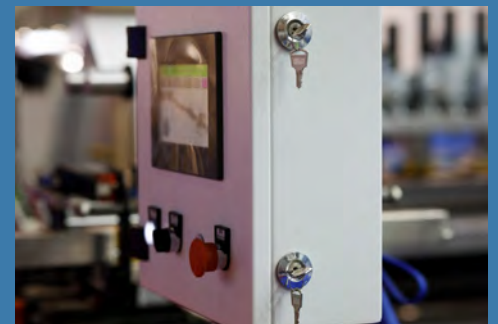


Enclosure selection can be customized for a particular installation by considering the type of construction material used and by the style or configuration of the enclosure. Different materials will provide specific beneficial performance characteristics, such as chemical resistance or the ability to withstand prolonged UV exposure. We will discuss the various enclosure material options available in the next section.

The variety of enclosure styles available has evolved to include an expansive variety of options, well beyond the basic, bulky cabinet-type designs that are typically used.

Today's enclosure styles can be:

- Free-standing or mounted
- Adapted for specific mounting/installation requirements
- Designed to be heavy load-bearing
- Available in a range of sizes to meet space restrictions
- Designed with climate control features
- Accessorized to integrate IoT technologies such as data tracking and sharing
- Made to include security features such as locks or remote monitoring and access



Another difference among enclosure types is that there are standard designs and enclosure designs that are classified as certified. Depending on the application environment and nature of the equipment and components involved, certification may be required to assure safety and compliance. We will talk more about this in an upcoming section.



ENCLOSURE MATERIALS

PLASTICS

POLYCARBONATE

Polycarbonate enclosures are popular for their long-lasting durability. Enclosures made with this material withstand UV light and high-temperature deterioration and display the greatest strength and impact-resistance over their fiberglass and metal counterparts. They also weigh 40% less than fiberglass. If you're in search of a customized enclosure for your specific needs, this material is ideal. Polycarbonate enclosures are easy to machine and cut to your requested specifications. They are suitable for solar, wind, outdoor wireless, and small instruments. Plus, they are EMI-ready, which makes them ideal for radio control applications.



FIBERGLASS

Enclosures made of fiberglass are corrosion and impact-resistant, making them ideal for harsh and high-temperature environments. This lightweight material consists of plastic made with fine glass fibers for increased strength.

Fiberglass can be prone to aesthetic fading over time from long-term exposure to sunlight. If you need a lightweight enclosure that can handle highly corrosive conditions such as water treatment, pharmaceutical, mining, and chemical processing, fiberglass is a good choice.



ENCLOSURE MATERIALS

(CONTINUED)

METALS

STAINLESS STEEL

Stainless steel enclosures are corrosion-resistant and built to carry greater loads than non-metallic enclosures. These enclosures offer the best protection against radio and electromagnetic interference. Due to their strength and heavier weight, these enclosures are well suited for corrosive, high-temperature, hose down conditions in the beverage, oil/gas, water, and wastewater industries. This material is also customizable.



ALUMINUM

A lighter-weight alternative to stainless steel, aluminum enclosures also provide corrosion protection. If your environment requires a minimum weight with corrosion-resistance, this material is your best solution. The lower stiffness of aluminum enclosures means they are easily milled and customized to your specifications.

ENCLOSURE APPLICATIONS

As previously mentioned, enclosures have widely evolved as a product line to include a broad range of applications within a plant or facility. Enclosures are highly customizable and they can be designed for indoor or outdoor use, and to withstand specific environmental conditions.

Factors to consider when selecting an enclosure include:



Need for UV resistance



Plant/factory conditions



Temperature extremes



Resistance to weather elements



Exposure to harsh or abrasive elements



Environmental dust or debris



Any electromagnetic interference



Humidity levels

Any job or production site that involves the use of electronic components and controls benefits from the installation of a top-of-the-line enclosure.

Enclosures are commonly found in the following applications:



Building electrical & telecommunication rooms

Chemical plants



Electric vehicle charging equipment

Manufacturing plants



Mining, oil, & gas facilities

Utilities



RATINGS & DEGREES OF PROTECTION

As mentioned earlier, there are both standard and certified enclosure options available. Applications will often have particular performance standards that enclosures must meet, so certifications are available from agencies such as NEMA (National Electrical Manufacturers Association) and UL (Underwriters Laboratories).

Certification standards are met during testing when an inspector determines if any dust, moisture or other damaging elements have entered the enclosure. If the enclosure performs well against infiltration, it is determined to meet the guidelines.

NEMA / UL-50 TYPE RATINGS

Type 1 – Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.

Type 2 – Indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.

Type 3 – Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust, and damage from external ice formation.

Type 3R – Outdoor use primarily to provide a degree of protection against rain, sleet, and damage from external ice formation.

Type 3S – For use primarily to provide a degree of protection against rain, sleet, windblown dust and to provide for operation of external mechanisms when ice laden.

Type 4 – Indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation.

Type 4X – Indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation.

Type 5 – Indoor use primarily to provide a degree of protection against settling airborne dust, falling dirt, and dripping non-corrosive liquids.

Type 6 – Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, and the entry of water during occasional temporary submersion at a limited depth and damage from external ice formation.

Type 6P – Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth and damage from external ice formation.

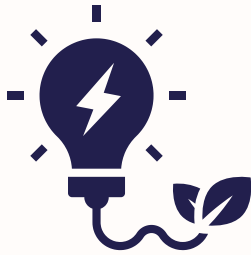
Type 12/12K – Indoor use primarily to provide a degree of protection against circulating dust, falling dirt, and dripping non-corrosive liquids.

Type 13 – Indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolants.

Marine Use – For use in or around marine and coastal environments to provide a degree of protection from corrosion, rain, dust, splashing and hose-directed water, and damage from external ice formation.



ENCLOSURE MARKETS



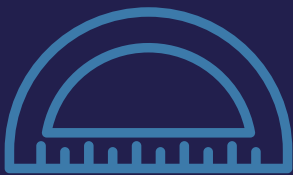
Alternative Energy



Car Wash



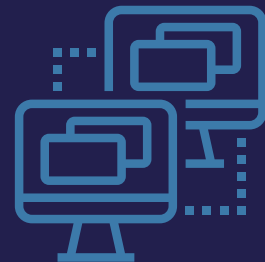
Industrial



Instrumentation



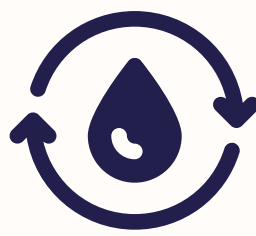
Marine



Remote Monitoring



Telecom



Wastewater



Water/Water Treatment



Wireless

FINDING THE RIGHT SUPPLIER

Choosing the right enclosure begins with finding the right supplier to meet your project needs and guide your enclosure selection.

- Find a supplier that is able to customize your enclosure to fit your needs.
- Don't base your decision on price alone - quality will save you money in the long run.
- Look for a reputable manufacturer that uses superior materials and workmanship.
- Choose a supplier that will be available to provide service and support.

Sealcon offers customers a comprehensive [selection of enclosures](#) to meet specific industry requirements. Sealcon enclosures are UL and IP/NEMA rated and designed for both indoor and outdoor applications.

Available in polycarbonate, fiberglass, and stainless steel, our enclosures are extremely durable and resistant to both heat, chemicals, and electromagnetic interference. Sealcon enclosures are available in a variety of sizes and styles to suit your needs. They are also customizable to match your unique specifications.

Sealcon offers a wide selection of engineered thermoplastic and stainless steel electrical enclosures featuring patented panel suspension systems which allow infinite range of motion of a panel within the enclosure, as well as other unique features.

READY TO CHOOSE YOUR ENCLOSURE?

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Visit us [here](#) or [contact us](#) to discuss your project.
You can also live chat with one of our friendly representatives [here](#).

