



Choosing an Enclosure

GENERAL CONSIDERATIONS Generally, enclosures are intended to protect their contents from outside risks. These risks can be varied in nature and are of extreme importance when choosing an enclosure. In judging whether a particular housing meets the protection requirements of your application, a clear analysis of the environment where the enclosure is to be used should be made.

The following conditions need to be taken into account:

1. Protection against contact with and penetration by foreign bodies;
2. Protection against water ingress;
3. Protection against external or internal radiated noise (RFI Shielding);
4. Chemical resistance;
5. Temperature resistance;
6. Impact resistance;
7. Corrosion resistance.

In electronics/electrical engineering, the functions of enclosures are two-fold:

1. To protect the contents from mechanical risks and radiated noise from the outside.
2. To protect the environment from mechanical and electrical risks, as well as from radiated noise caused by installed components.

With the ever-increasing development of electronic components, the increased packing densities on printed circuit boards, and the increased "contamination" of the environment by electromagnetic interference, electromagnetic compatibility is becoming an issue of growing importance in the choice of an enclosure.

MATERIAL CONSIDERATIONS In most applications, material is a major factor in your choice of an enclosure. In general, aluminum is ideal for EMI/RFI applications; fiberglass is ideal for caustic environments and salt-water applications; polycarbonate is good for all indoor and light outdoor applications; and ABS is well suited for indoor instrumentation designs.

PROTECTION CLASSIFICATIONS Rose and Bopla enclosures are classified under the generally applicable European protection guidelines of EN 60529 and IEC 144. These protection classifications are indicated by a designation consisting of two unchanging letters, IP, plus two digits for the protection grade. Many of the enclosures presented here bear the IP 66 or IP 65 protection classification.

IP 65: Protection against ingress by dust and water jets

IP 66: Protection against ingress by dust and powerful water jets

Specific product lines are classified according to UL 508. These include aluminum, fiberglass, and plastic. Also noted are recommended classification types like NEMA and UL, which are commonly used in the USA. Please contact the appropriate association or agency for complete information regarding test requirements and qualifications. Refer to the Technical Information Chapter in this catalog for more information on [Protection Classifications](#).

TEMPERATURE RESISTANCE The temperature resistance of enclosures is defined as the maximum permanent temperature at which the stability of the shape and the protection classification are maintained. Permissible short-term peak temperatures are often considerably higher.

CORROSION RESISTANCE OF ALUMINUM ENCLOSURES Aluminum enclosures are resistant to corrosion even without a special surface treatment. The use of aluminum alloys with a low copper content increases corrosion resistance. Additional treatments such as irriditing, painting, powder-coating, or a combination of irriditing and painting provide increased corrosion resistance.

IMPACT RESISTANCE Impact resistance is a measurement of the maximum impact that will not affect the protection classification. The breaking strength is often far greater. Impact resistance for Rose and Bopla

enclosures is determined in an impact test to EN 50014.