ENCLOSURES & ACCESSORIES

## The IP and IK classifications

TRIBOX™ enclosures have been tested according to the IEC 60529.These are given an international protection (IP) class of protection in the form of a two digit coding shown in the table below. The IEC 60529 standard entails the “second digit to be tested from class 6 upward”,thus the marking of the two digit means that the test has been made for both the levels.

| FIRST NUMBER<br>Protection against solid objects | | SECOND NUMBER<br>Protection against liquids | | IK CODE<br>Protection against mechanical impacts | |
|---|---|---|---|---|---|
| IP | TEST | IP | TEST | IK | TEST |
| 0 | no protection | 0 | no protection | 00 | no protection |
| 1 | protected against solid objects up to 50 mm e.g. accidental touch by hands. | 1 | protected against vertically falling drops of water. | 01-05 | impact < 1 joule |
| 2 | protected against solid objects up to 12 mm e.g. fingers. | 2 | protected against direct sprays of water up to 15° from the vertical. | 06 | impact 1 joule |
| 3 | protected against solid objects over 2,5 mm (tools+ small wires). | 3 | protected against sprays to 60° from the vertical. | 07 | impact 2 joule |
| 4 | protected against solid objects over 1mm (tools+ small wires). | 4 | protected against water sprayed from all directions - limited ingress permitted. | 08 | impact 5 joule |
| 5 | protected against dust - limited ingress permitted (no harmful deposit). | 5 | protected against low pressure jets of water from all directions - limited ingress permitted. | 09 | impact 10 joule |
| 6 | totally protected against dust. | 6 | protected against strong jets of water e.g. for use on shipdecks - limited ingress permitted. | 10 | impact 20 joule |
| | | 7 | protected against the effects of immersion between 15 cm and 1 m. | | |
| | | 8 | protected against long periods of immersion under pressure. | | |





ENCLOSURES & ACCESSORIES

## Comparison of materials

The following table gives a general idea of the properties of the various materials. For more detailed information on material performance in your specific application environment please consult your local TRIBOX™ representative.

| | PC | ABS | GRP/ FRP |
|---|---|---|---|
| Outdoor use | **** | ** | ***** |
| Indoor use | ***** | ***** | ***** |
| Cost | *** | ***** | * |
| Light weight | | ***** | *** |
| High rigidity | *** | * | **** |
| Impact resistance | ***** | *** | **** |
| Chemical resistance | | | |
| Salt water environments | ***** | ** | ***** |
| Neutral salt | ***** | | ***** |
| Acids, low concentrations | ***** | **** | ***** |
| Acids, high concentrations | *** | * | *** |
| Alkalis, low concentrations | *** | ***** | **** |
| Alkalis, high concentrations | * | **** | **** |
| Petroleum | *** | * | **** |
| Hydraulic oil | ***** | ***** | ***** |
| Alcohols | **** | *** | **** |
| Solvents | * | * | ***** |
| Cooling fluids | *** | ***** | ***** |

***** Excellent
* Poor

## ENCLOSURES & ACCESSORIES

### TRIBOX™ enclosure gaskets offer the best protection

Enclosure protection is synonymous with gasketing; it is a vital part of the total enclosure protection. Over the time the dependability of the protection and the IP rating is the gasket's responsibility, as it is more susceptible to erosion. The main aspects of the performance of a gasket are the compression set and the proper fit in the gasket groove. The level of protection depends on the cross section (profile) and the material of the gasket. An enclosure's performance can be affected if a different gasket is used. The important factors to compare in a gasket's material are: the varying elastic properties and their reaction to heat and cold or contact with chemicals. The gasket is as important as the enclosure material hence, both the gasket material and the enclosure material should be able to withstand the same factors.

### TRIBOX™ enclosures are well designed

The material used in a gasket are crucial to the level of the International Protection (IP). Essentially, all the components need to combine with each other correctly. If not the IP rating will remain low. All TRIBOX™ enclosures are designed and manufactured keeping this in mind. As a customer the right variant from the TRIBOX™ range is all you need to choose. The below tables give some frequently asked physical properties of the gaskets. The exact resistance should be checked separately.

**Gasket material : Physical Characteristics**

| Property | Silicon | Unit |
|---|---|---|
| Temperature range | -40 to 200 | °C |
| Tensile strength | 8.1 to 8.6 | Psi |
| Elongation at break | 520 to 750 | % |
| Hardness | 30 to 45 | Shore A |
| Density | 1.11 to 1.15 | g/cm3 |
| Flammability UL 94 | V1 | Scale |
| Compression Set | 27 | % |

**Gasket material : Chemical resistance comparison**

| Chemical Performance | Silicon |
|---|---|
| Neutral salt | **** |
| Acid, low concentration | *** |
| Acid, high concentration | * |
| Alkalis, low concentration | *** |
| Alkalis, high concentration | * |
| Petroleums | * |
| Hydraulic oils | * |
| Alcohols | **** |

**Summary of TRIBOX™ Series**

| Box Size | Dimension (H x W x D) mm | Material |
|---|---|---|
| Basic 1308 | 130 x 80 x 60 | ABS / Polycarbonate |
| Basic 1313 | 130 x 130 x 75 | ABS / Polycarbonate |
| Basic 1813 | 180 x 130 x 100 | ABS / Polycarbonate |
| Basic 1818 | 180 x 180 x 100 | ABS / Polycarbonate |
| Heavy 2819 | 280 x 190 x 130 | ABS / Polycarbonate |
| Heavy 2828 | 280 x 280 x 130 | ABS / Polycarbonate |
| Heavy 3828 | 380 x 280 x 180 | ABS / Polycarbonate |
| Heavy 5638 | 560 x 360 x 180 | ABS / Polycarbonate |