

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 Protection against solid objects		SECOND NUMBER Protection against liquids		IK CODE 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.		

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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

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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