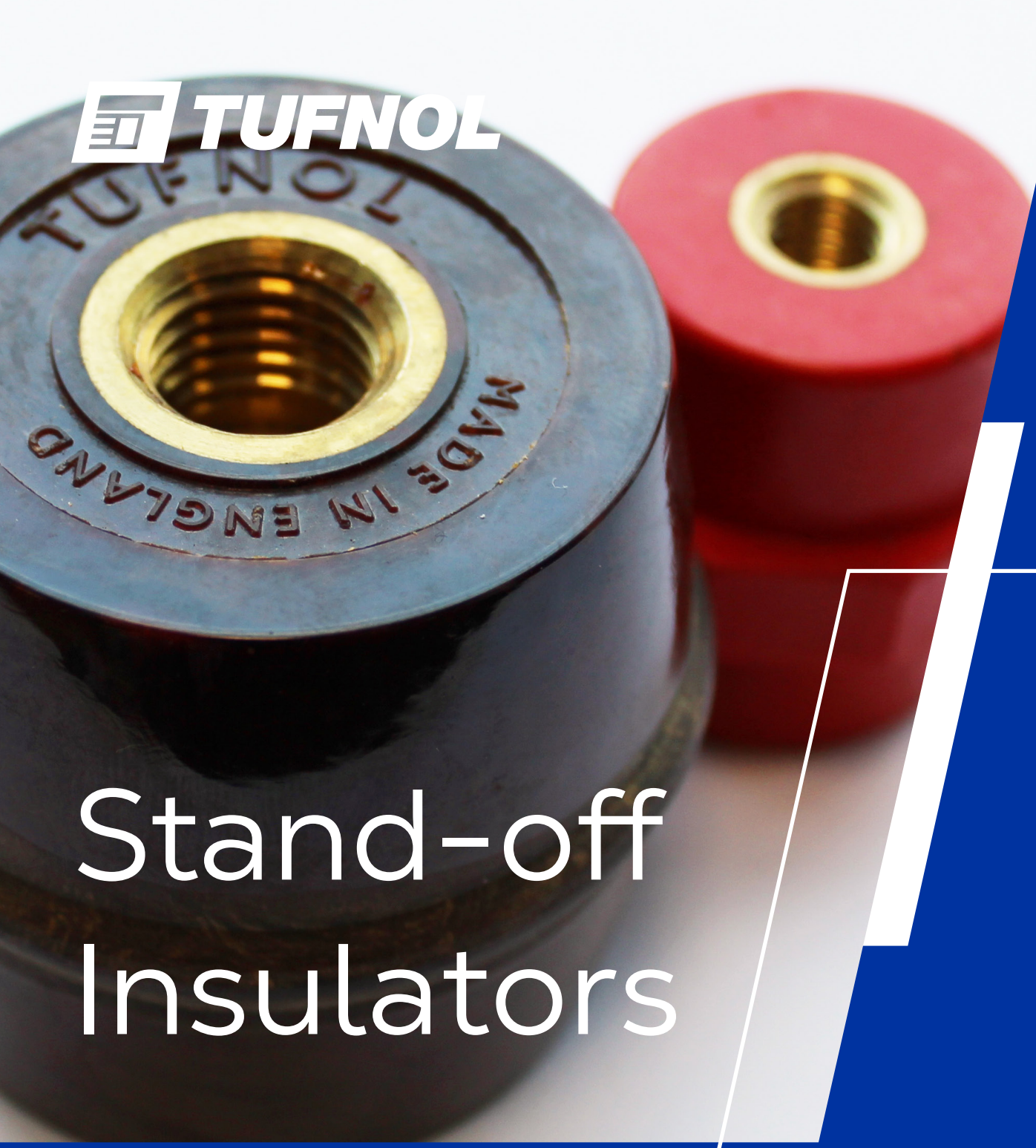


Stand-off Insulators

TUFNOL Moulded Stand-off insulators

Stand-off Insulators.

TUFNOL Moulded Stand-off Insulators are resistant to:

- Tracking
- Shock loading
- Climatic deterioration
- Moisture
- Oil and chemical absorption

All ensure there is less need for replacement and plant downtime.

What are TUFNOL Stand-off Insulators?

Suitable for use at 660v, the range of TUFNOL stand-off insulators has been designed for the electrical engineer involved with power systems for overhead cranes, with collector gear, bus bar systems, switchboard and transformer manufacture and other medium voltage applications where a robust, high quality stand-off insulator is required.

Developed to meet exacting conditions, TUFNOL Insulators have high strength and, due to their unique combination of physical properties, will withstand climactic extremes without deterioration. They are impervious to moisture, oil and most chemical fumes. Under normal conditions, dirt and dust do not readily adhere to their smooth surfaces. These advantageous features coupled with robust design and proven reliability enable all types of TUFNOL moulded insulators to be used with complete satisfaction in arduous industrial environments.

Types available

Standard Types

Two types of moulded insulator are available namely bell and barrel. They are available in three different types of material, paper reinforced phenolic (KITE BRAND), glass fibre reinforced polyester and glass fabric reinforced phenolic (GRADE 10G/24). The reinforced phenolic types are recommended where mechanical strength is important. Polyester glass types provide enhanced electrical features but with slightly lower mechanical strength.

Barrel Insulators

There are two standard types of barrel insulator, Type A and Type B. Both types can be used either horizontally or vertically and have brass inserts which are specially shaped to resist torsion and tension. The inserts are available with a choice of thread sizes. Threaded brass fixing stems, in lengths to suit the users' requirements, can be supplied with the insulator.

Type A barrel insulators are made only in polyester glass and are red in colour. They are widely used as stand-off insulators by switchgear and transformer manufacturers.

Type B barrel insulators are slightly different in shape and have a drip ridge moulded round in the middle. They are available in all of the three materials previously mentioned. Where rugged heavy duty conditions are likely to be encountered, the KITE BRAND type is recommended. However, where conditions are less arduous and mechanical strengths are less important the polyester glass insulators, with their enhanced electrical properties, are an attractive alternative, TUFNOL GRADE 10G/24 phenolic glass insulators are used where high strength is required at raised temperatures.

Bell Insulators

Bell Insulators are available in all of the three alternative materials. They are usually mounted vertically and incorporate a specially designed leakage path to minimise the risk of flashover in adverse conditions. If required, threaded brass fixing stems, in lengths to suit the users' requirements, can be supplied with the insulator.

Technical Information

Reinforced Phenolic

The reinforced phenolic insulators have superior mechanical properties and are designed for use up to 660v. GRADE 10G/24 is recommended for use in temperatures ranging from 100°C to 150°C and where chemical resistance is required. Each insulator is proof tested at 2.2kV for one minute and is stamped accordingly before despatch.

Polyester Glass

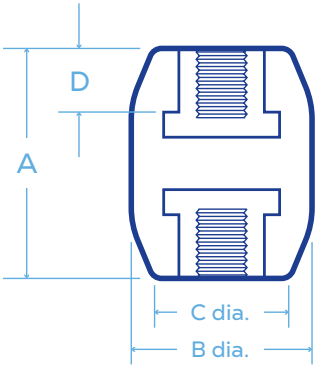
The polyester glass types are manufactured from a dough moulding compound and have enhanced electrical features but slightly lower mechanical strength. Properties for this material are shown in the table overleaf.

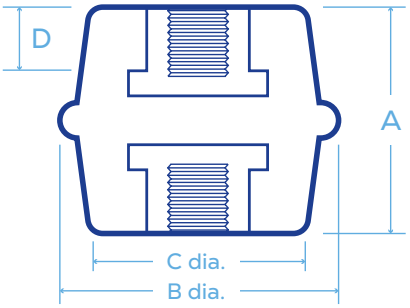
Material Properties (Polyester Glass)

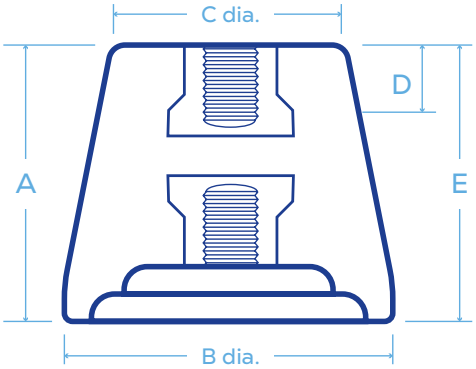
Property	Typical Value	Units
Density	1.73	g/ml
Water absorption	20	mg
Tensile strength	41	MPa
Flexural strength	92	MPa
Charpy impact strength (notched)	20	kJ/m²
Electric strength at 90°C	8.0	MV/m
Insulation resistance	$10^{12.3}$	ohms
Loss tangent at 1 MHz	0.013	-
Permittivity at 1 MHz	4.1	-
Comparative tracking index to IEC112	›1000	-

Note: Test methods to BS2782, except where indicated. The values quoted in the table have been obtained by applying tests to standard specimens of the material from which polyester glass insulators are made. They do not necessarily indicate the performance of commercial parts, which may differ due to the conditions of manufacture, the design of the part, or other factors.

Standard Range







	Stock No.	Ultimate Tensile Strength	Material	Insert Thread Size	Dimensions (mm)				
					A	B	C	D	E
Barrel Type A	30	1550kg	Polyester	M12	50.8	47.6	41.3	12.7	-
	31	450kg	Polyester	M6	28.6	22.2	15.9	7.9	-
	32	750kg	Polyester	M8	31.8	28.6	20.6	9.5	-
	33	1100kg	Polyester	M10	41.3	38.1	28.6	9.5	-
Barrel Type B	34	1800kg	KITE BRAND	M10, M12 3/8" BSW 1/2" BSW	38.1	47.6	38.1	9.5	-
	35G	1800kg	GRADE 10G/24	M10, M12 3/8" BSW 1/2" BSW	38.1	47.6	38.1	9.5	-
	36	1100kg	Polyester	M10, M12 3/8" BSW 1/2" BSW	38.1	47.6	38.1	9.5	-
	37	3600kg	KITE BRAND	M12, M16 1/2" BSW 5/8" BSW	50.8	63.5	50.8	15.9	-
	38G	3600kg	GRADE 10G/24	M12, M16 1/2" BSW 5/8" BSW	50.8	63.5	50.8	15.9	-
	39	2200kg	Polyester	M12, M16 1/2" BSW 5/8" BSW	38.1	47.6	38.1	9.5	-
Bell	40	4000kg	KITE BRAND	M12, M16 1/2" BSW 5/8" BSW	61.9	76.2	53.9	15.9	49.2
	41G	4000kg	GRADE 10G/24	M12, M16 1/2" BSW 5/8" BSW	61.9	76.2	53.9	15.9	49.2
	42	2200kg	Polyester	M12, M16 1/2" BSW 5/8" BSW	61.9	76.2	53.9	15.9	49.2

Other sizes of insulator or thread insert size can be supplied, subject to special enquiry.

Stand-off Insulators.

Reliability in the field of engineering plastics & composites.

Tufnol is the byword for quality in laminated plastics and resin based materials for engineering applications. It was invented here in the UK and its development to meet modern engineering demands continues to keep it abreast of 21st century technology.

This type of material is known as 'synthetic resin bonded laminated plastic', and is made from layers of paper, cotton cloth or woven glass fibre cloth, dipped in resin, then compressed and bonded together in a hot press. It is a strong, hard material, made in a number of different grades with varying properties and uses.

Tufnol's reliability is key to the many sectors of engineering industry in which it serves.

Tufnol UK
Wellhead Lane, Perry Barr
Birmingham B42 2TN

T: +44 (0)121 356 9351
E: info@tufnol.co.uk

tufnol.com

TUFNOL