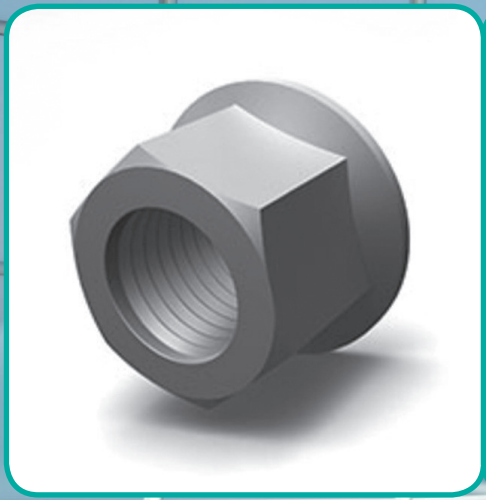
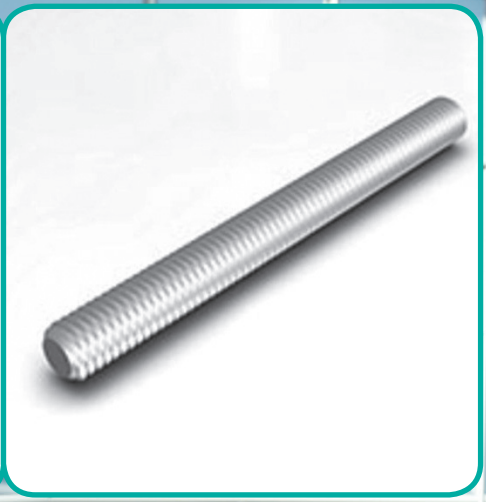
sustainable infrastructure systems

Threaded Rod & Flanged Hex Nuts
Part #SIS-TR Part #SIS-FHN

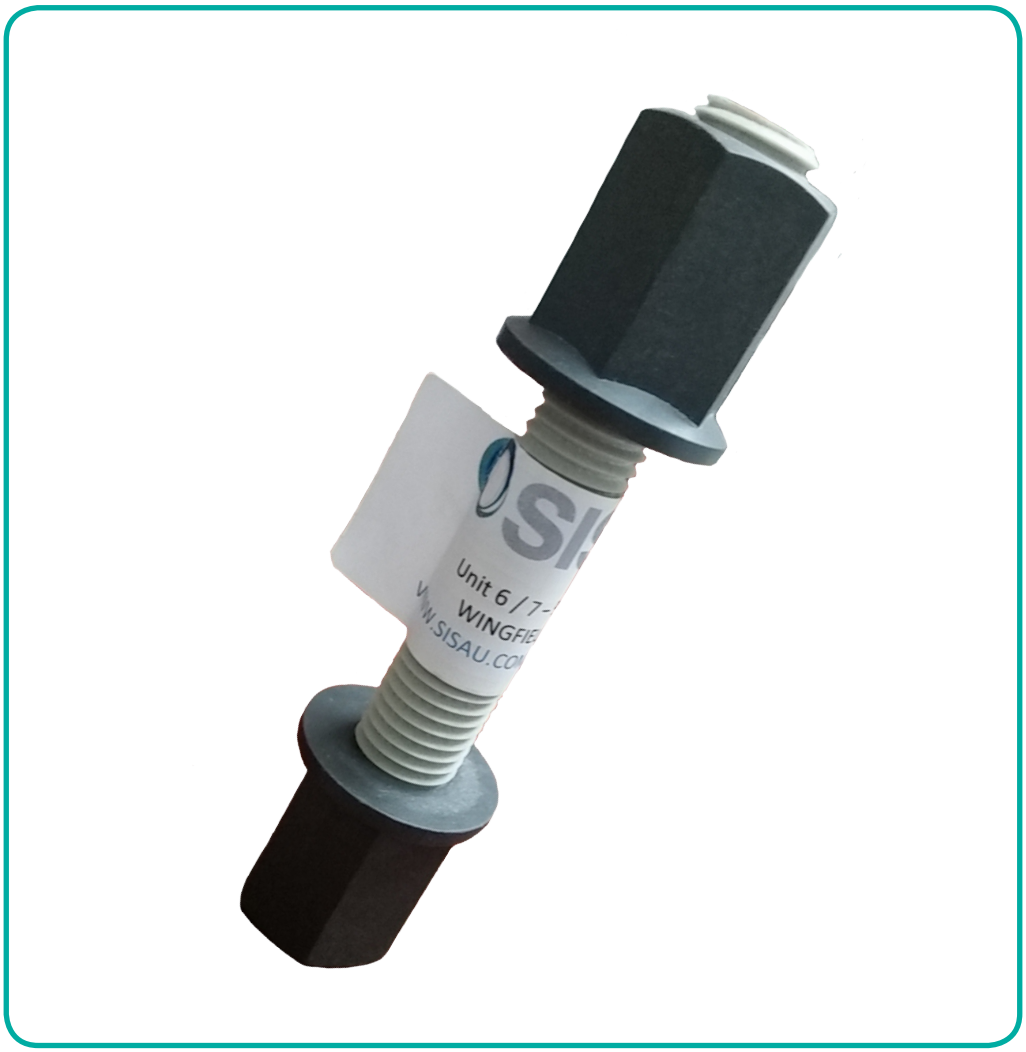




Innovative Projects call for Innovative Fixings

SISCo-FC™ SYSTEM COMPOSITE FIXINGS

V4.3 - Release Date 01.03.14



TRADE MARKS

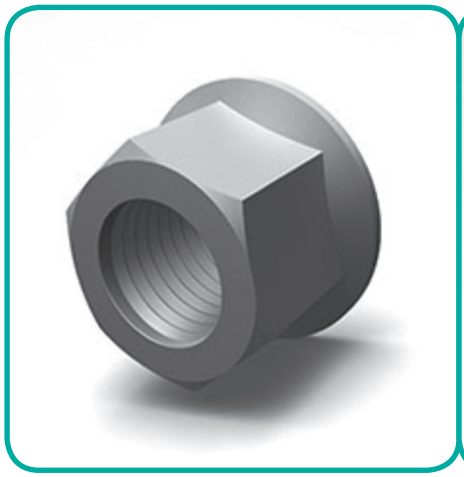
SISCo-FC™, CoreSpan™ and StructuralComp™ are registered trademarks used under licence by Sustainable Infrastructure Systems (Aust) Pty Ltd. Licence permission granted by Sustainable Infrastructure Systems (Aust) Pty Ltd

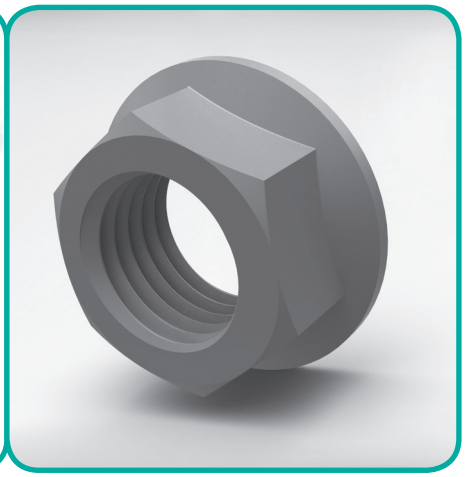
PATENTS / PATENTS PENDING

Parts of the SISCo-FC™ System are protected by either patents or patents pending. Individual components are protected by either patents or patents pending. Fixing methodology is protected by patents or patents pending.

All SISCo-FC™ System composite fixings are manufactured in the United States of America

SISCo-FC™ Composite Threaded Rod & Flanged Hex Nuts





Most common hardware fixings are available from SIS in various composites, although it is our threaded rod and nuts that continues to replace more traditional materials throughout Australia, North America and Europe than any other product. SISCo-FC™ threaded rod is manufactured using only premium grade vinyl ester (VE) resins and UV inhibitors. Pultrusion results in the production and supply of one of the world's strongest and most durable fixing products available today.

SISCo-FC™ Flanged Hex Nuts are manufactured from Isoplast 40% long glass fibre engineering thermoplastic polyurethane resin via a wind out moulding process. These resins are high strength, chemical resistant resins that combine the toughness and dimensional stability of amorphous resins with the chemical resistance of crystalline materials.

Features of SISCo-FC™ Flanged Hex Nuts and Threaded Rod Are:

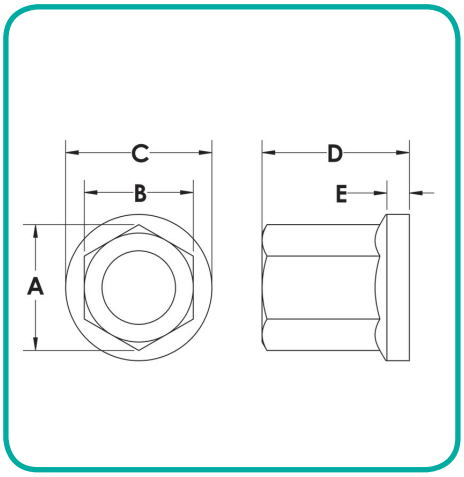
1) High Strength
2) Corrosion Resistant to Many Chemicals
3) Light Weight – Weighs Nearly 80% Less than Steel
4) Electrically Non Conductive
5) Non Metallic
6) Provides a Lower Life Cycle Cost
7) Non Leaching
8) Dimensionally Stable

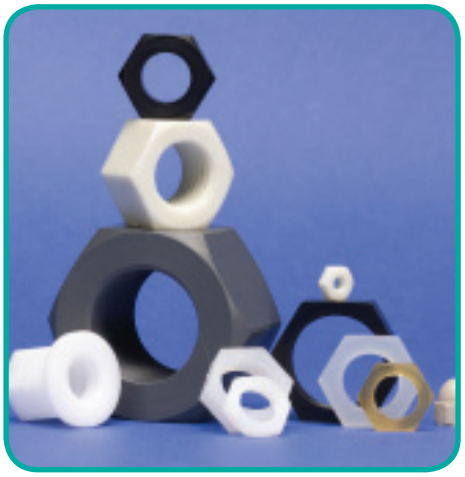
Sizes Available - Threaded Rod

SIS CODE	DIAMETER	THREAD	LENGTH
SIS-FC-TR-A	3/8 (9.5mm)	16 UNC	Up to 8ft (2.4m)
SIS-FC-TR-B	1/2 (12.7mm)	13 UNC	Up to 8ft (2.4m)
SIS-FC-TR-C	5/8 (15.9mm)	11 UNC	Up to 8ft (2.4m)
SIS-FC-TR-D	3/4 (19.0mm)	10 UNC	Up to 8ft (2.4m)
SIS-FC-TR-E	1 (25.4mm)	8 UNC	Up to 8ft (2.4m)

Sizes Available – Flanged Hex Nuts

SIS CODE	TO SUIT DIAMETER	THREAD	COLOUR	NUT SIZE (mm) Refer Diagram				
				A	B	C	D	E
SIS-FC-FHN-A	3/8 (9.5mm)	16 UNC	Grey	16.1	14.1	19.1	19.1	3.0
SIS-FC-FHN-B	1/2 (12.7mm)	13 UNC	Grey	21.4	18.5	25.5	21.7	3.0
SIS-FC-FHN-C	5/8 (15.9mm)	11 UNC	Grey	26.7	23.4	31.8	31.0	3.3
SIS-FC-FHN-D	3/4 (19.0mm)	10 UNC	Grey	32.6	28.5	38.1	40.4	3.3
SIS-FC-FHN-E	1 (25.4mm)	8 UNC	Grey	44.5	37.5	50.8	44.5	4.8





Weights

		3/8 - 16	1/2 - 13	5/8 - 11	3/4 - 10	1 – 8
ITEM	UNIT	9.5mm	12.7mm	15.9mm	19.0mm	25.4mm
Threaded Rod	Kg / m	0.104	0.119	0.297	0.447	0.789
Hex Nut	Grams	4.5	9.1	18.1	27.2	63.6

Installation Tips for SISCo-FC™ Threaded Rods & Flanged Hex Nuts

It is important when using engineered reinforced thermoplastic nuts with vinyl ester fiberglass threaded rod that the following guidelines are followed:

1) The bearing faces of the nuts must be parallel to the surface being joined
2) Threaded rod should be lubricated with a light spray of silicone or a light oil
3) When tightening nuts ensure that a socket wrench is used and ensure full contact with the wrench and nut face is achieved
4) If the nut is to remain in the locked position permanently, the nut / rod interface should be coated with an adhesive resin
5) A torque wrench should be used when tightening nuts – see table below for maximum installation torque.

Ultimate Torque Table

SIZE	ULTIMATE TORQUE STRENGTH	MAXIMUM TORQUE
3/8 (9.5mm)	10.84Nm	5.42Nm
1/2 (12.7mm)	24.40Nm	12.20Nm
5/8 (15.9mm)	47.45Nm	23.72Nm
3/4 (19.0mm)	67.71Nm	33.85Nm
1 (25.4mm)	149.14Nm	74.57Nm

Typical Properties of SISCo-FC™ Threaded Rod & Nuts

			Value (Diameter – Threads Per Inch)				
			3/8 - 16	1/2 - 13	5/8 - 11	3/4 - 10	1 – 8
PROPERTIES	ASTM	UNITS	9.5mm	12.7mm	15.9mm	19.0mm	25.4mm
Ultimate Transverse Shear (Double Shear)	B-565	N	18,680	30,240	44,480	59,600	106,750
Longitudinal Compressive Strength	D-695	MPa	344	344	344	344	344
Flexural Strength	D-790	MPa	482	482	482	482	482
Flexural Modulus	D-790	GPa	17.2	17.2	17.2	17.2	17.2
Flammability	D-635	Self Extinguishing For All					
Fire Retardant	E-84	Class 1					
Water Absorption (24hr Immersion)	D-570	% Max.	0.8	0.8	0.8	0.8	0.8
Longitudinal Coefficient of Thermal Expansion	D-696	10-6 mm/ mm/ C°	11	11	11	11	11
Ultimate Thread Shear (Fiberglass Nut)	----	N	5,337	10,670	16,010	17,790	36,470
Ultimate Torque Strength (Fiberglass Nut)	----	N/M	10	21	47	67	149

Typical Properties of 101 LGF40 BLK Engineering Thermoplastic Polyurethane Resin (Nuts – Raw Form)

PROPERTIES	ASTM	UNITS	VALUE
Mould Shrinkage	D-955	mm/mm	0.001
Water Absorption (24hrs @ 23°c)	D-570	%	0
Specific Gravity	D-792	1.51	No.
Tensile Strength at Yield	D-638	MPa	186
Tensile Strength at Break	D-638	MPa	186
Elongation at Yield	D-638	%	2
Elongation at Break	D-638	%	2
Tensile Modulus	D-638	MPa	10,000
Flexural Strength	D-790	MPa	248
Flexural Modulus	D-790	MPa	9,600
Izod Impact Strength (Notched, 23°c)	D-256	J/m	320
Izod Impact Strength (Notched, -40°c)	D-256	J/m	320
Vicat Temperature	D-1525	°C	186
Coefficient of Linear Thermal Expansion	D-696	10-5 mm/mm/°C	1.4

Typical Properties of Glass Reinforced Vinyl Ester (Threaded Rod – Raw Form)

PROPERTIES	ASTM	UNITS	VALUE
Barcol Hardness	D-2583	----	45
Tensile Strength, Ultimate (Lengthwise)	D-638	207	MPa
Tensile Strength, Ultimate (Crosswise)	D-638	48.3	MPa
Tensile Modulus (Lengthwise)	D-638	17.2	GPa
Tensile Modulus (Crosswise)	D-638	5.52	GPa
Flexural Modulus (Lengthwise)	D-790	12.4	GPa
Flexural Modulus (Crosswise)	D-790	5.52	GPa
Flexural Strength (Lengthwise)	D-790	207	MPa
Flexural Strength (Crosswise)	D-790	68.9	MPa
Compressive Strength (Lengthwise)	D-635	207	MPa
Compressive Strength (Crosswise)	D-635	103	MPa
Compressive Modulus (Lengthwise)	D-635	17.2	GPa
Compressive Modulus (Crosswise)	D-635	6.89	GPa
Shear Modulus	----	3.1	GPa
Shear Strength (Punch Shear)	D-732	68.9	MPa
Shear Strength (Short Beam Shear)	D-2344	31	MPa
Izod Impact, Notched (Lengthwise)	D-256	13.3	J/cm
Izod Impact, Notched (Crosswise)	D-256	2.14	J/cm
Dielectric Constant (Perpendicular to Laminate Face)	D-150	5	60 Hz
Dielectric Strength (Perpendicular to Laminate Face)	D-149	7.87	kV/mm
Dielectric Strength (Lengthwise)	D-149	1.38	kV/mm
Arc Resistance (Lengthwise)	D-495	120	Sec
Flame Spread Index (Tunnel Test)	E-84	Max 25	----
Flammability	D-635	Non Burning	
Density	D-792	1.72-1.94	g/cc
Water Absorption	24hrs, ASTM	Max 0.45%	

Pricing & Specification Codes for Threaded Rod & Flanged Hex Nuts

Note: The pricing below is LIST PRICE only and excludes GST. Please contact SIS for pricing and availability.

Note: Threaded Rod comes in a maximum length of 8ft (2.43m)

SIS CODE	UNIT	SIZE	THREAD	UNIT QUANTITY	LIST PRICE
SIS-FC-TR-A	4ft Rod	3/8 (9.5mm)	16 UNC	1 - 199	$23.98
SIS-FC-TR-A	4ft Rod	3/8 (9.5mm)	16 UNC	200 - 399	$22.96
SIS-FC-TR-A	4 ft Rod	3/8 (9.5mm)	16 UNC	400 - 1999	$20.40
SIS-FC-TR-A	4 ft Rod	3/8 (9.5mm)	16 UNC	1999+	$18.56
SIS-FC-TR-B	4ft Rod	1/2 (12.7mm)	13 UNC	1 - 199	$27.12
SIS-FC-TR-B	4ft Rod	1/2 (12.7mm)	13 UNC	200 - 399	$25.04
SIS-FC-TR-B	4 ft Rod	1/2 (12.7mm)	13 UNC	400 - 1999	$23.84
SIS-FC-TR-B	4 ft Rod	1/2 (12.7mm)	13 UNC	1999+	$21.44
SIS-FC-TR-C	4ft Rod	5/8 (15.9mm)	11 UNC	1 - 199	$28.11
SIS-FC-TR-C	4ft Rod	5/8 (15.9mm)	11 UNC	200 - 399	$26.40
SIS-FC-TR-C	4 ft Rod	5/8 (15.9mm)	11 UNC	400 - 1999	$25.20
SIS-FC-TR-C	4 ft Rod	5/8 (15.9mm)	11 UNC	1999+	$22.80
SIS-FC-TR-D	4ft Rod	3/4 (19.0mm)	10 UNC	1 - 199	$32.40
SIS-FC-TR-D	4ft Rod	3/4 (19.0mm)	10 UNC	200 - 399	$31.12
SIS-FC-TR-D	4 ft Rod	3/4 (19.0mm)	10 UNC	400 - 1999	$30.24
SIS-FC-TR-D	4 ft Rod	3/4 (19.0mm)	10 UNC	1999+	$29.12
SIS-FC-TR-E	4ft Rod	1 (25.4mm)	8 UNC	1 - 199	$47.80
SIS-FC-TR-E	4ft Rod	1 (25.4mm)	8 UNC	200 - 399	$45.36
SIS-FC-TR-E	4 ft Rod	1 (25.4mm)	8 UNC	400 - 1999	$42.56

SIS CODE	UNIT	SIZE	THREAD	UNIT QUANTITY	LIST PRICE
SIS-FC-TR-E	4 ft Rod	1 (25.4mm)	8 UNC	1999+	$39.76
SIS-FHN-A	Nut	3/8 (9.5mm)	16 UNC	1 - 249	$1.42
SIS-FHN-A	Nut	3/8 (9.5mm)	16 UNC	250 - 499	$1.24
SIS-FHN-A	Nut	3/8 (9.5mm)	16 UNC	500 - 999	$0.96
SIS-FHN-A	Nut	3/8 (9.5mm)	16 UNC	1000+	$0.88
SIS-FHN-B	Nut	1/2 (12.7mm)	13 UNC	1 - 249	$2.64
SIS-FHN-B	Nut	1/2 (12.7mm)	13 UNC	250 - 499	$1.88
SIS-FHN-B	Nut	1/2 (12.7mm)	13 UNC	500 - 999	$1.51
SIS-FHN-B	Nut	1/2 (12.7mm)	13 UNC	1000+	$1.39
SIS-FHN-C	Nut	5/8 (15.9mm)	11 UNC	1 - 249	$2.72
SIS-FHN-C	Nut	5/8 (15.9mm)	11 UNC	250 - 499	$2.30
SIS-FHN-C	Nut	5/8 (15.9mm)	11 UNC	500 - 999	$1.80
SIS-FHN-C	Nut	5/8 (15.9mm)	11 UNC	1000+	$1.57
SIS-FHN-D	Nut	3/4 (19.0mm)	10 UNC	1 - 249	$2.98
SIS-FHN-D	Nut	3/4 (19.0mm)	10 UNC	250 - 499	$2.67
SIS-FHN-D	Nut	3/4 (19.0mm)	10 UNC	500 - 999	$2.53
SIS-FHN-D	Nut	3/4 (19.0mm)	10 UNC	1000+	$2.39
SIS-FHN-E	Nut	1 (25.4mm)	8 UNC	1 - 249	$4.98
SIS-FHN-E	Nut	1 (25.4mm)	8 UNC	250 - 499	$4.59
SIS-FHN-E	Nut	1 (25.4mm)	8 UNC	500 - 999	$3.96
SIS-FHN-E	Nut	1 (25.4mm)	8 UNC	1000+	$3.55

About SISCo-FC™ Engineered Plastic Fixings

PLASTICS ENGINEERED FOR STRENGTH: For over 18 years, our people have been working with plastics to make them lighter, stronger and more cost effective. Now, the pinnacle of the advancements in plastic engineering is right here in the range of engineered plastic alternatives for any industry.

High strength plastics are usually composite plastics, meaning that they are made up of a base resin with the addition of various percentages of fibre. Some of the most common fibers now used are fiberglass or carbon. Many additives are sometimes mixed in with plastic to improve its characteristics. For example, some additives may cause a plastic to be UV resistant or fire resistant while others may change its colour or lower a plastics coefficient of friction to make it useful in bearing applications. While most plastics are thought of as electrical insulators, additives can also make them conductive. While all these additives are useful, the only way to achieve greater strength in plastics is to add fibers.

What does strong mean in the world of plastics and how do we evaluate plastics for strength?

The strength of a material may be evaluated through the results of several strength tests. ASTM International® is an international standards organisation that develops and publishes voluntary consensus technical standards. SIS considers the results of tests described by their standards for ultimate tensile strength (UTS), tensile modulus (otherwise known as Young's Modulus) and flexural strength.

Tensile Strength or Ultimate Tensile Strength (UTS) is the maximum stress a polymer can withstand without breaking while being pulled or stretched – ASTM D638

Tensile Modulus or Young's Modulus is a numerical constant that describes the elastic properties of a plastic under tension or compression from only one direction It is a measure of stiffness – ASTM 638

Flexural Strength is a material's ability to resist deformation under load. Many plastics exhibit flexural strength. This number represents the load required to cause a given test sample to exhibit a 5% deformation or strain of its outer surface – ASTM D790

Izod Impact Strength (Notched) is a single point test that measures the resistance of a material to impact. The resulting number represents the kinetic energy needed to initiate and cause the fracture of a given notched specimen of material – ASTM D256

High Strength Plastics Reference Chart

MATERIAL	TENSILE STRENGTH (MPa)	TENSILE MODULUS (MPa)	FLEXURAL MODULUS (MPa)	IZOD IMPACT STRENGTH (J/m)
G10 / FR4	310	LW: 24131 CW: 20684	LW: 400 CW: 345	641
Nylon 6/6 30% Glass Filled	155	8274	179	107
PAI Unfilled	152	4480	241	123
PAI 30 % Glass Filled	221	14500	333	80
PAI 30% Carbon Filled	221	16500	350	48
PARA 30% Glass Filled	190	11500	360	70
PARA 30% Carbon Filled	250	26000	285	59
PEEK 30% Glass Filled	165	8963	193	96
PEEK 30% Carbon Filled	138	7584	172	55
PC 20% Glass Filled	110	2206	131	107
PEI 30% Glass Filled	138	6205	207	107
POM 30% Glass Filled	110	9653	165	40
PPS 30% Glass Filled	152	13100	200	90
PPS 30% Carbon Filled	193	25512	269	31
TPU 40% Glass Filled	186	12000	310	427

Why Do We Add Fibers to Already Strong Plastics?

Here are some examples of performance increasing when we have added glass or carbon fibers to already strong plastics. Other benefits of these materials are also mentioned.

All values are expressed in MPa.

G10/FR4: This material is made of woven fiberglass cloth and an epoxy resin. It can be made as either a laminate or through a moulding process. G10/FR4 has a tensile strength (UTS) of 310, which makes it stronger than structural steel at 276 and is one of the strongest plastic materials available. Because G10/FR4 is anisotropic or directionally dependent, it has both LW (Length Wise) and CW (Cross Wise) values for tensile modulus and flexural modulus. Additionally, G10/FR4 is fire resistant, UV resistant and water proof.

Polyamide Nylon 6/6, 30% Glass Filled: Perhaps the best known composite plastic. Unfilled Nylon 6/6 has a tensile strength of 82 but adding 30% glass fiber increases this to 155. Additionally the tensile modulus or Young's Modulus goes from 2558 unfilled to 8274 for 30% glass filled. The flexural strength for the unfilled grade is 103 compared to 179 for 30% glass filled. Grades are also available that are fire and UV resistant and also resistant to organic solvents such as petrol and kerosene. Nylon 6/6 30% glass filled offers increased strength for relatively low cost.

Polyarylamide, PARA 30% Glass Filled & PARA 30% Carbon Filled: This polymer is not commonly sold in an unfilled grade. It can be fibre filled up to 60% with glass, carbon and mineral fibers or a combination thereof. PARA 30% glass filled has a tensile strength (UTS) of 190 and PARA carbon filled is 250. The tensile modulus for 30% glass filled is 11500 while for 30% carbon fibre it is 26000 (ISO527-2). Flexural strength for the 2 grades are 360 and 285 respectively. PARA has a high quality surface finish and can be painted and chromed for high end applications.

Polyamide Imide, PAI Unfilled, PARI 30% Glass Filled & 30% Carbon Filled: PAI is one of the few polymers that has significant strength in the unfilled grade. The UTS of unfilled PAI is 152 while the UTS of both the 30% glass filled and the 30% carbon filled increases to 221. The tensile modulus or stiffness of unfilled PAI is 480 but this increases to 14500 for PAI 30% glass filled and 16500 for PAI 30% carbon filled. Flexural strength is 241 for the unfilled grade and 333 for the PAI 30% glass filled and 350 for PAI 30% carbon filled grade. This makes polyamide imide the strongest thermoplastic currently available.

Polycarbonate (PC) 20% Glass Filled: Polycarbonate is not one of the strongest composites, however, if the characteristics of PC are required and more strength than the unfilled grade will provide are necessary, the 20% glass filled composite may be the answer. Tensile strength of the unfilled grade is 69 and increases to 110 with the addition of 20% glass fibre. Stiffness (tensile modulus) almost triples at 2206 for the unfilled grade to 5929 for the 20% glass composite. The ability for the material to avoid deformation under load (flexural strength) goes from 90 to 131. Unfilled PC is optically clear as well as UV resistant.

Polyetherimide (PEI 30% Glass Filled): Unfilled PEI has a tensile strength of 115 but the strength of PEI goes up when 30% glass is added to 138. Tensile modulus (stiffness) is 3309 for the unfilled grade but almost doubles to 6205 for the 30% glass filled composite. Flexural strength increases from 138 to 207 and the flexural modulus of 3447 for the unfilled resin increases to 6550 for 30% glass filled. PEI is also microwave clear, has high heat resistance and good chemical resistance. It is also fire resistant and virtually smoke free.

Tensile Strength Comparison

MATERIAL	MPa
Brass (Grade C3600)	345
Steel	330
FR-4/G-10	310
Zinc Alloy	280
Aluminium (Grade 6463-T6)	241
PARA (50% glass-filled)	230
Magnesium (Grade HK31A-T6)	225
TPU (40% glass-filled)	186

Materials

SISCo-FC™ fixings are precision machined and moulded plastic fasteners and components produced in a wide range of plastic materials from commodity to exotic. The following is a selection of plastic materials that are regularly used to process our state of the art fixing components:

ABS

Acrylonitrile Butadiene Styrene mechanical properties are good for impact resistance even in low temperatures. The material is stiff and the properties are kept over a wide temperature range. The hardness and stiffness for ABS is lower than for PS and PVC. The chemical resistance for ABS is relatively good and it is not affected by water, non organic salts or acids. The material will dissolve in aldehyde, ketone, ester and some chlorinated hydrocarbons.

Delrin©

(Acetal, Celcon ©) – Polyoxymethylene (POM) displays good impact resistance, dimensional stability and outstanding surface hardness due to their high degree of crystallinity. They have high dielectric strength and are resistant to many solvents. They also exhibit negligible water absorption. Typical applications include roller bearings, gears, reels, counters, control cams, valves, and pump parts.

Engage ©

Ethylene alpha-olefin copolymer bridges the gap between plastics and rubber properties. Key performance benefits include toughness, flexibility, light weight, high clarity and UV stability. It resists low temperature brittleness and can be engineered to offer specific levels of flexibility to meet a range of technical requirements.

G10/FR4

G10/FR4 material has superior mechanical properties, particularly it's extremely high strength and high dimensional stability over temperature which allows it to hold details of threads and thin features for demanding insulation applications. G10/FR4 offers excellent chemical resistance and electrical properties under dry and humid conditions and features high flexural, impact and mechanical strength and bond strength at temperatures up to 140°c.

Halar © (ECTFE)

Ethylene-Chlorotrifluorethylene copolymer exhibits better mechanical properties than many other fluoroplastics. But like other fluoroplastics,

its flame retardation, chemical resistance and low dielectric constant remain constant over a wide temperature range. These qualities make it suitable for use in such products as electrical insulation, monofilament, tank linings, housings and electrical components. It may be usefully employed at temperatures from the cryogenic range to about 160°c.

Isoplast™

Impastmodified urethane resins are high tensile strength, chemically resistant resins originally developed for medical use. They are available in long glass fibre-filled grades. Isoplast combines the toughness and dimensional stability of amorphous resins with the chemical resistance of crystalline materials. The long fibre reinforced grades are strong enough to replace some metals in load bearing applications.

IXEF

1521 is a 50% glass-fibre reinforced, fire resistant polyarylaminde which exhibits high strength and stiffness, outstanding surface gloss and excellent creep resistance. The compounds in this family are characterised by creep resistance at high stress levels, high flow, low and slow moisture pickup and excellent dimensional stability. IXEF 1521s glass transition temperature of approximately 85°c offers remarkable rigidity for a polymeric material and its combination of properties makes the material an excellent candidate for metal replacement in many market areas.

LCP

Vectra® Liquid Crystal Polymer grades offer advantages over metal, thermosets and other thermoplastics materials. Advantages include excellent chemical and hydrolytic stability, corrosion resistance, thermal stability and dimensional stability. Additional good properties include creep resistance at elevated temperatures, high strength and high continuous use temperatures, very high abrasion resistance and excellent electrical insulation properties. All grades have UL 94 V-0 flammability ratings and most grades have low smoke ratings.

Lexan® (PC)

Polycarbonate exhibits the highest impact strength over a range of temperatures from -30°c to 135°c. It is fine for all precision parts or where transparency is desired. Its water-clear transmittance (89%) makes it excellent for visors or guards. It shows good creep resistance and has a temperature-independent dielectric constant, as well as good insulating properties.

Nylon 6/6

All grades possess roughness and resiliency and have high fatigue strength. Resistance to oils and hydrocarbon solvents is also good. Almost all formulations are also self-extinguishing and retain stable mechanical properties at temperatures from -32°c to above 110°c. They are widely used for gears and many other moving parts due to their excellent abrasion and impact resistance. Glass-filled Nylon has improvements over un-filled Nylon including higher strength and tensile strength.

PCTFE (Kel-F)

Polychlorotrifluoroethylene is highly transparent. It also exhibits good electrical properties, and is resistant to most common solvents at room temperature. Kel-F is a fluorochemical product which offers the unique combination of physical and mechanical properties, chemical resistance and near zero moisture absorption. PCTFE has a temperature range of -200°c to +200°c. It also has extremely low out gassing making it well suited for use in aerospace and flight applications. Compression, impact and tensile strength are high over a wide temperature range.

PEEK, T-series

Based on VICTREX®® PEEKTM polymer and Celazole® polybenzimidazole (PBI) and offering excellent mechanical performance. The TU-60 grade is unfilled, unreinforced PEEK/PBI blend suitable for high performance in high temperature and high-strength applications. TF-60V is glass-reinforced for even greater rigidity and dimensional stability while maintaining

many of the useful characteristics of the unfilled grade. The glass reinforcement yields a product with an exceptional strength-to-weight ratio and increased tensile strength.

PEEK,30% Glass-Filled

Has an increase in flexural modules and a reduction in expansion rate. This grade is ideal for structural applications that require improved strength, stiffness or stability, especially at temperatures above 150°c.

PEEK-HT (High Temperature)

Is a unique high performance polymer for applications requiring superior high-temperature resistance. With a glass transition temperature of 155°c and a melting temperature of 353°c, this semi-crystalline, unreinforced polymer offers all the key characteristics of standard PEEK including toughness, strength and chemical resistance.

Polyethylene (PE)

Because of its flexibility at low temperatures, excellent electrical resistance and low dielectric constant, Polyethylene is unique. PE's self-lubricating properties also make it ideal for applications such as rollers, skids and other end-uses which call for a non-stick, low-friction material. PE is available in a wide range of densities and formulations.

Polypropylene (PP)

Has good impact resistance and structural rigidity and t is unaffected by any solvent at room temperatures. It has excellent insulating properties and is extremely lightweight. Its high fatigue strength makes it a top choice under cyclic loading conditions.

RADEL © A-200

Is a polyethersulfone resin offering high heat deflection temperatures, excellent toughness and dimensional stability and superior resistance to steam, boiling water and mineral acids. Other desirable properties include thermal stability, creep resistance and inherent flame resistance. This medium viscosity grade can be used for either extrusion or injection moulding.

RADEL © AG-330

Is a 30% glass fibre reinforced polyethersulfone compound. Adding glass fibre to Radel A-300 polyethersulfone substantially increases the rigidity, tensile strength, creep resistance, dimensional stability and chemical resistance of the material while maintaining most of its other basic characteristics. The combination of structural properties and cost effectiveness makes this resin an attractive alternative to metals in many engineering applications. Radel AG-330 is an opaque gray material in its natural form and may be readily coloured.

RADEL© R-5000, R-5100 NT15, R-5500

Are polyphenylsulfone resins offering exceptional hydrolytic stability, and toughness that is superior to other commercially available, high-temperature engineering resins. They offer high deflection temperatures and outstanding resistance to environmental stress cracking. The polymer is inherently fire resistant and also has excellent thermal stability and good electrical properties. Radel R-5000 resin is a transparent injection moulding grade. R-5100 NT15 is an opaque general purpose injection moulding grade and R-5500 is a transparent extrusion grade.

Rexolite

Is one of the best dielectric materials known with a dissipation factor 200 times better than nylon. In contrast with other high temperature, ultrahigh frequency dielectrics, Rexolite has the rigidity and ability to resist deformation under load. These characteristics are extremely important where assembled insulators must withstand compression without yielding and loosening over long periods of time.

Rexolite 1422

Has a combination of good physical and excellent electrical properties including low and stable dielectric constant. These properties make this material suitable for precision components.

Chemical Resistance & Plastics

Not all plastics hold up well in extreme environments. Engineers needs to be sure that fasteners will last as long as the rest of the materials used. While you should always conduct testing to ensure that you make the right material for your specific application, there are certain chemical resistant plastics which tend to hold up well in most environments. In order to guide you in the right direction, we've put together a list of the top four commonly used chemical resistant plastics.

1) Kynar® (PVDF)

PVDF resins are used in the power, renewable energies and chemical processing industries for their excellent resistance to temperature and harsh chemicals. PVDF is also used in the pharmaceutical, medical, food & beverage and semiconductor industries for its high purity and availability in a multitude of forms. PVDF is also one of the most popular chemical resistant plastics in the mining, plating and metal preparation industries. This popularity is due to PVDF's resistance to hot acids of a wide range of concentrations. PVDF is also used in the automotive and architectural markets for its chemical resistance and excellent resistance to UV degradation and extreme weather conditions.

2) PEEK

PEEK exhibits excellent mechanical and thermal properties, creep resistance at high temperatures, very low flammability, hydrolysis resistance and radiation resistance. These properties make PEEK a preferred product in the aerospace, automotive, telephonic, and chemical processing industries. PEEK is used for wear and load bearing applications such as valve seats, pump gears, and compressor valve plates.

3) PVC

Due to its wide use as indoor and in-ground wastewater piping, thousands and thousands of tons of PVC are produced every year, making PVC the third most produced plastic. PVC is extensively used in construction as it is more effective than traditional materials such as copper, steel or timber. PVC can be made softer and more pliable with the addition of plasticisers. In this form, it is used in clothing and upholstery. PVC's status as a chemical resistant plastic makes it an ideal material for window and door frames, insulation on electric cables, outdoor signs, sporting equipment, medical tubing, flooring, green houses and outdoor playgrounds.

4) CPVC

CPVC resin is made by the chlorination of PVC resin and is used primarily to produce piping. CPVC shares many properties with PVC, including low conductivity and excellent corrosion resistance at room temperatures. The extra chlorine in its structure also makes it more corrosion resistant than PVC. Whereas PVC begins to soften at temperatures over 60°c, CPVC is useful to temperatures of 82°c. Like PVC, CPVC is fire resistant, is readily workable and can be used in hot water pipes, chlorine pipes, sulphuric acid pipes, and high-pressure electric cable sheaths.

Other SISCo-FC™ Composite Fixings Available

sustainable infrastructure systems

Australian Head Office
abn 61160899703
a 6/7-9 Streiff Road, Wingfield SA 5013
t +1300 26 10 74 f +1300 08 10 75
service@sisau.com.au
sisau.com.au

sydney	melbourne	brisbane	hong kong	shanghai	shenzhen	los angeles
17 Jumal Place Smithfield NSW 2164 Australia	135 Boundary Road Laverton North Victoria 3026 Australia	1094 Lytton Road Murarrie Queensland 4172 Australia	Room 102, 1st Floor The Centre Mark 287 - 299 Queen´s Rd Central Hong Kong	RM 1001A Hua Sheng Building No.398 Han Kou Road 200001 Shanghai People´s Republic of China	27-3, 27th Floor Shun Hing Square Di Wang Commercial Centre Lu Wu District, Shenzhen People´s Republic of China	Suite 135 5230 Pacific Concourse Dr. Los Angeles CA 90045 United States