

GFRP and Composite Bolting Technologies For Sustainability

Description

Composite technologies positively benefit the environment and your workforce. Compared to the standard permanent steel rock bolt, GFRP bolts reduce Green House Gas emissions (such as CO₂) by up to 60% in manufacturing and transportation. GFRP is significantly better than traditional steel bolts in all categories of environmental impact. GFRP is much lighter than steel so this improves the work environment and increases productivity. GFRP offers superior durability compared to combination coated steel bolts, with a potential design life of more than 120 years. A variety of GFRP products are available for various applications including continuous thread bars, self-drilling bolts, cable bolts, hollow bars, reinforcement bars and meshes, along with a full range of accessories such as face plates and nuts

Advantages include:

- Corrosion resistance
- Ease of cutting
- Electrically insulated
- Flexibility for installation in confined spaces
- High tensile strength
- High torsional strength
- High thermal isolation
- Lightweight (up to 75% lighter than steel)
- A wide range of diameters and shapes in solid or hollow bar

Indicative characteristics		
	GFRP	Steel
Specific weight (kg/dm ³)	1.9	7.8
Tensile strength (N/mm ²)	1 000	600
E modulus (N/mm ²)	50 000	207 000
Deformation (%)	> 3.5	>8

GFRP Bolt Summary

Typical Units	Tubular Bolt		Solid Bolt						
	M25	M28	M20	M22	M25	M27	M30	M32	M38
Outer diameter (mm)	25	28	20	22	25	27	30	32	38
Tensile stress area (mm ²)	250	357	200	250	346	400	510	580	830
Ultimate load (kN)	250	350	200	250	350	400	490	560	750
Tensile E-Modulus (N/mm ²)	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000
Weight (kg/m)	0,630	0,880	0,560	0,69	0,9	1,04	1,33	1,5	2,1

To meet project requirements additional alternate technical specifications and sizes as well as alternate composite technologies are available.