

Material Guide

Pro-Bolt is proud to be Europe's largest stockist of titanium and aluminium fasteners, along with a growing range of stainless steel products. Our uniquely designed bolts have been successfully tested in the field for the last four years, gaining us a reputation for high quality products, excellent customer service and prompt delivery. Since 1999, Pro-Bolt has supplied many of the top names in the world of Motorsport. We have now taken the initiative and are actively developing products suitable for the Marine Industry.

We manufacture in the UK using single process on multi-axis CNC machining centres, which includes thread rolling. Thread standards are to BS3692:1967, the British Standard for ISO Precision Metric Threads, and root radii vary between 0.8mm and 0.4mm, the maximum that we can use to improve shear strength. Thread lead varies between K1 and K2. We also supply items machined from bar.

Titanium



Made from aircraft grade titanium 6AL-4V (grade 5), the outstanding benefits are that we roll the threads to produce greater fatigue strength and reduce galling. These bolts are in excess of 120,000psi ultimate tensile strength, suitable to replace both Grade 5 and Grade 8 steel bolts. We offer Race Spec drilled Flanged Hex Head Bolts, Flanged Hex Head, Tapered Socket Cap, Countersunk Bolts, Dome Head Bolts, Nuts and Washers – from 3mm to 12mm.

Black Titanium: Long lasting finish resulting from an application of Diamond Like Coating (DLC). This unique finish increases the fastener lifetime and helps to prevent galling whilst providing a supreme hardness and offering the optimum in corrosion resistance thanks to a nanocomposite coating.

Density

4420kg/m³ (276lb/ft³)

Young's Modulus

110GPa (16 x 10⁶psi)

Yield Strength

828 MPa (120 x 10³ psi)

Ultimate Tensile Strength

1030MPa (149 x 10³ psi)

Compressive Strength

960MPa (139 x 10³ psi)

Shear Modulus

43GPa (6.24 x 10⁶ psi)

Ductility

10% elongation at break

Poisson's Ratio

0.34

Hardness

36 Rockwell C

Strength-to-Weight Ratio

187kNm/kg

Stiffness-to-Weight Ratio

24.9MNm/kg

Aluminium



Manufactured from 7075T6 aluminium, and suitable for use in all non-safety critical areas,

all products are available in a choice of black, blue, gold, orange, purple, red and silver. During manufacturing, the head is cold formed and the shank thread rolled. The anodising involves chemically brightening and colour anodising to between 8 and 12 microns thick. We offer Race Spec Drilled Flanged Hex Head, Socket Cap Bolts, Countersunk Bolts, Dome Head Bolts, Nuts and Washers – from 3mm to 10mm.

Density

2730kg/m³ (170lb/ft³)

Young's Modulus

72GPa (10.4 x 10⁶ psi)

Yield Strength

505 MPa (120 x 10³ psi)

Ultimate Tensile Strength

570 MPa (73.2 x 10³psi)

Compressive Strength

505 MPa (82.7 x 10³psi)

Shear Modulus

27 GPa (3.92 x 10⁶ psi)

Shear Strength

330 MPa (47.9 x 10³ psi)

Ductility

10% elongation at break

Poisson's Ratio

0.33

Hardness

150 Brinell

Strength-to-Weight Ratio

185 kNm/kg

Stiffness-to-Weight Ratio

26.4 Mnm/kg

Stainless Steel



Manufactured from A316 stainless steel. A316 stainless steel has a minimum chromium content of 16.5% and contains elements of carbon, molybdenum, silicon, phosphorus, sulphur, nickel, manganese and iron, all of which add properties of formability, strength, weldability and enhanced corrosion resistance. All of the fasteners are highly polished to a mirror-like finish.

Density

8030kg/m³(501lb/ft³)

Young's Modulus

193GPa (28 x 10⁶psi)

Yield Strength

260MPa (37.7 x 10³ psi)

Ultimate Tensile Strength

570MPa (82.7 x 10³psi)

Compressive Strength

260MPa (37.7 x 10³psi)

Shear Modulus

78GPa (11.3 x 10⁶ psi)

Ductility

40% elongation at break

Poisson's Ratio

0.27

Hardness

95 Rockwell B+

Maximum value allowed by ASTM A240**Strength-to-Weight Ratio**

32.4kNm/kg

Stiffness-to-Weight Ratio

24 MNm/kg