

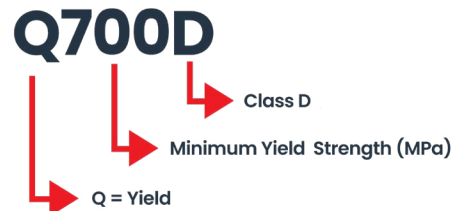
HIGH-STRENGTH STEEL - Q700D PLATE

Introduction

Q700D is a low-alloy, high-strength structural steel. It is control rolled and cooled with the addition of Nb and Ti alloys. It has excellent low-temperature impact toughness with good formability and weldability. It has been widely used in construction equipment and vehicle structures.

Grade Name

Q and the numbers that follow represent the yield for the product. Each product has B, C, D, E and F classes based on testing requirements.



Dimensions

- 3~5mm x 1000~1500mm x 6000~10000mm
- 6~9mm x 1000~1800mm x 6000~12000mm
- 10~12.75mm x 1000~1850mm x 6000~14000mm

Equivalent Grades

Standard	GB/T 1591-2008	Q/BQB 316 - 2018	EN10149-2	
Grade	Q690MD	BS700MCK2	S700MC	Strenx® 700MCD

Chemical composition

C	Si	Mn	P	S	Al	Nb	Ti	V
0.12	0.40	2.00	0.025	0.010	0.015	0.11	0.20	0.12

Note: Figures are for max%

Carbon Equivalent

CEV (max%)	Pcm (max%)
0.49	0.25

1) $CEV = C + Mn/5 + (Cr + Mo + V)/5 + (Ni + Cu)/15$

2) $Pcm = C + Si/30 + Mn/20 + Cu/20 + Ni/60 + Cr/20 + Mo/15 + V/10 + 5B$

Mechanical Properties

Thickness (mm)	Yield Stress Rel (MPa)	Tensile Strength Rm (MPa)	Elongation A	Bending 180°
≤12.75	≥700	770-940	≥14	R = 1t

Notes:

- All tests are in transverse direction.
- If no obvious yield point, take Rp0.2 (0.2%PS).
- Bent sample can not have visible crack on the surface.
- R = Radius of upper former - t = Plate thickness.

Charpy Impact Test

Class	Temperature (°C)	Sample Size (mm)	Direction	Impact Energy KV2 (J)
D	-20	10 x 10 x 55	Longitudinal	≥ 47

Notes:

- Impact test only applies to 6mm and above thickness.
- Charpy impact test with three samples, list value is average.
- Impact energy listed above is for sample size 10x10mm. 5 or 7.5mm samples will be used for plate <12mm thick and value will be proportionally reduced.

HIGH-STRENGTH STEEL - Q700D PLATE

Fabrication

1. No preheating is required for thermal cutting and welding.
2. For recommendations on welding consumables for Q700D, refer to the welding consumable selection guides for 'BISALLOY® Structural 80' in the Bisalloy technical guides' "Welding of BISALLOY® Steels" chapter.
3. The bend test is done per batch per specification in the mechanical properties section.
4. For machining guidance, including drilling, milling and tapping, refer to 'BISALLOY® Structural 80' in the relevant BISALLOY® Steel Technical Guide chapters.
5. For all Bisalloy technical resources, visit the Bisalloy Steels resource centre at www.bisalloy.com.au/resource-centre/

Delivery Conditions

Q700D is an BOS made steel and continuously cast after secondary refining, continuous cast billet is reheated and rolled into coils using controlled rolling and controlled cooling process (TMCP), and delivered in levelled steel sheet condition.

Surface Conditions

1. Free of crack, scab, lamination, seams or any detrimental defect.
2. Permitted to have localised pits and light scratches. However, the depth of such defect is less than half of thickness tolerance and minimum thickness in affected area shall be guaranteed.

Others

1. Dimension, shape and weight per Chinese standard GB/T 709-2019.
2. Packaging and certification are per Chinese standards GB/T 247 or GB/T 2102 unless there is special requirement.
3. Special dimensional tolerance or other requirement can be negotiable.

PLEASE NOTE: Every care has been taken to ensure the accuracy of information contained in this manual which supersedes earlier publications, however Bisalloy Steels shall not be liable for any loss or damage whatsoever caused from the application of such information. Typical values are provided for reference information only and no guarantee is given that a specific plate will provide these properties. Information is subject to change without notice. **Published February 2024**