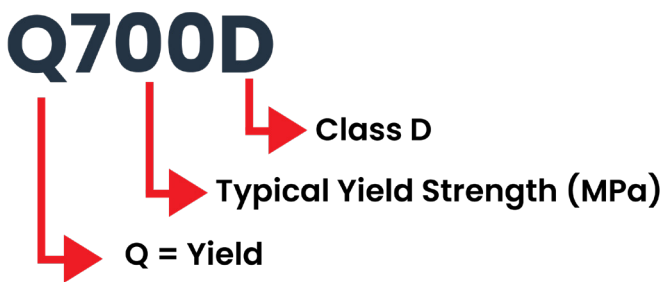


HIGH-STRENGTH STEEL - Q700D PLATE

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.



Production Process

- Molten Iron Smelting with 5100m³ Blast Furnace
- Steelmaking at 210t converter
- LF Refining
- RH Vacuum Degassing
- Position 1# CCS with 150mm slab
- Rolling at 2050mm hot continuous rolling and crimp
- Flatenning of the rolling plate and appearance finishing
- Flatness and surface inspect
- Stencil
- Packing

Quality Control Points

1) **Receiving of Molten Iron:** S<0.030%, P<0.020%

2) **Steelmaking and refining:** Chemical element within the technical agreement SGRZXNBF084a-2023. RH Vacuum time no less than 6 minutes.

3) **CCM:** Casting speed should not have significant fluctuations. Casting superheat within 25°C. Macrostructure center defect within C1.5.

4) **Rolling-hot strip mill:** Continuous rolling with Thermo Mechanical Control Process.

- Tolerance on Thickness: Per GB/T 709 2019 Table 4.
- Surface of coil should not have detrimental defects such as cracks, seams, shell, rolled in scab, edge cracks or other defects at the edges.

5) **Mechanical Property and Charpy Test Impact:** Test specimen from each coil. Test in laboratory with CNAS No. L13305. Mechanical properties are guaranteed, as shown in the table below.

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

a) All tests are in transverse direction;

b) If no obvious yield point, take Rp0.2 (0.2% PS) ;

c) Bent sample can not have visible crack on the surface;

d) R – Radius of upper former; t- sample thickness.

Charpy Impact Test according as table below.

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

a) Impact test only applies to 6mm and above thickness

b) Charpy impact test with three samples, list value is average of three.

c) 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.

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6) Plate cut from Coil:

6.1) Dimensional Tolerances and surface defect

- Tolerance on width: $-0\sim+20\text{mm}$
- Tolerance on length: $-0\sim+30\text{mm}$
- Tolerance on flatness: $\leq 4\text{mm}/1\text{m}$
- The surface defect such as pits, bumps, scratches etc. with a depth (or height) not exceeding half of the thickness tolerance is allowed, but the minimum allowable thickness of the steel plate should be ensured

6.2) Packing

- Bundles individually wrapped with VCI paper for protection from weather. Kiln Dried ISPM15 timber dunnage strapped to each bundle at one metre intervals. Two stickers with bundle identification are presented on each bundle (one at each end)
- The weight of each bundle is < 5 tons

6.3) Delivery

- Ensure the packaging not be damaged during the loading and unloading process. If the plate is stored outdoors or during transportation, it should be covered with waterproof material.

7) Certificate and List:

- Certificate with the Certificate No.,
- Contract No.
- Grade
- Size
- Heat No.
- Lot No.
- Bundle No.
- Chemical Composition
- Test results.

List with the certificate no., bundle no., size of plate, weight and quantity will be provided.

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 March 2024**