

The differences between

A516GR70 steel plate and Q345R steel plate

The A516GR70 steel plate offers several key advantages, making it a preferred choice for pressure vessel applications, especially in low-temperature and moderate-temperature services. Here are its main benefits:

1. Excellent Low-Temperature Toughness

A516GR70 is designed for low-temperature applications (down to -46°C/-50°F), making it suitable for cryogenic storage tanks, LNG equipment, and refrigeration vessels.

- Its impact toughness (measured by Charpy V-notch test) is superior to many carbon steel plates, reducing brittleness risk in cold environments.

2. Good Weldability & Fabrication Performance

Lower carbon content (max 0.27% C) compared to some high-strength steels, reducing the risk of **cold cracking** during welding.

Preheating and post-weld heat treatment (PWHT) are straightforward, minimizing fabrication challenges.

Compatible with common welding methods (SMAW, GTAW, SAW, etc.).

3. Reliable Strength & Ductility Balance

Tensile strength (485-620 MPa / 70-90 ksi) ensures structural integrity under high pressure.

Yield strength (min 260 MPa / 38 ksi)** provides good load-bearing capacity.

Elongation (min 21%)** allows for deformation without sudden failure.

4. Compliance with Strict Quality Standards (ASTM A516)

Tight control over sulfur (max 0.025%) and phosphorus (max 0.025%), reducing hot cracking risks.

Strict non-destructive testing (NDT) requirements ensure defect-free plates.

5. Cost-Effective for Pressure Vessels

More economical than stainless steel or high-alloy steels while still providing **good corrosion resistance** (when properly coated or lined).

Widely available in global markets due to ASTM standardization.

6. Versatile Applications

Used in oil & gas (refineries, storage tanks), power plants (boilers, heat exchangers), chemical processing, and cryogenic vessels.