

ICS 87.040



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 50128-2014

**Code for construction and acceptance of vertical cylindrical
steel welded storage tanks
(English Translation)**

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1 General Provisions

1.0.1 This code is formulated to standardize the construction of vertical cylindrical
welded

**1.0.1 This code is formulated to standardize the construction of vertical
cylindrical welded**

steel tanks, guarantee the engineering quality and make it advanced in technology,
cost-effective, safe and applicable.

**1.0.2 This code is applicable to the construction of vertical cylindrical welded
steel tank**

body at and close to normal pressure for storing petroleum and petrochemical products and
other similar liquids, including accessories welded with the tank, but not applicable to the
construction of buried tank, tank holding extremely and highly hazardous medium and
artificial refrigerant fluid tank.

**1.0.3 Tanks shall be constructed according to design documents. In case design
documents**

are required to be revised, written consent of the original design organization shall be first
obtained.

**1.0.4 Prefabrication, installation and inspection of tanks shall be performed with
qualified**

measuring tools with the same accuracy grade.

1.0.5 The construction of vertical cylindrical welded steel tanks shall not only meet those
specified in this code, but also those in the current relevant standards of the nation.

2.0.1 Annular/sketch bottom plates

The tank bottom plates at the outermost side of the lower part of the shell plate, including
annular edge plates and non-annular edge plates.

2.0.2 Fixed roofs

The tank roofs with peripheral parts connected, in fixed method, with the tank shell top, mainly including self-supporting cone roof, supporting cone roof and self-supporting dome roof etc.

2.0.3 Floating roofs

Roofs which lifts with the liquid level, including external floating roof and internal floating roof, and mainly being single-deck floating roof, double-deck floating roof, open-top bulk-headed floating roof and floating roof on floats etc.

2.0.4 Wind girder

Member arranged onto the shell to make it stronger to resist wind.

2.0.5 Auto vent

The venting device which opens/closes automatically when the floating roof rises or restores to be in bracing state.

2.0.6 Floating roof drains

Equipment which drains the rainwater on external floating roof out of the tank under normal conditions.

3.0.6 Material re-inspection shall meet the requirements of the design documents.

3.0.7 In case of any doubt about material quality, re-inspection shall be performed by the party purchasing such material.

4.1 General Requirement

4.1.1

Sample plate for tank prefabrication and installation inspection shall meet the following requirements.

1 the chord length of arc-shaped sample plate shall not be less than 1.5m in case the curvature radius is less than or equal to 12.5m or 2m in case the curvature radius is greater than 12.5m.

2 the length of linear sample plate shall not be less than 1m.

3 for the arc-shaped sample plate for measuring weld angularity, its chord length shall not be less than 1m.

4.1.2

The method to prefabricate the tank shall not damage the base material or reduce the performance of base material.

4.1.3 Cutting of tank members and processing of weld groove shall meet the following

requirements.

1 carbon steel and low alloy steel members should be machined or processed by way of automatic and semi-automatic flame cutting; stainless steel members shall be machined or processed by way of plasma cutting;

2 if the operating temperature is less than the following temperature listed, steels shall not be cut.

1) -16°C for common carbon steels;

2) -12°C for low alloy steels.

4.1.4 Weld groove shall be processed to be flat and smooth, free from slag inclusion, delamination or crack and other defects; hardened surface layer generated on weld groove due to flame and plasma cutting shall be removed.

4.1.5 As for shell plate of which the minimum yield strength specified in the standard is greater than 390MPa, if its weld groove is processed by way of flame cutting, groove surface shall be subjected to magnetic particle or penetrant testing after the removal of hardened layer, and testing methods and criterion of acceptability shall meet the requirements of 7.2.9 of this code.

4.1.6 If no required in design documents, groove type and dimension of welded joints shall

be selected according to the current national standards Recommended Joint Preparation for Gas Welding, Manual Metal Arc Welding, Gas-shield Arc Welding and Beam Welding (GB/T 985.1) and Recommended Joint Preparation for Submerged Arc Welding (GB/T 985.2); types of butt joints for electro-gas welding and submerged arc welding respectively for longitudinal welding seam and circumferential welding seam of the tank shall also meet the following requirements.

Figure 4.1.6-2 -- Butt Joint Formed Through Submerged Arc Welding of Circumferential Welding Seam