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

GB/T 25027-2018

Replacing GB/T 25027-2010

**Structure, main size and basic parameters of two pieces
glass-lined steel vessels with agitator**

搪玻璃开式搅拌容器型式、主要尺寸及基本参数

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Foreword

GB/T 25027-2018 was issued on 28 December 2018 by the State Administration for Market Regulation and the Standardization Administration of the People's Republic of China, and has been in force since 1 November 2019. It is classified under ICS 71.120 and 25.220.50 and under Chinese Standard Classification code G 94. It replaces GB/T 25027-2010, Glass-lined open type agitated vessels, which was the only previous edition.

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

Compared with GB/T 25027-2010, apart from editorial changes, the main technical changes are the following: the title of the standard was revised from "Glass-lined open type agitated vessels" to "Structure, main size and basic parameters of two pieces glass-lined steel vessels with agitator"; the 400 L size of glass-lined open type agitated vessel was deleted (see Table 1 of the 2010 edition); the half-pipe jacket structural type was added (see Figure 1); provisions were added for the types, dimensions and parameters of axial-flow agitators matched to the agitated vessel (see Figure 2 and Table 3); for vessels of DN1 450 to DN1 750 the manhole size was revised from 300 mm by 400 mm to 350 mm by 450 mm (see Table 7, and Table 7 of the 2010 edition); the height of the manhole was modified, being increased by about 10 mm (see Table 7, and Table 7 of the 2010 edition); a provision was added that vessels with a nominal capacity above 1 000 L should preferably use the U-shaped lower connecting ring (see 5.15); the former 6.1 (design, manufacture, inspection and acceptance of glass-lined open type agitated vessels to be carried out in accordance with GB 25025 and the relevant standards and specifications), 6.2 (all accessories of the vessel, such as manholes, handholes, high-neck flanges, manhole

flanges, nozzles, clamps, loose flanges, transmission devices, agitators, sealing devices, gaskets, thermowells including the baffle type, sight glasses and flange covers, to comply with the relevant provisions of the corresponding glass-lined equipment component standards) and 6.3 (the vessel to undergo a pressurised agitating running test with water in place of the process material, the results to meet the design requirements of the drawings) were deleted (see 6.1, 6.2 and 6.3 of the 2010 edition); and Clause 7 of the former standard, Delivery documents, packaging, transport and storage, was deleted (see Clause 7 of the 2010 edition).

This standard was proposed by the China Petroleum and Chemical Industry Federation and is under the jurisdiction of the National Technical Committee on Glass-lined Equipment of Standardization Administration of China (SAC/TC 72).

The drafting organisations of this standard are: Jiangsu Yangyang Chemical Equipment Manufacturing Co., Ltd.; Zibo Taiji Industrial Enamel Co., Ltd.; Suzhou Xieli Chemical Equipment Co., Ltd.; Shanghai Institute of Special Equipment Inspection and Technical Research; Hebei Dajing Dat Chemical Equipment Co., Ltd.; Changshu Huayi Chemical Equipment Co., Ltd.; Jiangyin Chemical Equipment Factory; Zibo Xingtian Industrial Enamel Factory; Zibo Huading Chemical Equipment Manufacturing Co., Ltd.; and Tianhua Chemical Machinery and Automation Research and Design Institute Co., Ltd.

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1 Scope

Glass-lined steel vessels exist because a great deal of chemistry has to be carried out in something that steel alone cannot survive. Hot mineral acids, chlorides and organic acids attack carbon steel within hours, and even austenitic stainless steels pit or crack in the presence of chloride; fusing a borosilicate enamel onto the inside of a mild steel shell gives the corrosion behaviour of glass with the strength and pressure rating of steel. The compromise is that the coating is brittle and only a fraction of a millimetre thick, and its bond depends on the enamel and the steel contracting at nearly the same rate as the vessel cools from firing. A single chip, a bolt dropped through an open manhole, a thermal shock from cold feed into a hot batch, and the exposed metal corrodes and undermines the glass around it. This document deals with the open type of such a vessel, split at a full-diameter high-neck flange so that the shell can be re-glassed and the agitator withdrawn. It fixes the structural types, the classification, the principal dimensions and parameters, and the designation, so that shells, jackets, agitators, manholes and nozzles from different makers remain interchangeable.

This standard specifies the structural types and classification, the main dimensions and parameters, and the designation of glass-lined open type agitated vessels.

This standard applies to glass-lined open type agitated vessels whose inner vessel has a design pressure not greater than 1.0 MPa and a nominal capacity from 50 L to 5 000 L, whose jacket has a design pressure not greater than 0.6 MPa, and whose inner vessel and jacket have a design temperature not lower than minus 20 degrees C and not higher than 200 degrees C.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document, including any amendments, applies.

The documents cited are: GB/T 25198, Heads for pressure vessels; HG/T 2048.1, Glass-lined stuffing box; HG/T 2049, Glass-lined equipment - High neck flange; HG/T 2050, Glass-lined equipment - Gasket; HG/T 2051.1 to HG/T 2051.4, Glass-lined agitators - anchor, frame, impeller and paddle types; HG/T 2052, Glass-lined equipment - Transmission device; HG/T 2054, Glass-lined equipment - Clamp; HG/T 2055.1 and HG/T 2055.2, Glass-lined manhole and glass-lined manhole with sight glass; HG/T 2057, Mechanical seal for glass-lined agitated vessels; HG/T 2058.1 and HG/T 2058.2, Glass-lined thermowell and glass-lined baffle-type thermowell; HG/T 2143-2012, Glass-lined equipment - Nozzle; HG/T 2145.1 to HG/T 2145.4, Glass-lined handholes of the flat cover, sight glass, quick-opening and quick-opening with sight glass types; HG/T 3217 and HG/T 3218, glass-lined upward and downward discharge valves; HG/T 20592, Steel pipe flanges (PN series); and JB/T 4712.3 and JB/T 4712.4, Supports for vessels, Part 3 lug supports and Part 4 leg supports.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Two pieces glass-lined steel vessel with agitator

A glass-lined vessel fitted with an agitating device, in which the shell carries a high-neck flange of the same diameter as the shell itself.

3.2 Capacity for under equipment flange

The capacity of the part of the vessel below the high-neck flange.

4 Structural types and classification

According to the structural type of the jacket, glass-lined open type agitated vessels are divided into the U-shaped jacket type and the half-pipe jacket type; see Figure 1.

Figure 1 shows the structural types of the open type agitated vessel: sub-figure a) is the

U-shaped jacket structure and sub-figure b) is the half-pipe jacket structure. Both drawings identify the inner vessel diameter d_1 , the jacket diameter d_2 , the height of the cylindrical part h_1 , the height of the upper section above the flange h_2 , the overall height h_3 and the wall thickness T .

5.1 Structure, basic parameters and main dimensions

The structure of the glass-lined open type agitated vessel is shown in Figure 2; the basic parameters and main dimensions are given in Table 1, and the list of components in Figure 2 together with their requirements is given in Table 2.

5.2 Technical parameters

The technical parameters of the glass-lined open type agitated vessel are given in Table 3.

5.3 Thermowell and agitator combinations

The combined forms of the thermowell tube and the agitator are shown in Figure 3. Where an impeller, paddle or axial-flow agitator is selected, the baffle-type thermowell should preferably be used in accordance with the provisions of HG/T 2058.2.