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Two pieces glass-lined steel vessels with agitator

搪玻璃开式搅拌容器

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Issued by: General Administration of Quality Supervision, Inspection and Quarantine;

Standardization Administration Committee.

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Foreword

This Standard was formulated and based on references of DIN 28136.1:2005 “The main dimensions of stirring vessels”, DIN 28136.3:2005 “Glass-lined vessel spout head orientation and size”, DIN 28137.3:1983 “Connection size of glass-lined vessel port reducer flange”, DIN 28140.2:1978 “Connection size of discharge valve and glass-lined vessels PN10”, DIN 28145.3:1982 “Welding pieces of glass-lined vessels - Lug position and size” and DIN 28151:1999 “Industrial glass-lined vessel jacketed mouth position and size”. It summarized problems and disadvantages of HG/T 2371-2003 “Two pieces glass-lined steel vessels with agitator” during its implementation, and combined national manufacturing process characteristics of glass-lined equipment and present manufacturing level.

This Standard was proposed by China Petroleum and Chemical Industry Association.

This Standard shall be under the jurisdiction of National Technical Committee on Glass Lining Equipment of Standardization Administration of China (SAC/TC 72).

Main drafting organizations of this Standard: Jiangyin Chemical Equipment Plant, Changshu Huamao Chemical Equipment Co., Ltd., Ningbo Mingxin Chemical Machinery Co., Ltd., Suzhou Xieli Chemical Equipment Co., Ltd, and Quality Supervision and Inspection Center of Non-metallic Materials and Equipment in Chemical Industry.

Drafting organizations of this Standard: Zibo Industrial Enamel Equipment Plant, Jiangsu Hua Ming Mao Machinery Co., Ltd., and Tianhua Institute of Chemical Machinery & Automation.

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Two pieces glass-lined steel vessels with agitator

1 Scope

This Standard specifies the terms and definitions, basic parameters and the main dimensions, models and technical characteristics, technical requirements and factory documents, packaging, transportation and storage of two pieces glass-lined steel vessels with agitator.

This Standard is applicable to two pieces glass-lined steel vessels with agitator, of which the designed pressure of inner vessel is less than or equals to 1.0 MPa, nominal volume is greater than or equals to 50 L, less than or equals to 5000 L, designed pressure in U-type jacket is less than or equals to 0.6 MPa, and designed temperature of inner vessel and jacket is higher than -20°C~200°C.

2 Normative references

The following standards contain the provisions which, through reference in this Standard, constitute the provisions of this Standard. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Standard are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Standard.

GB 25025 Specification of glass-lined equipment for industry

HG/T 2048 Glass-lined stuffing boxes

HG/T 2049 Glass-lined Equipment H Flange

HG/T 2050 Gaskets for Glass-lined Steel Vessel

HG/T 2051 Glass-lined Agitator

HG/T 2052 Drive for Glass-lined Steel Vessel with Agitator

HG/T 2054 Clamps for glass lined vessels

HG/T 2055 Glass-lined Manhole

HG/T 2057 Mechanical seals for glass lined vessel

HG/T 2058 Glass Lined Vessel Parameter

HG/T 2143 Welding Neck for Glass Lined Steel Vessel

HG/T 2145 Hand Hole for Glass Lined Equipment

HG/T 3217 Glass lined-life up valves

HG/T 3218 Glass lined-life down valves

HG/T 20592 Steel pipe flanges and model parameters

JB/T 4712.3 Vessel supports - Part 3: Lug support

JB/T 4712.4 Vessel supports - Part 4: Bracket support

JB/T 4746 Formed Heads for Steel Pressure Vessels

3 Terms and definitions

The following terms and definitions apply to this Standard.

3.1 Two pieces glass-lined steel vessels with agitator

The glass-lined steel vessels with agitator of which the high-neck flange is set on cylinder and has equal diameter with cylinder. The code is K and the structure is shown in Figure 1.

3.2 Capacity for under equipment flange

The capacity that is below high-neck flange.

7	HG/T 2050	Glass-lined equipment Gasket	1	Assembly	
8	HG/T 2054	Glass-lined equipment Clip	Shown in Table 8	Assembly	
9	HG/T 2051	Glass-lined agitator	1	Assembly	Carbon steel and glass-lined steel
10	HG/T 3217	Glass lined-life up valves	1	Assembly	
	HG/T 3218	Glass lined-life down valves	1	Assembly	

Table 3 Technical characteristics

Nominal volume VN/L		50	100	200	300	400	500	800
Nominal diameter d1/mm	L Series	-	-	-	-	800	900	1000
	S Series	500	600	700	800	-	-	-
Capacity for under equipment flange VJ/L		70	127	247	369	469	588	878
Full volume VT/L		101	179	324	483	583	744	1082
Jacket heat transfer area /m^2		0.54	0.84	1.50	1.90	2.40	2.60	3.70
Designed pressure /MPa		Inner vessel: 0.25, 0.60, 1.0; Jacket: 0.60						
Designed temperature /°C		Inner vessel: 0~200, > -20~200; Jacket: 0~200, > -20~200						
Agitator shaft nominal diameter d_n/mm		40	50		65			
Motor power /kW		0.55	0.75	1.1	1.5		2.2	3.0
Motor model		Y type or YB type series (Synchronous speed: 1500r/min)						
Agitator shaft speed		Anchor type, frame type agitators: 50r/min~80r/min; paddle type and impeller type agitators: 70r/min~125r/min						
Transmission model		W1	W2		W3			
Lug support		A1	A2				A3	
Combination of agitator and thermowell		Refer to Table 3 and relevant standards						
Glass-lined agitator shaft seal		Use according to application scope specified in HG/T 2048 or HG/T 2057						

spout according to PN 1.0 of HG/T 2143.

Table 5 Head spout position, size and height

Nominal diameter d_1/mm	Spout position	Spout size and height
500	Shown in Table 5	Shown in Table 6
600~1100	Shown in Table 6	Shown in Table 6
1200~1750	Shown in Table 7	Shown in Table 7

Table 6 Spout size and height of which d1 = 500 mm ~ 1100 mm Unit: mm

d_1	H	N_1 N_2	S_1 S_2	T	e	R	h_n	h_t	h_g	A
500	80	40	50	50	200	190	170	175	200	15°
600	80	40	50	50	225	225	190	195	225	15°
700	125	65	80	80	270	265	220	225	250	10°
800	125	65	80	80	300	300	240	245	285	10°
900	150	100	100	100	325	325	270	270	310	10°
1000	150	100	100	100	375	375	285	285	235	10°
1100	200	100	100	100	400	400	310	310	260	10°

Table 7 Spout size and height of which d1 = 1200 mm ~ 1750 mm Unit: mm

d_1	M	N_1 N_3	N_2	N_4	S	T	e	R_t	R	h_m	h_t	h_g	h_n
1200		100	100	100	100	150	420	420	420	110	350	385	330
1300		100	100	100	100	150	460	460	460	115	370	410	350
1450		100	100	100	100	150	510	510	510	115	400	448	380
1450		100	100	100	100	150	510	510	510	115	400	452	380
1600	300	100	100	100	100	200	600	600	580	120	430	490	405
1750	× 400	100	150	100	100	200	630	650	615	120	460	528	440 /460

top according to Figure 12. Discharge outlet of condensate or liquid residues shall be designed on jacket bottom according to Figure 13.

5.14 Support height and positioning size of equipment are shown in Table 11. Position is shown in Figure 14. When there are higher insulation requirements, it shall choose B type or C type lug support of corresponding specifications according to the provisions in JB/T 4712.

Table 10 Specification, height and positions size of flange

Nominal volume VN/ L	Nominal diameter d_1/mm		Spout specification						Mounting size				
	L Series	S Series	L_1 L_2 L_3/ mm	P_1/ mm	P_2/ mm	P_3/ mm	g	K	h_5/ mm	h_6/ mm	h_7/ mm	B_1/ mm	B_2/ mm
50		500	20	20					210			250	250
100		600	20	20					240			250	250
200		700	25	25					250			270	270
300		800	25	25					250			270	270
400	800		25	25	-		G 3/8		250	-		270	270
500	900		32	32					270			270	270
800	1000		32	32					270			270	270
1000	1100		32	32		-			270		-	270	270
		1200	40	40				G 1/2	270			350	350
1500	1200		40	40	50				270	1100		350	350
		1300	40	40	50		G 3/4		310	950		510	350
2000	1300		40	40	50				310	1300		510	350
		1450	50	50	50				310	950		510	350
3000	1450		50	50	50				310	1500		510	350
		1600	50	50	50	50			310	1300	400	510	400
4000	1600		50	50	50	50			310	1750	500	510	400
		1750	65	65	65	65			310	1400	450	510	400
5000	1750		65	65	65	65			310	1850	600	510	400

at the bottom head of jacket for easy lifting and mounting.

6 Technical requirements

6.1 The design, manufacture, inspection and acceptance of two pieces glass-lined steel vessels with agitator shall be conducted according to relevant provisions in GB 25025.

6.2 Accessories of two pieces glass-lined steel vessels with agitator, such as manhole, hand hole, high-neck flange, manhole flange, spout, clip, lapped flange, transmission device, agitator, sealing device, gasket, thermowell (including baffle), level glass and flange cover shall comply with relevant provisions of corresponding glass-lined equipment.

6.3 Stirring running test under pressure which uses water as material shall be conducted for two pieces glass-lined steel vessels with agitator. The test results shall comply with design requirements of the drawings.

6.4 Marks:

K ①-② / ③-④⑤⑥ GB/T 25027-2010

⑥ - Shaft seal code: mechanical seal is P while stuffing seal is S;

⑤ - Agitator code: anchor type is represented by M, frame type is represented by K, paddle type is represented by J, impeller type is represented by Y and others are represented by N;

④ - Transmission device code: W type uses W, DZ type uses D and SZ type uses S;

③ - Nominal diameter, in mm;

② - Nominal volume, in L;

① - Designed pressure of inner vessel; MPa: 0.25, 0.6 and 1.0;

K - Code of two pieces glass-lined steel vessels with agitator.

Marking example:

The two pieces glass-lined steel vessels with agitator of which designed pressure of inner vessel is 0.60 MPa, nominal volume is 2000 L, nominal diameter is 1300 mm, transmission device model is W type, agitator is frame type and shaft sealing is mechanical sealing, shall be marked as:

K0.6-2000/1300-WKP GB/T 25027-2010

7 Exit-factory documents, packaging, transport and storage

7.1 Product labels, exit-factory documents, packaging and transport shall comply with the provisions in GB 25025.

7.2 Vessels shall be safely kept before leaving factory, and kept from rain, snow and erosion of corrosive medium. Usually, do not store it in the open air.

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