



CERTIFICATE

(Certificate of conformity with technical requirements in:)
API STANDARD 607 EIGHTH EDITION, OCTOBER 2022

Certificate No.: 335183

Ref. Test report No.: 335182

Name and postal address of manufacturer: **SHANGHAI THINKTANK PROCESS MANAGEMENT CO., LTD.**
#489, Shihui Road, Songjiang District, Shanghai City, P. R. China

We hereby certify that the fire test on below valves have been conducted at the laboratory designated by manufacturer and witnessed by TÜV SÜD inspector according to requirements of API STANDARD 607 EIGHTH EDITION, OCTOBER 2022. The testing results of valves meet the requirements of API STANDARD 607 EIGHTH EDITION, OCTOBER 2022.

1. Description of Test Valve:

Type of Test Valve	2" CL150 Ball Valve
Description of Test Valve	Ball Valve
Valve Size (NPS)	2"
Pressure Rating (Class)	Class 150
Valve Body Material	ASTM A105

2. Qualified Range of Valves :

Type	Ball Valves
Description of Valves	Ball Valves
Qualified Sizes (NPS) (according to API 607 Table 3)	2" and below, 2 1/2", 3", 4"
Qualified Pressure Ratings(Class) (according to API 607 Table 4)	Class 150, Class 300
Qualified Valve Material	According to API 607 7.2
Remark: the technical data of tested valves see back of this certificate appendix 1.	

This certificate is issued according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022, based upon the result of testing report on above mentioned test valve. The additional valve qualification shall be limited on similar valves of same basic design and construction as the test valves and of the same nonmetallic materials as the test valve in the seat-to-closure member seal, seat-to-body seal, stem seal, and body joint seal according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022, Paragraph 7.

Shanghai, March 02, 2026
(Place, date)

Guilin Chen
TÜV SÜD Certification and Testing (China) Co., Ltd.
Floor 3-13, No.151, Heng Tong Road,
Shanghai, 200070, P. R. China



Appendix 1:

Certificate No.: 335183

Ref. Test report No.: 335182

Name and postal address of manufacturer: **SHANGHAI THINKTANK PROCESS MANAGEMENT CO., LTD.**
#489, Shihui Road, Songjiang District,
Shanghai City, P. R. China

Technical Data of Valve

1. Type of Test Valve: 2" CL150 Ball Valve

2. Description of Test Valve: Ball Valve

3. Details of Valve:

Valves Size (NPS) Material Part Name	2"
Body	ASTM A105
Bonnet	ASTM A105
Ball	ASTM A105+ENP
Gasket	Graphite/304
Seat	ASTM A105+ENP/PTFE
Stem	ASTM A182 F6a
Stem Packing	Graphite
Bonnet Nut	ASTM A194 2H
Bonnet Bolt	ASTM A193 B7
Gland Flange	ASTM A105
Spring Seat	ASTM A105+ENP
Spring	17-7PH
Socket Heat Cap Screw	ASTM A193 B7
Design Drawing No.:	FSV-260202

Guilin Chen

Shanghai, March 02, 2026
(Place, date)

TÜV SÜD Certification and Testing (China) Co., Ltd.
Floor 3-13, No.151, Heng Tong Road,
Shanghai, 200070, P. R. China

TÜV SÜD Certification and Testing (China) Co., Ltd.
Shanghai Branch
Floor 3-13, No.151, Heng Tong Road,
Shanghai, 200070, P. R. China

Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn



Test Report

(Fire test for valves according to API STANDARD 607 API STANDARD 607 EIGHTH EDITION, OCTOBER 2022.)

Certificate No. : 335183
Test Report No.: 335182

Applicant / Manufacturer: SHANGHAI THINKTANK PROCESS MANAGEMENT CO., LTD.
#489, Shihui Road, Songjiang District,
Shanghai City, P. R. China

Inspection body: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China

Lab of test: Suzhou GME Inspection & Testing Co., Ltd.

Test Date: January 31, 2026

Description of valves: 2" CL150 Ball Valve
Size: 2"
Pressure Rating: Class150
Assembly Drawing No.: FSV-260202

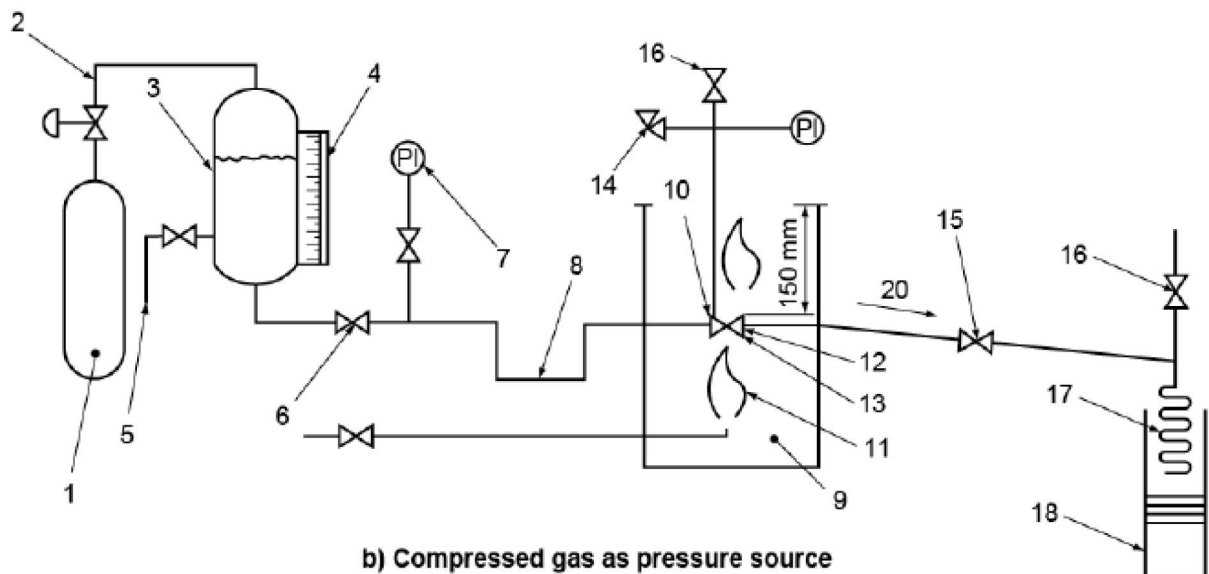
Test Witnessed By: CHEN Guilin/ TÜV SÜD Inspector

Inspection and Tests

1. Conformity of Equipment

The test equipment was verified by TÜV SÜD inspector according to requirements of API STANDARD 607 EIGHTH EDITION, OCTOBER 2022. Para.5.3 and found satisfactory. The detail arrangement of the fire-test equipment is shown below:

Figure 1. Typical Fire-Test System Using Compressed Gas as the Pressure Source



Key

- | | | |
|--|--|------------------------------|
| 1. Pressure source | 10. Test valve mounted horizontally with stem in horizontal position | 19. Check valve |
| 2. Pressure regulator and relief | 11. Fuel gas supply and burner | 20. Slope |
| 3. Vessel for water | 12. Calorimeter cubes | 21. Clearance: 150 mm (6in.) |
| 4. Calibrated sight gauge | 13. Flame environment and body thermocouples | |
| 5. Water supply | 14. Pressure gauge and relief valve | |
| 6. Shut-off valve | 15. Shut-off valve | |
| 7. Pressure gauge | 16. Vent valve | |
| 8. Piping arranged to provide vapor trap | 17. Condenser | |
| 9. Enclosure for test | 18. Container | |



Test Report No.: 335182

2. Calibration of measurement and test instrument

The measurement and test instrument have been properly calibrated such as pressure gauges, thermocouples, etc.

3. Technical Data of Test Valve:

a) Description of test valve

Type of Test Valves	2" CL150 Ball Valve
Description of Valves	Ball Valve
Pressure Class	Class 150
Valve Size	2"
Face to Face	ASME B16.10
Designed Standard	API6D

b) Details of technical data on test valve

Part Name	Materials
Body	ASTM A105
Bonnet	ASTM A105
Ball	ASTM A105+ENP
Gasket	Graphite/304
Seat	ASTM A105+ENP/PTFE
Stem	ASTM A182 F6a
Stem Packing	Graphite
Bonnet Nut	ASTM A194 2H
Bonnet Bolt	ASTM A193 B7
Gland Flange	ASTM A105
Spring Seat	ASTM A105+ENP
Spring	17-7PH
Socket Heat Cap Screw	ASTM A193 B7
Design Drawing No.:	FSV-260202



Test Report No.: 335182

4. Visual and dimensional Check on Valve Specimen:

The specimen valve was chosen at random by the manufacturer in its workshop and submitted to the laboratory. The visual and dimensional check was performed according to drawing No. FSV-260202 and results found satisfactory. The mark was verified on valve as following:

<u>--</u>	<u>2"</u>	<u>150</u>	<u>A105</u>
Manufacturer` Brand	Size	Class	Material

5. Document Review:

The chemical and mechanical test report of forgings was reviewed and found satisfactory. Also the inspection report of shell test, hydro seat test and air seat test were reviewed and found satisfactory.

6. Preparation before testing:

- 6.1 The thermocouples and calorimeters were installed properly according to Figure 1,2,3,4 in API 607. Two thermocouples (part 13) are installed to measure flame temperature, one is located under valve body, another is located under valve stem, both within 25mm. Two calorimeters (part 12) are positioned to the same place as the thermocouples do.
- 6.2 The test system including test valve (part 10) was cleaned through by water before testing. All air was purged from test valve and testing system by water.
- 6.3 The test system was pressurized to 2.8MPa after the test valve and system upstream of valve have been completely full of water and system downstream of the test valve have been completely empty of water. The system and test valve were carefully checked for leakage when the test pressure was held at 2.8MPa. No leakage was found on system and test valve.

7. Fire Test:

The fire test was conducted according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022 Section 5. The pressure of the system upstream was kept 0.2MPa, then the fire ignited. The flame temperature reached 750°C within 2 minutes after ignition. The test pressure and temperature were maintained at 0.2MPa during the fire test. The temperature and pressure were recorded continuously by the operators. The system and test valve was cooled below 100 °C within 5 minutes by shower nozzles after 30 minutes fire test. The loss of water weight in vessel was measured by weighing scale and water in calibrated container (part 18) were read and recorded. The test result is shown as below:



Test Report No.: 335182

Test result of fire test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	0.2MPa	0.19-0.21 MPa
Test Temperature	750 - 1000 °C	794.0 – 929.0°C
Through-valve leakage according to API 607 table 1	≤ 200 ml / minute	43.0 ml / minute
Total time from fire test to cooling down	35 Minutes	
External Leakage	≤ 50 ml / minute	28.0 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

8. Low Test:

The test valve was cooled below 100 °C within 5 minutes after complete the fire test. The low pressure test was conducted according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022 Para. 6.4 and 5.6.15. The test result was recorded as below:

Test result of low pressure test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	0.2 MPa	0.2 MPa
Test Temperature	30 °C	
Test Time	5 minutes	
Through-valve leakage	≤ 80 ml / minute	18. 0 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

After completing the static leakage tests, close the shut-off valve, operate the test valve against the low test pressure at 0.2 MPa to the fully open position and then to the fully closed position. Open the shut-off valve. Allow the system to stabilize for a five-minute period, and once completed, record in the test report the through-seat leakage over a five-minute time period.

Test result of low pressure test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	0.2 MPa	0.2 MPa
Test Temperature	30 °C	
Test Time	5 minutes	
Through-valve leakage	≤ 80 ml / minute	12.0 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

9. Operational Test:

The test valve was cooled below 100 °C within 5 minutes after complete the fire test. The operational test was conducted according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022 Para. 6.6 and 5.6.17. The upstream pressure was increased to 1.5 MPa then the test valve was fully opened against the high test pressure differential to vent the piping and test valve body cavity to remove air or steam. The



Test Report No.: 335182

downstream shutoff valve was then closed and the system pressure was increased to and maintained at 1.5 MPa. Then measured and recorded external leakage for a period of five minutes after valve was in the open position at high test pressure. The test result was recorded as below:

Test result of operational test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	1.5 MPa	1.5 MPa
Test Temperature	30 °C	
Test Time	5 minutes	
External Leakage	≤ 50 ml / minute	34.9 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

The undersigned, hereby declare that I have checked test valve and witnessed the fire test on the test valve according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022. The test result is satisfactory.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

RONG Zhibin

Prepared by: Rong Zhibin

Date: March 02, 2026

Chen Guilin

Reviewed by: Chen Guilin

Date: March 02, 2026

Annexes:

- 1) Copy of Drawing No. FSV-260202.
- 2) Copy of Test Record of Fire Test No. GMB202601012.