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

**GB/T 12385-2025**

Replacing GB/T 12385-2008

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**Standard test methods for sealability of gaskets for pipe  
flanges**

管法兰用垫片密封性能试验方法

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## Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for Standardization - Part

1. Rules for the Structure and Drafting of Standardizing Documents. This document serves as a replacement for GB/T 12385-2008 Standard Test Method for Sealability of Gaskets for Pipe Flanges. In comparison with GB/T 12385-2008, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

- a) The Scope is modified (see Chapter 1; Chapter 1 of Version 2008);
- b) The asbestos rubber sheet is deleted (see Table 1 of Version 2008);
- c) The provisions for specimens, dimensions and dimensional measurements are added (see 4.3.2,
- d) The helium mass spectrometry vacuum leak detection method (Method C) is added (see Chapter 6). Please be noted that certain content of this document may involve patents. The institution issuing this document does not undertake the responsibility of identifying these patents. This document was proposed by China Machinery Industry Federation. This

document shall be under the jurisdiction of National Technical Committee 237 on Piping Fittings of Standardization Administration of China (SAC/TC 237). The drafting organizations of this document. East China University of Science and Technology; Zhejiang CPS Cathay Packing & Sealing Co., Ltd.; Ningbo Tiansheng Sealing Parts Co., Ltd.; China Productivity Center for Machinery Co., Ltd.; Ningbo Yitiandi Xinyuan Sealing Technology Co., Ltd.; Cixi Hengli Sealing Materials Co., Ltd.; Special Equipment Safety Supervision Inspection Institute of Jiangsu Province; Guangzhou Dongshan South Seals Co., Ltd.; Wuxi Xixi Chemical Machinery Parts Co., Ltd.; Wenzhou Huahai Sealing Co., Ltd.; Taizhou Longjiang Chemical Machinery Technology Co., Ltd.; SINOPEC Engineering Incorporation; China Tianchen Engineering Corporation Ltd.; CNPC EastChina Design Institute Co., Ltd.; Beijing Branch of China Huanqiu Contracting & Engineering Co., Ltd.; Suzhou Nuclear Power Research Institute; Ningbo Auto Sealing Technology Co., Ltd.; Cixi AIFLON Sealing Parts Co., Ltd.; Zhejiang Zhengtong Pipes Co., Ltd.; Shenzhen Minle Pipe Industry Co., Ltd.; Zhejiang Bomeite Energy Equipment Co., Ltd.; Yanqi Lake Institute of Basic Manufacturing Technology Research Co., Ltd.; Nuclear Industry Research and Engineering Co., Ltd. The main drafters of this document. Zhang Lanzhu, Wu Yimin, Li Xinggen, Feng Feng, Lin Jianhong, Xu Shaohuan, Li Ke, Wu Kaijun, Hui Fuming, Zhang Yong, Xiong Conggui, Zhao Yong, Liu Hongfu, Liu Jianxin, Pang Dong, Han Chuanwei, Ye Xin, Ye Qiwei, Yang Xin, Xu Zhihua, Zhang Kemei, Wang Xiaojuan, Chang Haijun. Standard Test Methods for Sealability of Gaskets for Pipe Flanges

## 1 Scope

GB/T 12385-2025 is the Chinese national standard on standard test methods for sealability of gaskets for pipe flanges, in the field of fluid systems and general-purpose components. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 28 March 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2025. Classification: ICS 23.040.60, CCS J15. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes three methods for determining the sealability of gaskets used for pipe flanges. the leak detection cavity pressurization method (Method A), the pressure drop method (Method B) and the helium mass spectrometry vacuum leak detection method (Method C). This document is applicable to the determination of the sealability of non-metallic flat gaskets, spiral wound gaskets, polytetrafluoroethylene coated gaskets, metal coated gaskets, flexible graphite composite reinforced gaskets, metal toothed combination gaskets and metal corrugated composite gaskets. Other types of gaskets may

take this as a reference.

## 2 Normative References

This document does not have normative references.

## 3 Terms and Definitions

This document does not have terms or definitions that need to be defined.

## 4 Leak Detection Cavity Pressurization Method (Method A)

4.1 Overview It is applicable to the sealability test of gaskets for pipe flanges with the medium being nitrogen or helium, and the leakage rate ranging from 105 cm<sup>3</sup>/s (standard state) to 101 cm<sup>3</sup>/s (standard state) (hereinafter referred to as "the gaskets").

### 4.2 Test Device

4.2.1 The test device consists of a gasket loading system, a test medium supply system, a leak detection system and a test flange, as shown in Figure 1.

4.2.2 The gasket loading system shall be able to provide the specified gasket pre-tightening specific pressure and be able to control constant loading and unloading speeds. During the test, the fluctuation of the gasket pre-tightening specific pressure shall be 2% of the specified value. When the gasket pre-tightening specific pressure is less than or equal to 35 MPa, the loading speed and unloading speeds shall be

0.2 MPa/s; when the gasket pre-tightening specific pressure is greater than 35 MPa, the loading and unloading speeds shall be

0.5 MPa/s. PC

---the absolute pressure of the test medium introduced into the leak detection cavity, expressed in (MPa).

### 4.5.4 In accordance with the provisions of

4.2.3 and Table 1, introduce the test medium, and after the medium pressure reaches the specified value, maintain it for 10 minutes.

4.5.5 Start leak detection and record the pressure and temperature in the leak detection cavity at the beginning of the leak detection. Start timing and record the pressure and temperature in the leak detection cavity at the end of the measurement. The measurement time depends on the leakage rate and is usually 2 minutes ~ 10 minutes.

4.6 Number of Tests Select several specimens from the same sample and randomly select no less than 3 specimens for testing.

## 4.7 Leakage Rate Calculation and Test Result

4.7.1 The leakage rate calculation is based on the ideal gas law and is calculated in accordance with Formula (2). Where, LNV

- when nitrogen is the medium, the volume leakage rate under the standard state, expressed in (cm<sup>3</sup>/s) (the standard state); LHV
- when helium is the medium, the volume leakage rate under the standard state, expressed in (cm<sup>3</sup>/s) (the standard state); Tst
- the absolute temperature of the atmosphere under the standard state, expressed in (K) (Tst = 273.16); Pst
- the atmospheric pressure under the standard state, expressed in (MPa) (Pst = 0.101325); VC
- the volume of the leak detection cavity, expressed in (cm<sup>3</sup>); t
- the leakage detection time, expressed in (s); P1
- the absolute pressure in the leak detection cavity at the beginning of leak detection, expressed in (MPa); T1
- the absolute temperature of the leak detection cavity at the beginning of leak detection, 4
- simulated flange (upper); 13
- buffer tank; 5
- pressure source; 6
- simulated flange (lower); 15
- sealed cavity; 7

## 5.5 Test Procedures

5.5.1 Use solvent (for example, acetone) to clean the flange sealing surface and install the gasket in the center.

5.7.1 The leakage rate calculation is based on the ideal gas law and is calculated in accordance with Formula (4). Where, LNV

- when nitrogen is the medium, the volume leakage rate under the standard state, expressed in (cm<sup>3</sup>/s) (the standard state); LHV
- when helium is the medium, the volume leakage rate under the standard state, expressed in (cm<sup>3</sup>/s) (the standard state); Tst
- the absolute temperature of the atmosphere under the standard state, expressed in (K)