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

GB/T 46627-2025

**Standard test methods for sealability of gaskets at elevated
temperature for pipe flanges**

管法兰用垫片高温密封性能试验方法

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Foreword

This document is in accordance with GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting is scheduled.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee on Standardization of Pipeline Fittings (SAC/TC237). This document was drafted by: Zhejiang Guotai Xiaoxing Sealing Materials Co., Ltd., China Machinery Productivity Promotion Center Co., Ltd., and Hefei General Machinery. Mechanical Research Institute Co., Ltd., Ningbo Tiansheng Sealing Parts Co., Ltd., East China University of Science and Technology, Jiangsu Provincial Special Equipment Safety Supervision and Inspection Institute Guangzhou Dongshan Nanfang Sealing Parts Co., Ltd., Wenzhou Huahai Sealing Parts Co., Ltd., Suzhou Baohua Sealing Technology Co., Ltd., China Petrochemical Engineering Construction Co., Ltd., China Tianchen Engineering Co., Ltd., CNPC East China Design Institute Co., Ltd., China Huanqiu Engineering Co., Ltd. Beijing Branch, Taizhou Longjiang Chemical Machinery Technology Co., Ltd., Suzhou Thermal Power Research Institute Co., Ltd., and Hefei General Machinery and Electrical Products Testing Institute have Limited Liability Company, Ningbo Aituo Sealing Technology Co., Ltd., Liaoning Zhongke Lile Testing Technology Service Co., Ltd., Yanqi Lake Basic Manufacturing Technology Research Institute Beijing Institute Co., Ltd. The main drafters of this document are. Wu Yimin, Wang Lu, Feng Feng, Li Xinggen, Zhang Lanzhu, Li Ke, Qiu Kuanheng, Wu Kaijun, Ma Zhigang, and Zhang Yong. Zhang Jiahong, Xiong Conggui, Zhao Yong, He Hua, Liu Hongfu, Liu Jianxin, Pang Dong, Han Chuanwei, He Song, Luo Linhang, Gou Yangyang, Lou Wenchao, Wang Xiaojuan. Test method for high-temperature sealing performance of gaskets for pipe flanges

1 Scope

GB/T 46627-2025 is the Chinese national standard covering how a gasket seals when it is hot - the bolt load applied and the relaxation of it as the joint heats, the leak rate measured

at temperature, and the thermal cycling that finds the gasket which seals cold and leaks once the plant is running. First edition, in force from 1 May 2026. Issued on 31 October 2025, it has been in force since 1 May 2026.

This document describes the test method for the sealing performance of gaskets for pipe flanges at specified temperatures, including the leak detection cavity pressurization method (Method A) and pressure drop. Method B and helium mass spectrometry vacuum leak detection method (Method C). This document applies to the testing of the sealing performance of pipe flanges using circular gaskets under conditions where the test temperature does not exceed 900°C and the medium pressure does not exceed 10MPa. Energy measurement. Gasket types include non-metallic flat gaskets, spiral wound gaskets, PTFE-coated gaskets, metal-coated gaskets, and flexible graphite composite gaskets. For reinforced gaskets, metal toothed composite gaskets, and metal corrugated composite gaskets, other types of gaskets should be followed as per the guidelines.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 12385-2025 Test Method for Sealing Performance of Gaskets for Pipe Flanges

3 Terms and Definitions

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

4 Symbols

The following symbols apply to this document. LNV

--- Volumetric leakage rate under standard conditions when the test medium is nitrogen, in cubic centimeters per second (cm³/s) (standard conditions). LHV

--- Volumetric leakage rate under standard conditions when the test medium is helium, expressed in cubic centimeters per second (cm³/s) (standard conditions). PA1

--- The absolute pressure inside the leak detection cavity at the start of leak detection, in Pascals (Pa). PA2

--- The absolute pressure inside the leak cavity at the end of the leak test, measured in Pascals (Pa). PB1

--- Absolute pressure in the sealed cavity at the start of leak testing, in Pascals (Pa). PB2

- Absolute pressure in the sealed cavity at the end of leak testing, in Pascals (Pa). Pst
- Atmospheric pressure under standard conditions, in Pascals (Pa) (Pst=101325Pa).
DeltaP1
- The pressure difference across the differential pressure sensor at the start of leak detection, in Pascals (Pa). DeltaP2
- The pressure difference across the differential pressure sensor at the end of leak detection, in Pascals (Pa). Q
- Helium leakage rate measured by a helium mass spectrometer leak detector, in Pa·m³/s.
TA1
- The absolute temperature of the leak test cavity at the start of leak testing, in Kelvin (K).
TA2
- The absolute temperature of the leak cavity at the end of the leak test, in Kelvin (K). TB1
- The absolute temperature of the sealed cavity at the start of leak testing, in Kelvin (K).
TB2