GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 23.040.80

CCS Q 69

GB/T 41487-2022

Composite sealing gasket material

复合型密封垫片材料

Issued on: April 15, 2022 **Implemented on: November 1, 2022**

Issued by: State Administration for Market Regulation;
Standardization Administration of PRC.

Table of Contents

Composite sealing gasket material

1 Scope

This document specifies the classification and marking, requirements, test methods, inspection rules and marks, packaging, transportation, and storage of composite sealing gasket materials.

This document applies to the non-metallic materials (excluding materials containing asbestos) that are compounded on both sides of the metal core material for making the sealing gasket. This document does not apply to multi-layer composite non-metallic materials of metal rubber sheets and metal core materials.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB/T 191 Packaging -- Pictorial marking for handling of goods

GB/T 540-2008 Test methods for oil-resisting compressed asbestos fibre jointing

GB/T 6682 Water for analytical laboratory use -- Specification and test methods

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

GB/T 20671.1-2020 Classification system and test methods for nonmetallic gasket materials -- Part 1: Standard classification system for nonmetallic gasket materials

GB/T 20671.3 Classification system and test methods for nonmetallic gasket materials -- Part 3: Standard test method for fluid resistance of gasket materials

GB/T 30709 Standard test method for compressibility and recovery of laminated composite gasket materials

GB/T 30710 Standard test method for creep relaxation of laminated composite gasket materials

3 Terms and Definitions

There are no terms and definitions that need to be defined in this document.

4 Classification and marking

4.1 Classification

Composite sealing gasket materials are divided into 3 categories according to the non-metallic materials to be composited, namely beater addition asbestos-free metal clad plate (CJ), rolled asbestos-free metal clad plate (GJ), and flexible graphite metal clad plate (MJ).

Beater addition asbestos-free metal clad plate, rolled asbestos-free metal clad plate, and flexible graphite metal clad plate are divided into two types according to the composite form, namely metal clad truss plates (C) and metal clad plane plate (P).

4.2 Marking

The mark of composite sealing gasket materials consists of product name, document number, category, and nominal thickness.

For example:

The beater addition asbestos-free metal clad truss plate (CJC) with a thickness of 1.0 mm

Marked as: Composite sealing gasket material GB/T XXXXX-CJC-1.0.

5 Requirements

5.1 Appearance quality

The surface of the composite sealing gasket material shall be flat, and there shall be no defects such as cracks, delamination, impurities, bubbles, and scratches, which affect the use.

5.2 Dimensions and deviations

5.2.1 The length and width of the composite sealing gasket material shall be based on user requirements, and the allowable deviation is ±5 mm.

5.2.2 The allowable deviation of the thickness of the composite sealing gasket material shall meet the requirements in Table 1. If the user has special requirements for thickness deviation, it can be processed according to the user's requests.

6 Test methods

6.1 Specimen preparation and conditioning

According to the test requirements, cut a sample with certain dimensions from the composite sealing gasket material. The edge of the sample shall be neat and free of defects such as wrinkles, delamination, obvious scratches, and impurities.

Unless otherwise specified, the sample for the performance requirement test for composite sealing gasket material shall be conditioned in an oven at 100 °C±2 °C for 1 hour, moved to a dryer, and cooled to 21 °C~30 °C; then, carry out the test.

6.2 Appearance quality

Check the appearance quality by a visual inspection.

6.3 Dimensions

6.3.1 Length and width

The length and width shall be measured with a ruler or measuring tape with a graduation value of 1 mm. Measure at the edge and the middle of the plate respectively, and take the arithmetic mean of measurement values of 3 points as the measurement result of the length and width.

6.3.2 Thickness

The measurement of thickness shall be carried out according to the provisions of Type 7 material in Chapter 5 of GB/T 20671.1-2020. Measure 3 points within the range of 10 mm~20 mm from the edge in the length and width directions of the plate respectively; that is, measure 6 points in total. Use the difference between the maximum value and the minimum value of the 6 measurement points of the same plate as the reported value of thickness difference, and take the average value of 6 measurement points as the reported value of thickness.

6.4 Compression ratio, rebound rate

The test shall be carried out according to the provisions of GB/T 30709.

6.5 Creep relaxation rate

The test shall be carried out according to the provisions of GB/T 30710.

6.6 Performance after impregnation in IRM903 oil

The test shall be carried out according to the provisions of GB/T 20671.3.

6.7 Performance after impregnation in ASTM fuel oil B

The test shall be carried out according to the provisions of GB/T 20671.3.

6.8 Performance after impregnation in distilled water + ethylene glycol (50:50)

6.8.1 Reagents and equipment

6.8.1.1 Ethylene glycol: analytically pure.

6.8.1.2 Distilled water: It shall comply with GB/T 6682.

6.8.1.3 Graduated cylinder: 100 mL.

6.8.1.4 Balance: The sense quantity shall not be more than 0.001 g.

6.8.1.5 Thickness gauge: The diameter of the indenter shall be 6.4 mm±0.13 mm, and the pressure on the sample shall be 80.3 kPa±6.9 kPa.

6.8.1.6 Electric drying oven: The temperature shall be ~200 °C, and the temperature control accuracy shall be ±2 °C.

6.8.1.7 Dryer.

6.8.1.8 Beaker: 300 mL.

6.8.2 Test procedure

6.8.2.1 Cut 3 samples with the size of 40 mm×40 mm; carry out the conditioning according to 6.1.

6.8.2.2 Accurately weigh the mass of the sample, and the weight shall be accurate to 0.001 g; take it as the mass before impregnation; then, measure the thicknesses of 5 points at the four corners and the center of the sample, and mark them as the thicknesses before impregnation.

6.8.2.3 Measure 100 mL each of ethylene glycol and distilled water with a graduated cylinder, pour them into a beaker, and mix well.

6.8.2.4 Put the sample into the beaker containing ethylene glycol and water (50:50), and cover with a watch glass; place the beaker in an electric drying oven at 130 °C±2 °C and keep it in the drying oven for 5 h.

6.8.2.5 Take out the sample and immediately immerse it in a newly prepared solution of ethylene glycol and water (50:50) at a temperature of 21 °C~30 °C, and keep the sample in it for 30 min.

6.8.2.6 Take out the sample and immediately absorb the excess liquid on the surface of

$\triangle d_1$ --- Thickness change rate;

d_4 --- The thickness of the sample after aging, in millimeters (mm);

d_3 --- The thickness of the sample before aging, in millimeters (mm).

Take the arithmetic mean of the thickness change rate measurement values of 5 points of each sample as the thickness change rate of each sample. Take the arithmetic mean of 3 samples as the test result, and the result shall be rounded to 3 significant figures according to GB/T 8170.

6.10 Corrosion to metallic materials

The test shall be carried out according to the provisions of Chapter 4 in GB/T 540-2008.

6.11 Stripping performance

6.11.1 Instruments and equipment

6.11.1.1 Electric drying oven: 0 °C~200 °C; the accuracy shall be ±2 °C;

6.11.1.2 Dryer.

6.11.1.3 Tools.

6.11.2 Test procedure

6.11.2.1 Cut 3 samples with the size of 50 mm×100 mm, and the edges shall be cut neatly.

6.11.2.2 After placing the sample in an electric drying oven with a temperature of 100 °C±2 °C for 1 h, move it into a dryer and cool it to room temperature.

6.11.2.3 Tear off the non-metallic materials on both sides and observe the surface of the core board.

6.11.3 Result judgment

Observe the sample by eyes; if the maximum exposed area of the metal core board does not exceed 25 mm^2, it can be judged as qualified; if the maximum exposed area of the metal core board exceeds 25 mm^2, it can be judged as unqualified.

6.12 Weight loss on heating

6.12.1 Specimen

Cut 3 samples with the size of 50 mm × 50 mm; the surfaces of the samples shall be free of dust and oil pollution. The samples shall be conditioned according to 6.1.

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------