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

GB/T 17727-2024

Replacing GB/T 17727-2017

Nonmetal material gaskets for marine flange

船用法兰非金属垫片

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4 Classification and marking

4.1 Gaskets are divided into six types according to the flange connection dimensions and the sealing face: type A, whose flange connection dimensions and sealing face follow CB/T 4196-2011; type AS, which follows GB/T 2501-2010; type JA, the flat face gasket following GB/T 9124.1-2019; type JB, the raised face gasket following GB/T 9124.1-2019; type JC, the male and female face gasket following GB/T 9124.1-2019; and type JD, the tongue and groove face gasket following GB/T 9124.1-2019.

4.2.1 Table 1 lists the gasket materials with their code, the media they suit, the design pressure and the service temperature range. The materials are asbestos free fibre reinforced rubber, that is aramid oil resistant rubber sheet, with the code NA; flexible graphite composite sheet, code RSB; polytetrafluoroethylene, code PTFE; reinforced polytetrafluoroethylene, code RPTFE; expanded polytetrafluoroethylene, code EPTFE; silicone rubber, code MVQ; fluororubber, code FPM; and nitrile rubber, code NBR. Among the media listed are sea water, fresh water, fuel oil, lubricating oil, compressed air, inert gas, oily bilge water and chilled water for the asbestos free fibre reinforced rubber; fuel oil, steam, exhaust gas, chemicals and hot oil for the flexible graphite composite sheet; drinking water for the silicone rubber; acids, alkalis and organic solvents for the fluororubber; and liquefied natural gas, liquefied petroleum gas, liquefied ethylene gas, ammonia, methanol, acids, alkalis, organic solvents and urea for the reinforced and expanded polytetrafluoroethylene.

4.2.2 Table 2 lists the basic parameters of the gasket, giving for each type the nominal pressure, the design pressure in megapascals and the range of nominal size.

4.3 Tables 3 to 7 give the structure and the basic dimensions in millimetres, type by type: Table 3 for type A with Figure 1, Table 4 for type AS with Figure 1, Table 5 for type JA with Figure 2, Table 6 for type JB with Figure 1, and Table 7 for types JC and JD with Figure 1. The symbols used in the figures are d for the inside diameter, D for the outside diameter, t for the thickness, C for the diameter of the bolt hole circle, n for the number of bolt holes and d_1 for the bolt hole diameter. A note to Table 7 states that the dimensions in brackets apply to flanges of nominal pressure 10 K.

4.4 The product marking combines the type of flange sealing face, the nominal pressure, the nominal size and the material. Example 1: a gasket of nominal pressure PN 6 and nominal size DN 25, of fire resistant asbestos free fibre reinforced rubber, that is aramid oil resistant rubber sheet KQG-003N, whose flange connection dimensions and sealing face follow CB/T 4196-2011, is marked gasket GB/T 17727-2024 A6025KQG-003N. Example 2: a flat face gasket of nominal pressure PN 16K and nominal size DN 400, of

polytetrafluoroethylene, whose flange connection dimensions and sealing face follow GB/T 9124.1-2019, is marked gasket GB/T 17727-2024 JA16400PTFE.

5 Requirements

5.1.1 The gasket material shall comply with Table 8, which gives for each material its designation or code and the standard it follows: the asbestos free fibre reinforced rubber grades KQG-001, KQG-002, KQG-003, KQG-003N and KQG-001R follow GB/T 22209-2021; flexible graphite composite sheet RSB1222 follows JB/T 6628-2016; polytetrafluoroethylene SFB-2 or PTFE follows QB/T 5257-2018; reinforced polytetrafluoroethylene RPTFE and expanded polytetrafluoroethylene EPTFE follow JB/T 10688-2020; silicone rubber Z or MVQ follows HG/T 4070-2008; fluororubber type II or FPM follows GB/T 30680-2014; and nitrile rubber class C or NBR follows GB/T 5574-2008.

5.1.2 The mechanical properties of the gasket materials shall comply with Table 9 and Table 10. Table 9 fixes, for the asbestos free fibre reinforced rubber, the flexible graphite composite sheet, polytetrafluoroethylene, reinforced polytetrafluoroethylene and expanded polytetrafluoroethylene, the density, the transverse tensile strength, the compressibility, the recovery and the increase in thickness and in mass after the oil resistance test in ASTM 903 number 3 oil at 150 °C for 5 h. Table 10 fixes, for silicone rubber, fluororubber and nitrile rubber, the density, the tensile strength, the elongation at break, the Shore A hardness and the change in volume after the oil resistance test in ASTM 903 number 3 oil at 150 °C for 72 h.

5.1.3 The gasket material shall be free of asbestos.

5.2 The tightness of the gasket shall comply with Table 11, which fixes for each gasket type the test conditions - the specimen size, the test medium, the test temperature, the gasket stress and the medium pressure - and the leak rate to be met.

5.3 The oxygen index of a gasket for which flame retardance is required shall be not less than 27.

5.4 The fire resistant tightness leak rate of a gasket for which fire resistance is required shall be not greater than 150 mL/min.

5.5 The surface of the gasket shall be free of cracks, blisters and inclusions; it shall be flat, free of visible scratches and creases, and its edge shall be cut cleanly.

5.6 The gasket dimensions are those of Tables 3 to 7. The permitted limit deviations of the dimensions of gaskets for flat face and raised face flanges shall comply with Table 12, which covers the inside diameter, the outside diameter, the thickness, the bolt hole diameter and the diameter of the bolt hole circle, nominal size by nominal size. The permitted limit deviations of the dimensions of gaskets for male and female face and tongue and groove face flanges shall comply with Table 13, which covers the inside diameter, the

outside diameter and the thickness for a nominal pressure not exceeding 4.0 MPa.

5.7 For a gasket used with drinking water, the hygiene requirements follow Clause 3 of GB/T 17219-1998.

6 Test methods

6.1.1 The gasket material is inspected by checking the material designation and the quality certificate.

6.1.2 The mechanical properties of the gasket material are tested by the methods prescribed in the standards that correspond to Table 8.

6.1.3 An asbestos free gasket shall have passed inspection.

6.2 The airtightness test of the gasket is carried out according to GB/T 12385.

6.3 The oxygen index test is carried out according to GB/T 10707.

6.4 The fire resistance test is carried out according to Annex A of GB/T 22209-2021.

6.5 The appearance of the gasket is checked visually.

6.6 The permitted limit deviations of the gasket dimensions are checked according to 8.4 of GB/T 9126.1-2023.

6.7 A gasket used with drinking water is tested according to Clause 4 of GB/T 17219-1998.

7 Inspection rules

7.1 Inspection of the gasket is divided into type inspection and delivery inspection.

7.2.1 Type inspection shall be carried out in any of the following cases: a new product goes into production for the first time or is being finalized; production is resumed after a break of more than two years; the design, structure, material or process has changed enough to affect the performance or the quality of the product; delivery inspection has failed several times in succession; or the competent department so requires.

7.2.2 The items of the type inspection and their order shall comply with Table 14, which lists seven items - material, tightness, flame retardance, fire resistance, appearance, limit deviations and hygiene - and shows for each whether it is inspected in the type inspection and in the delivery inspection, together with the clause of the requirement and the clause of the test method. According to that table all seven items are inspected in the type inspection, while the delivery inspection covers tightness, appearance and limit deviations.

7.2.3 The number of samples for the type inspection of gaskets shall be not fewer than 5 pieces.

7.2.4 Where all the samples pass every inspection item, the type inspection is judged to