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OF THE PEOPLE'S REPUBLIC OF CHINA

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Silicon carbide rings of mechanical seal - Specification

机械密封用碳化硅密封环 技术条件

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Silicon carbide rings of mechanical seal - Specification

1 Scope

This Standard specifies product classification, technical requirements, test and inspection methods, inspection regulations and marks, packaging, transportation and storage for silicon carbide rings of mechanical seal.

This Standard is applicable to reaction sintered silicon carbide for mechanical seal, pressureless sintered silicon carbide (solid phase, liquid phase, added graphite, sealing end face with micropores), hot-pressed sintered silicon carbide seal ring (hereinafter referred to as the seal ring).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 191, *Packaging and storage marks*

GB/T 1184-1996, *Geometrical tolerancing. Geometrical tolerance for features without individual tolerance indications*

GB/T 2828.1-2012, *Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

GB/T 3045, *Conventional abrasive - Chemical analysis of silicon carbide*

GB/T 6569, *Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for flexural strength of monolithic ceramics at room temperature*

GB/T 8489, *Test method for compressive strength of fine ceramics (advanced ceramics, advanced technical ceramics)*

GB/T 10700, *Test methods for elastic moduli of fine ceramics (advanced ceramics, advanced technical ceramics) - Bending method*

GB/T 16534, *Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for hardness of monolithic ceramics at room temperature*

GB/T 16535, *Fine ceramics (advanced ceramics, advanced technical ceramics) - Test method for linear thermal expansion of monolithic ceramics by push-rod*

and the auxiliary seal ring contact is h7 or H7.

5 Test and inspection methods

5.1 The bulk density shall be determined in accordance with the provisions of GB/T 25995.

5.2 The porosity shall be determined according to the provisions of GB/T 25995.

5.3 The Rockwell hardness is determined according to the provisions of GB/T 230.1.

5.4 The Vickers hardness shall be determined according to the provisions of GB/T 16534.

5.5 The bending strength shall be determined according to the provisions of GB/T 6569.

5.6 The determination of chemical composition shall be carried out in accordance with the provisions of GB/T 3045.

5.7 The flatness is measured by interferometry with level I flat crystal and monochromatic light source.

5.8 The surface roughness is measured with a surface roughness measuring instrument or checked by the surface roughness sample block comparison method.

5.9 The surface defects are inspected with the naked eye and optical microscopy.

5.10 The compressive strength shall be determined according to the provisions of GB/T 8489.

5.11 The elastic modulus shall be determined according to the provisions of GB/T 10700.

5.12 The coefficient of linear expansion shall be determined according to the provisions of GB/T 16535.

5.13 The thermal conductivity shall be determined according to the provisions of GB/T 22588.

6 Inspection regulations

6.1 Inspection classification

Inspection is divided into exit-factory inspection and identification inspection.

6.2 Exit-factory inspection

6.2.1 Inspection items

The inspection items of the finished seal ring include appearance quality, sealing face flatness and surface roughness, dimensions and tolerances. The hardness, bulk density, and flexural strength are tested with furnace specimens from batches of products.

6.2.2 Sampling method

Appearance quality is fully inspected. Use primary normal sampling plan for seal face flatness and surface roughness, dimensions and tolerances according to the provisions of GB/T 2828.1-2012. The special examination level is S-4. The AQL is 4.0. For hardness, bulk density and flexural strength, at least one sample from each batch shall be inspected.

6.3 Identification inspection

6.3.1 Inspection timing

In one of the following situations, identification inspection shall be carried out:

- Before design finalization and product production;
- When there are major changes in product structure, materials and processes;
- When the product is transferred to another factory;
- When it is required by the user;
- When it is required by national quality supervision department.

6.3.2 Inspection items

The inspection items are all the items specified in Chapter 4.

6.3.3 Sampling method

The sampling quantity is based on the inspection method involved in the inspection item.

7 Marks, packaging, transportation and storage

7.1 The non-working surface of the seal ring shall be marked with the manufacturer's trademark or code.

7.2 The packaging of the seal ring shall ensure that it will not be damaged during transportation and storage.

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