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Rubber compounds of O-ring used for hydraulic fluid power system

普通液压系统用 O 形橡胶密封圈材料

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Table of Contents

Rubber compounds of O-ring used for hydraulic fluid power system

1 Scope

This standard specifies the classification, requirements, test methods, inspection rules, marking, packaging, storage of rubber compounds of O-ring, for oil-based hydraulic oil and lubricating oil (grease), in ordinary hydraulic systems.

This standard applies to rubber compounds of O-ring, for oil-based hydraulic oil and lubricating oil (grease), in ordinary hydraulic systems, in a working temperature range of -40 °C ~ +100 °C and -25 °C ~ +125 °C, respectively.

Note: This standard only specifies the material requirements for rubber compounds of O-ring. It does not involve the size and appearance requirements of rubber compounds of O-ring. The size and tolerance of the O-ring should be selected, according to the actual situation, from GB/T 3452.1 "Fluid power systems - O-rings - Part 1: Inside diameters, cross-sections, tolerances and size identification code". The appearance quality requirements of the O-ring should meet the relevant requirements of GB/T 3452.2 "Fluid power systems - O-rings - Part 2: Quality acceptance criteria".

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 528-1998 Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties (eqv ISO 37:1994)

GB/T 531-1999 Rubber - Determination of indentation hardness by means of pocket hardness meters (idt ISO 7619:1986)

GB/T 1682-1994 Rubber, vulcanized - Determination of low-temperature brittleness (single test piece method)

GB/T 1690-1992 Rubber, vulcanized - Determination of the effect of liquids (neq ISO 1817:1985)

prepare a specimen with the equivalent degree of vulcanization. It can also be negotiated by the supplier and the buyer, to use the O-ring as the specimen for the test.

5.2 Method

5.2.1 The measurement of hardness is carried out, in accordance with GB/T 5720-1993, GB/T 531-1999, GB/T 6031-1998.

5.2.2 The determination of tensile strength and elongation at break shall be carried out, in accordance with GB/T 5720-1993 or GB/T 528-1998.

5.2.3 The determination of compression set shall be carried out, in accordance with GB/T 5720-1993 or GB/T 7759-1996.

5.2.4 The liquid resistance test shall be carried out, in accordance with GB/T 5720-1993 or GB/T 1690-1992.

5.2.5 The hot air aging test shall be carried out, in accordance with GB/T 5720-1993 or GB/T 3512-2001.

5.2.6 The low temperature brittleness test shall be carried out, in accordance with GB/T 1682-1994.

6 Inspection rules

6.1 For the same rubber material, which is produced on the same shift AND on the same machine, one batch is composed of not more than 300 kg.

6.2 The physical properties of each batch of rubber materials shall be inspected, in accordance with the hardness, tensile strength, elongation at break requirements, in Table 1 or Table 2.

6.3 When one of the following situations occurs, it shall inspect all items of the technical requirements, which are specified in the standard.

a) When the product is subject to trans-plant production OR when the new product is subject to type finalization and identification.

b) After formal production, where there is significant change in structure, materials, craftsmanship, which may affect the performance of the product.

c) During normal production, it is inspected once every quarter.

d) When the production is resumed, after suspension for more than 3 months;

e) When there is a big difference between the exit-factory inspection result

and the last type inspection.

f) When the national quality supervision agency requests for type inspection.

6.4 When the inspection of physical properties of the rubber material are unqualified, it shall take double quantity of specimens, to carry out reinspection for the unqualified items. If the reinspection is still unqualified, it is allowed re-melting for one time. After re-melting, it shall carry out a full physical property inspection. If there is still one item unqualified, the batch of rubber compound material is unqualified.

7 Identification, packaging, storage

7.1 Each batch of rubber compound material shall be marked with the name or code of the rubber compound, manufacturing batch number, manufacturing date, conformity label.

7.2 It shall use the materials, that do not damage or pollute the rubber compound material, for packaging, to prevent foreign matter, such as dust, from adhering to the surface of the rubber material.

7.3 The rubber compound material shall be stored in an environment, which has a temperature below 30 °C AND a relative humidity below 80%, at least 1 m away from the heat source, with proper ventilation.

7.4 During storage, the rubber compound material shall avoid direct sunlight and other strong ultraviolet light sources. It is not allowed to come into contact with acids, alkalis, oils and various solvents.

7.5 In compliance with 7.2, 7.3, 7.4, the storage period of the rubber compound materials shall not exceed three months.

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