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**Rubber seals used in the power lithium battery**

动力锂电池用橡胶密封件

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# Rubber seals used in the power lithium battery

## 1 Scope

This Standard specifies the terms and definitions, requirements, test methods, inspection rules, identification, packaging, transportation, and storage of rubber seals used in the power lithium battery.

This Standard applies to rubber seals used in the power lithium battery (hereinafter referred to as seals).

## 2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB/T 528 Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties

GB/T 531.1 Rubber, vulcanized or thermoplastic - Determination of indentation hardness - Part 1: Durometer method (Shore hardness)

GB/T 1690 Rubber, vulcanized or thermoplastic - Determination of the effect of liquids

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

GB/T 2900.41 Electrotechnical terminology - Primary and secondary cells and batteries

GB/T 2941 Rubber - General procedures for preparing and conditioning test pieces for physical test methods

GB/T 3452.1 Fluid power systems - O-rings - Part 1: Inside diameters, cross-sections, tolerances and size identification code

GB/T 3512 Rubber, vulcanized or thermoplastic - Accelerated ageing and heat resistance tests - Air-oven method

GB/T 3672.1 Rubber - Tolerances of products - Part 1: Dimensional tolerances

GB/T 5721 General rules of identification, packaging, transportation and storage for rubber sealing products

GB/T 7759.1 Rubber, vulcanized or thermoplastic - Determination of compression set - Part 1: At ambient or elevated temperatures

### **3 Terms and definitions**

The terms and definitions defined in GB/T 2900.41 apply to this document.

### **4 Requirements**

#### **4.1 Appearance**

There shall be no rubber edge, lack of rubber, cracks, air bubbles, impurities, and filler protrusions on the surface of seals.

#### **4.2 Specification and dimension**

The dimensions and tolerances of the O-ring shall comply with the provisions of the G series in GB/T 3452.1. The dimensions and tolerances of the rectangular ring shall comply with the provisions of M2 level in GB/T 3672.1.

#### **4.3 Insulation resistance**

The resistance index is negotiated by the manufacturer and the user.

#### **4.4 Properties of rubber materials**

The seal is made of ethylene-propylene rubber or fluororubber as the base material. The property requirements are shown in Table 1 and Table 2.

of GB/T 1690 (take the specimen out of the liquid until the measurement is completed; it shall not exceed 5 min); calculate the percentage of mass change.

## 6 Inspection rules

**6.1** For rubber materials produced in the same shift and machine, no more than 50 kg is a batch. For seals of the same specification produced from the same batch of rubber materials, no more than 5000 pieces are a batch.

**6.2** 500 g shall be randomly taken from each batch of rubber materials to prepare specimens. According to the requirements of items 1 to 4 in Table 1 or Table 2, carry out exit-factory inspection.

**6.3** The appearance of seals shall be 100% inspected. The dimensions of seals shall be inspected according to GB/T 2828.1. The inspection level is II. The normal single inspection AQL=2.5. For the insulation resistance of seals, 3 seals shall be randomly selected from each batch for testing.

**6.4** When one of the following conditions exists, all requirements of Clause 4 shall be inspected:

- When the product is transferred to another factory for production or new product is subject to pattern evaluation;
- When there are major changes in materials and processes that may affect product properties after formal production;
- No less than once every six months during normal production;
- When production resumes after a product has been discontinued for more than six months;
- When there is a big difference between the exit-factory inspection result and the last type inspection.

**6.5** If the appearance inspection of a seal is disqualified, this seal is disqualified. If the dimension of one of the seals is disqualified, this batch is disqualified. If the insulation resistance is disqualified, this batch of seals is disqualified.

**6.6** When there is a nonconformity in the inspection results of rubber material, double number of specimens shall be taken for re-inspection of the nonconformity item. If the re-inspection is still disqualified, it is deemed disqualified.

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