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

GB 20688.5-2014

**Rubber bearings - Part 5: Elastic sliding seismic-protection
isolators for buildings**

橡胶支座 第5部分：建筑隔震弹性滑板支座

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Foreword

6.2,6.5.1,6.5.2.2,6.6.3,

8.2.1 this section and section

8.2.2 in bold are mandatory, the rest are recommended. GB 20688 "rubber bearing" is divided into five parts.

--- Part 1. Test methods for isolation rubber bearings;

--- Part 2. bridge rubber bearing;

--- Part 3. Building isolation rubber bearings;

--- Part 4. ordinary rubber bearing;

--- Part 5. Building isolation elastic slide bearings. This section GB 20688 Part 5. This section drafted in accordance with GB/T 1.1-2009 given rules. This part is proposed by the China Petroleum and Chemical Industry Association. This part of the National Rubber and rubber products, rubber sundries Standardization Technical Committee Technical Committee (SAC/TC35/SC7) Centralized. Drafting this Part. Earthquake Engineering Research Center, Guangzhou University, Beijing Chemical Products Quality Supervision and Inspection Station, China Building Research Institute Study Institute, China Building Standard Design and Research Institute, Nanjing University of Technology, Lanzhou

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1 Scope

China's mandatory standard for elastic sliding seismic isolation bearings. It is Part 5 of GB 20688 and specifies the terms and definitions, the symbols, the classification, the requirements, the test methods, the inspection rules and the marks and labels, applying to elastic sliding bearings used in the seismic isolation of building structures. Base isolation works by making a building softer than the ground it stands on: a layer of bearings between the structure and the foundation lengthens the natural period until the building no longer resonates with the earthquake, and the ground moves underneath while the structure above moves much less. Ordinary laminated rubber bearings do this by shearing, but they also have to carry the vertical load, and under a heavy or unevenly loaded column that becomes the limiting requirement. The elastic sliding bearing separates the two jobs. A rubber element gives the elastic restoring behaviour and accommodates rotation, while a low-friction sliding surface above or below it carries the vertical load and slides in any horizontal direction at a nearly constant friction force. That makes the bearing able to support a very high load with a low horizontal stiffness, which is what a heavily loaded column in an isolated building needs, and the sliding friction contributes damping. What the standard has to fix is what determines whether the isolation system behaves as designed: the vertical load capacity, the friction coefficient and its stability with velocity, pressure, temperature and ageing, the horizontal displacement capacity, the restoring behaviour, the durability of the sliding material, and the type and factory tests by which each is proved. Issued on 10 October 2014 and in force since 1 October 2015.

This section GB 20688 specifies the construction isolated elastic slide bearings terms and definitions, symbols, classification, requirements, test methods, inspection Rules, signs and labels. This section applies to the building structure with isolated elastic slide bearings, hereinafter referred to as slide bearings.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references,

the latest edition (including any amendments) applies to this document.

GB/T 528 Determination of vulcanized rubber or thermoplastic rubber tensile stress-strain properties
1033.1 Non-plastic foam density measurement GB/T Part 1. Immersion method, liquid pycnometer method and titration method GB /1040.2 T Plastics Determination of tensile properties - Part 2. Test plastics molding and extrusion conditions

GB/T 3280 stainless steel cold-rolled steel sheet and strip

GB/T 3398.1 Determination of plastic hardness - Part 1. Ball indentation method

GB/T 6031 Determination of vulcanized rubber or thermoplastic rubber hardness (10 ~ 100IRHD)

GB/T 7759 vulcanized rubber, thermoplastic rubber at room temperature, high and low temperature compression set determination Determination of

GB/T 7760 vulcanized rubber or thermoplastic rubber rigid substrate adhesion strength of 90 ° peel method

GB/T 7762 vulcanized rubber or thermoplastic rubber resistant to ozone cracking static tensile test

GB/T 15256 vulcanized rubber - Determination of low-temperature brittleness (multiple test piece method)

GB/T 20688.1-2007 rubber bearing - Part 1. Test methods for isolation rubber bearings

GB 20688.3-2006 rubber bearing - Part 3. Building isolation rubber bearings

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1 Flexible slide bearing elasticslidingbearing; ESB By the Ministry of rubber bearings, sliding materials, sliding panels and the upper and lower webs consisting of isolators.

3.2 Rubber bearing portion rubberbearingcomponent By the internal and internal steel laminated rubber vulcanization integrally formed abutment portion.

3.3 Slip material slidingmaterial Friction and sliding panels, providing material slip function.

3.4 Sliding panel slidingplate Provide friction slip function panel.

3.5 Dynamic friction coefficient slidingfrictioncoefficient The ratio of positive pressure and friction between the friction sliding friction.

3.6 Failure failure By the press - Rupture slide bearing shear loading induced deformation slip or skid panel material damage, as well as slide bearing horizontal position Move beyond the sliding panel outside.

3.7 Pressure - Shear test apparatus compressive-shear testing machine Means for testing the performance of the bearing slide, having the ability to apply shear loads at constant pressure. NOTE. rewrite GB/T 20688.1-2007, definitions 3.4.

3.8 Rubber protective layer cover rubber Wrapped in rubber and internal steel interior side of the outer rubber layer. [GB/T 20688.1-2007, the definition 3.5]

3.9 Design stress design compressive stress The design uses a compressive stress on the slide bearing. NOTE. rewrite GB/T 20688.1-2007, definitions 3.6.

3.10 Effective pressure area effective loaded area Rubber bearing portion subjected to vertical load area equal to the area of the plane internal rubber. NOTE. rewrite GB/T 20688.1-2007, definitions 3.7.

3.11 Effective width effective width Square section rubber bearing internal steel side. NOTE. rewrite GB/T 20688.1-2007, definitions 3.8.

3.12 Effective diameter effective diameter Diameter of the circular portion of the rubber bearings inside steel.

3.13 The first form factor 1st shape factor Than the effective pressure area to its side rubber layer in each area of the rubber bearing unit. NOTE. rewrite GB/T 20688.1-2007, definitions 3.11.

4 Symbol

The following symbols apply to this document. A

--- slip material confined area; A_s

--- slide bearing pressure area; c

--- slip plane slip chamfer side panel; D_d

--- circular rubber bearing portion connecting plate outer diameter; D_S

--- circular slip material diameter or square edge length slip material; D_r

--- circular rubber bearing plate portion internal diameter; D'

--- circular or square rubber bearing portion includes an outer diameter or side length of the protective layer thickness; E_1

--- slip material compressive modulus of elasticity; F

--- slip material compressive failure load; F_v

--- slide bearing compressive failure load; f_{sv}

--- slide bearing compressive strength; f_v