**General description**

The ISOSISM® LRB (Lead Rubber Bearing) is an isolator designed using an elastomeric block (natural rubber or neoprene) reinforced with metal bands bonded by vulcanising. It has one or more cylindrical lead cores. The damping provided by the ISOSISM® LRB results from the nature of the elastomeric mixture and the lead cylinder, and reduces the acceleration (through the distortion of the lead cylinder) and displacement of structures during a seismic event. It is designed and manufactured in accordance with EN 15129.

It is usually a type C isolator (fitted with outer plates) manufactured to the dimensions required for the project. It is available in square or round formats.

**Applications**

The ISOSISM® LRB has numerous applications in buildings, nuclear power plants, civil engineering structures, etc. It isolates the structure from the movement of the ground by forming flexible connections that increase the fundamental period of vibration of the structure to be protected and reduce its acceleration by a ratio of up to 3 to 5.

**Main properties**

- High recentring capability;
- High damping capacity ($\xi \leq 30\%$);
- Moderate maximum displacement;
- Zero maintenance.

**Behaviour law**

The behaviour law of the ISOSISM® LRB can be modeled as follows:

Linear calculation: $F = K_{eff}D$

Non-linear calculation: $F = F_y + K_rD$

- $F$: Horizontal force
- $K_{eff}$: Effective stiffness
- $D$: Displacement
- $F_y$: Shear force of the lead
- $K_r$: Stiffness of the elastomer

The damping is obtained by the properties of the lead core and the nature of the elastomer.

**Graphic representation**

The device can be shown using the following graphic representation in accordance with EN 15129.

- **Graphic representation of an ISOSISM® LRB plan view**
- **Graphic representation of an ISOSISM® LRB elevation**

LRB isolators are shown in their deformed position in order to emphasise their lateral flexibility.
Tests

ISOSISM® LRBs have undergone numerous dynamic tests to guide and validate Freyssinet’s technical development process.

CE marking

ISOSISM® LRB isolators can be supplied with CE marking.

Freyssinet Services

Freyssinet can produce structural designs with earthquake protection devices, including LRB isolators.

Local sales contact

Sakarya Viaduct - Turkey