With a successful service record for over 3½ decades, HERCULES LAMINATED ELASTOMERIC BEARINGS are finding ever increasing application in today's construction industry. Although used extensively in Bridges, bearing pads are being specified in a wide variety of applications where flexible structural support and / or vibration isolation is required. The typical application range is from concrete buildings and parking garages to heavy industrial equipment, storage tanks and pipe supports. Their popularity is understandable in view of the following advantages:

a) Performs required functions efficiently
b) Totally maintenance free
c) No moving parts and therefore no wear & tear
d) No corrosion
e) Absorbs shocks & vibrations
f) Cheaper than Mechanical Bearings
g) Simple to install
h) Capable to accommodate small irregularities in the loading surface.
i) No static friction to overcome.

1. BEARING FUNCTION

A bridge bearing must perform the following basic functions:

a) Support vertical loads with a minimum of deflection
b) Allow horizontal movement with minimal resistance thereby reducing detrimental effects of creep, shrinkage and temperature change.
c) Allow rotational movement with minimum resistance.
d) Obtain uniform distribution of loads.

2. STANDARDS

Plain un-reinforced pads are simple rectangular blocks of rubber that are hot molded individually, cut from large molded sheets or extruded and cut to length.

Steel reinforced bearings consist of horizontal laminated of steel plate molded as a complete unit under pressure and heat. With the exception of top and bottom dowel holes the steel plates are completely embedded and bonded on both sides to the Elastomer. The bond between the steel shims and the Elastomer is formed during vulcanization.

Hercules Elastomeric Bearings can be designed and manufactured to the dimensional tolerances using Natural Rubber or Neoprene to the requirement of Quality Management Systems MS ISO 9001 : 2000 and the following Standards:

- BS 5400: PART – 9
- AASTHO
- Austoroads ‘92
- MS 671
- JIS (JRA)

….. And many more
3. MATERIAL

ELASTOMER

Elastomeric Bearings have no moving parts to perform their required functions. Instead, they achieve this through deformation of the Elastomer. Obviously then, the properties of the Elastomer largely determine the behavior of the bearing.

Although a wide variety of elastomers are available, only two types are allowed in Bridge bearings.

a) Natural Rubber (100% virgin natural polyisoprene)

b) Neoprene (100% virgin synthetic polychloroprene)

Each of these materials has their advantages.

Natural Rubber (Polyisoprene) does not stiffen at drastically low temperatures
Neoprene (Polychloroprene) will exhibit more creep but has a greater resistance to Ozone and chemical deterioration.

Elastomers with less than 100% of the above material is referred to as “Commercial Grade”

Hercules Elastomeric Bearing Pads use only “Bridge Bearing” quality elastomers with Shore A Hardness of approximately 50 – 70 durometer and can be specified to meet the current material requirements of specified bridge design standards.

Elastomeric bearings can be used at temperatures ranging from -30°C to +50°C though it can work at +70°C for short periods.

STEEL

The steel used for reinforcing plates confirm to BS 1449 / BS 4360 or its equivalent with a minimum shim thickness of 2 mm.

POLY TETRA FLOURO ETHYLENE (PTFE)

In cases where a very low friction coefficient is required, virgin PTFE can be either bonded to the top of the bearing or recessed and bonded to a intermediate steel plate and then mated with a stainless steel surface to accept both vertical loads and horizontal movements.
<table>
<thead>
<tr>
<th>Part No.</th>
<th>Plan Size (mm)</th>
<th>Overall Height (mm)</th>
<th>Maximum Load Zero Rotation (kN)*</th>
<th>Maximum Load Full Rotation (kN)*</th>
<th>Shear Movement (mm)</th>
<th>Shear Stiffness (kN/mm)</th>
<th>Rotation about Longer axis (rad/100kN)</th>
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* Assuming dead load effect = live load effect
Typical Fixing of Hercules Elastomeric Bearing

Figure 1 Typical Cross Section of Laminated Elastomeric Bearing

Figure 2 Elastomeric Bearing Pad (EBP) with Keeper Bars

Figure 3 Elastomeric Bearing Pad (EBP) with Shear Key

Figure 4 Elastomeric Bearing Shoes (EBS) with PTFE sliding Surface

Figure 5 Elastomeric Bearing Shoes (EBS) with Shear Key
Handling and Storage

Avoid bearings in contact with sharp objects. This can damage the surface of bearings.

Avoid exposure to direct sunlight.

Store under cover, away from sunlight, oils, chemicals, etc..

All bearings should be clearly identified by a type reference number and location.