AssaFlex

Manufacturer of Bridge Components

Laminated Bearing Pads

Data sheets-1

Manufacturer of Bridge Components

Bearing Pads

Data sheet - One

Bridge bearings have the job of transferring forces caused by dead weight and live load, as well as braking forces and wind forces to the piers and abutments.

AssaFlex Bearing Pads are designed for use in Bridges and other structures such as Buildings as a vertical load bearing component. They are manufactured from high quality materials with number of layers of steel plates depending on the type of bearings highly strong and extremely resistance to weathering, ageing with almost no influence from UV radiation and Ozone. Sheets of high strength steel are capsulated by Elastomeric either NR or CR type.

Rubber used in the composition of bearings can be either natural or ***NR for "Natural Rubber"*** or synthetic, in which case the compound is generally a chloroprene polymer poly-chloroprene or ***CR for "Chloroprene Rubber***".

The minimum thickness of a sheet, in accordance with EN 1337-3, may in no circumstance be under 5 mm, or over 25 mm.

Design Features

Description

A laminated elastomeric bearing is a "*block of vulcanized Elastomeric which reinforced internally by one or several steel plates, chemically glued (bonded) during vulcanization. Elastomeric is a macromolecular material that regains its shape and initial dimensions approximately after being submitted to significant deformation under the influence of a low stress variation*".

External Forces being supported

Elastomeric bearings permit the simultaneous support of the following loads:

- Standard absorption of vertical loads
- Absorption of briefly applied external horizontal forces
- Horizontal movement in all directions through shear deformation
- Rotation of the bearing surfaces around all axes

NON-REINFORCED ELASTOMERIC BEARINGS ELASTOMERIC

At AssaFlex we manufacture Non reinforcement Bearings **(Type F)** to your details. This type of bearings is robust and more cost effective in comparison, where a strip rubber to a specific measurement can carry compressive loads while at the same time providing transitional and rotational movement. **This type is not suitable for bridges.**

We produce the pads according to your design for the type of application you require.

LAMINATED ELASTOMERIC BEARINGS

Neoprene Bearing Pads provide a uniform transfer of load from beam to substructure. They permit beam rotation at the bearing point due to deflection or misalignment. They absorb vibration and prevent sound transfer, while reducing the destructive action of vibration between movable and stationary structural members. They also provide for movement caused by normal expansion and contraction and concrete creep effects & shrinkage. Neoprene Bearing Pads are used extensively in bridge structures.

Natural rubber (with the appropriate formulation) provides good resistance to traction, excellent failure strain and performs well with dynamic loads and in the cold, although it does tend to crystallize. On the other hand, it is highly gas permeable, its resistance to oils and solvents is quite poor and its susceptibility to aging must be compensated by the use of antioxidant and anti-ozone6, where by ***polychloroprene*** *which, among other qualities, provides excellent resistance to aging, a very low load-bearing creep rate and good tear resistance. This makes it perfectly suitable for the requirements of bearings.*

The characteristics of plates

Internal plates

The thickness of the plates must equal or be above 2 mm. S235 steel must be used or steel with an equivalent failure strain.

External plates

For type C bearings, the thickness of the external plates is 15mm for elastomeric laminations with a thickness of 8 mm and under, and 18 mm for thicknesses above. S235 steel or an equivalent is also used.

Slide plates

The characteristics of sliding planes as in EN 1337-2, Sliding systems generally consist of a stainless steel plate lying on a side of the bearing on which a poly tetra fluoro ethylene (PTFE) sheet on pot bearings which includes items such as free sliding bearings, guided bearing types, etc.

For further details on POT BEARINGS please refer to the relevant data sheets.

Quality Control:

Bearings are important elements of structures, such as bridges and viaducts, ensuring that they operate correctly. The durability of the structure depends on their quality, as they are in a constant state of use.
The life expectancy of bearings is the result both of their intrinsic qualities and of the care taken over

The quality of these products depends on expertise in the manufacturing process. Quality Assurance provisions should enable you the client to:

- ✓ Convey the quality required in terms of manufacturing methods
- ✓ Obtain the quality required
- ✓ Check that it has achieved the quality required
- ✓ Justify subsequently that it has been reached and checked.
- ✓ AssaFlex products are checked independently at certain intervals such as Esfahan's Polytechnics or other reputable laboratories.

We are always happy to supply laboratory test result on request.

CE Marking

Quality control procedures will be implemented in the factory such as:

- ✓ Tests on samples taken in the factory in accordance with a prescribed test programme.
- ✓ Inspection of the ecstatic of the products

CE marking will be then applied on the products.
The last stage before leaving the factory is vacuum packed on palletized items.

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Please for further details refer to Quality and care documents.

Handling of modules / H&S Issue

When designing the ***AssaFlex Bearing Pads***, the issue of weight of the units and handling of the units has been the foremost issue, we therefore advise our customers to take great care when handling some bigger and heavier units at high levels when installing these units.

Specifications

AssaFlex Bearing Pads are manufactured to international standards such as European EN1337-3, British BS 5400, German DIN 4141, American AASHTO , etc
Every component is manufactured, moulded, mechanically worked and assembled by fully qualified operatives in our factory under strict ISO 9001:2008 certified quality control standards.

Following table shows the specifications that ***ASSAFLEX Bearing Pads*** are manufactured.

N0	*Property*	*Test Method*	*Unit*	*Test Result*
1	Hardness	ASTM D2240	Shore A	60 ± 5
2	Tensile Strength	ASTMD412-06a	Mpa	>16
3	Elongation at Break	ASTM D412-06a	%	>350
4	Tear Resistance	ASTM D624	Kgr/cm	>10
5	Abrasion	ASTM D2228	Mm^3	>165
6	G Modulus	ASTM D4014	N/mm^2	0/9±%15
7	Compression Set	ASTM D395-03 Method B 70®C, 70h, 24%	%	<27
8	Bonding Test	ASTM D429B	N/mm	>6
9	Ozone Test	ATM D1149-99 70h, 38°C, 50 pphm, 20% Elongation	Visual Examination	No cracks
Heat Aging Results with the following conditions (70h, 100° c)				
10	Elongation at Break Mean Variation	ASTM D573-04	%	≤20
	Tensile Strength Mean Variation	ASTM D573-04	%	≤20
Specification for Bolts and Nuts				
Steel shall conform to:		ASTM 240 Type 204 with 2B finish		
Anchor Bolts are manufactured to:		EN 20898 – CL 8.8 Zinc Plated		

Materials Specification

- Steel shall conform to ASTM 240 Type 204 with 2B finish.
- Compound: Two types;
  - NR Natural Rubber
  - CR Chloral Rubber

Note: the above details are general form of materials used; however we will alter the Specification Should the client request a specific one.

March 2009