

Laminated Elastomeric Bearings



D E S I G N , B U I L D , M A I N T A I N



FREYSSINET
SUSTAINABLE TECHNOLOGY

ELASTOMERIC BEARINGS

A laminated elastomeric bearing is an elastomeric rubber block reinforced with steel plates vulcanised when built. This bearing is the connection between a structure and its support and is designed to transfer forces, movement and rotation, through elastic deformation such as:

- transmission of normal forces;
- horizontal movements;
- rotation of the structure in any direction;
- transmission of horizontal forces, within defined limits.

Laminated elastomeric bearings can also be provided with a sliding plane to allow for large movements of the structure and may also have one or more horizontal movement locking systems to provide temporary or permanent horizontal restraint.

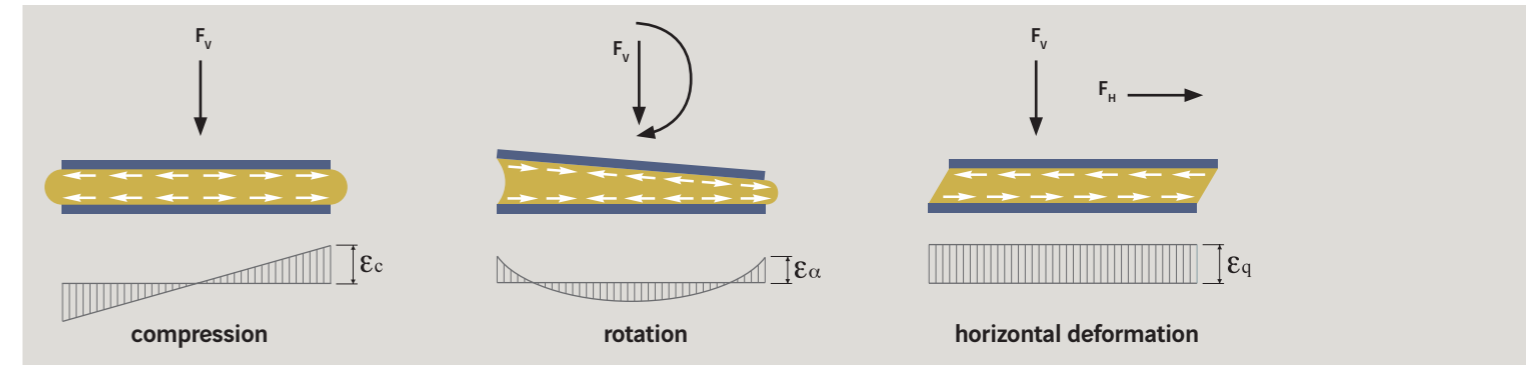
Contents

Applications	p 3
Dimensions	p 4
Elastomeric bearing types	p 6
Production and quality	p 7

APPLICATIONS

Behaviour

Each elemental layer, subject to stresses and movements, deflects as shown in the diagram below:



Shears that occur in the elastomeric layers depend on their dimensions, stresses and the characteristics of the elastomer used. Standard Laminated Elastomeric bearings are based on current Australian Standards, however Freyssinet can design and supply a range of non-standard bearings to suit applications where standard sizes are not applicable.

Use

Laminated elastomeric bearings are mainly used in structures such as bridges, for which this product has many advantages including: long service life, reliability, maintenance free, lightness, and ease of installation.

Installation

The correct installation of laminated elastomeric bearings is necessary for ensuring the design service life and performance of the bearing are achieved. Arrangements should be made at the design stage to allow for sufficient clearance around the bearings during installation and to accommodate for long term monitoring, maintenance and potential replacement.

Geebung Overpass - Queensland.



Cruas Nuclear Power Plant - France.



Omnisports Palace at Paris-Bercy - France.

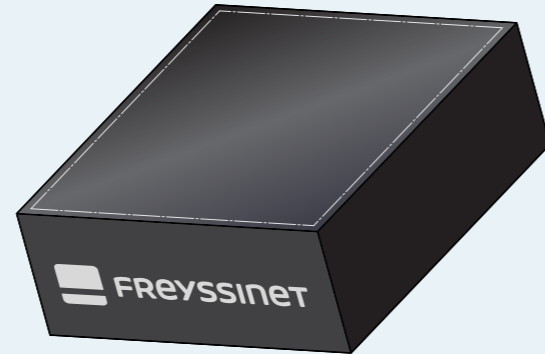
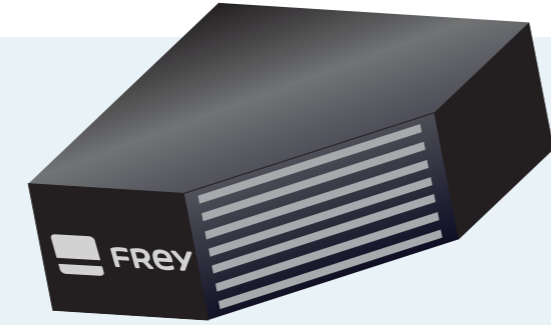
DIMENSIONS

The tables below summarise standard bearing sizes supplied in accordance with Australian Standards AS5100.4-2017.

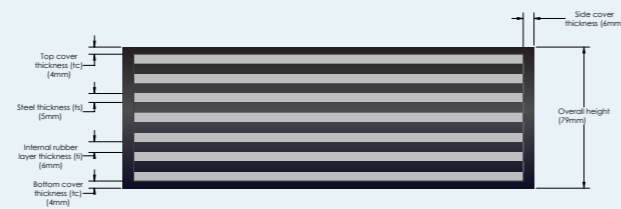
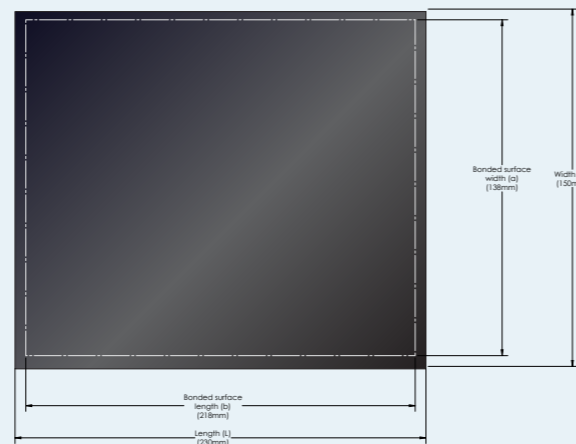
All Laminated Elastomeric Bearings are designed and supplied according to material properties and dimensions prescribed in the Australian Standards AS5100.4-2017.

Rectangular laminated elastomeric bearings

Plan Size (L x W) (mm)	Available Thickness (T) (mm)	Rated Load Range (KN)	Internal Rubber Layer Thickness (R) (mm)	AS Part Number [50]
230 x 150	35 - 101	116 - 451	6	010602R - 010608R
			9	010901R - 010906R
230 x 200	27 - 112	227 - 615	6	020602R - 020609R
			9	020901R - 020907R
350 x 170	35 - 101	301 - 801	6	030602R - 030608R
			9	030902R - 030906R
350 x 280	45 - 157	392 - 1287	9	040902R - 040910R
			12	041202R - 041208R
			15	041502R - 041506R
			9	050902R - 050908R
480 x 250	45 - 129	533 - 1587	12	051202R - 051206R
			15	051502R - 051505R
			9	060903R - 060909R
480 x 300	51 - 153	772 - 1932	12	061202R - 061208R
			15	061502R - 061506R
			9	070904R - 070912R
480 x 380	73 - 197	1005 - 2484	12	071203R - 071210R
			15	071503R - 071509R
			9	080905R - 080911R
600 x 330	57 - 171	1197 - 2697	12	081203R - 081209R
			15	081502R - 081507R
600 x 450	77 - 237	1556 - 3741	12	091204R - 091212R
			15	091503R - 091511R
			18	091803R - 091809R
600 x 600	97 - 293	2470 - 5046	15	101504R - 101513R
			18	101804R - 101812R

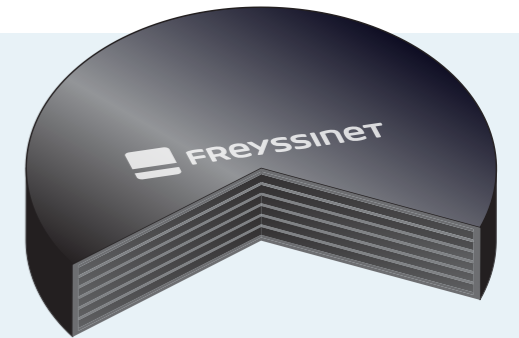


Example shown AS010606R
230 mm x 150 mm
AS 5100.4

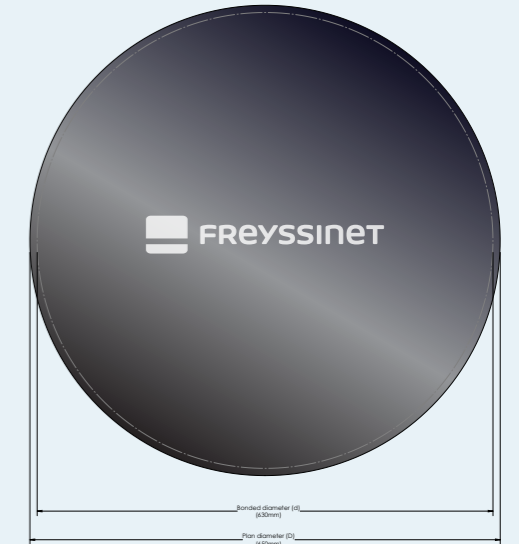


Circular laminated elastomeric bearings

Diameter (D) (mm)	Available Thickness (T) (mm)	Rated Load Range (KN)	Internal Rubber Layer Thickness (R) (mm)	AS Part Number [50]
240	35 - 149	156 - 612	6	110602C - 110610C
			9	110902C - 110909C
			12	111202C - 111208C
330	59 - 153	456 - 1191	9	120903C - 120909C
			12	121202C - 121208C
			15	121502C - 121506C
400	51 - 170	643 - 1701	9	130904C - 130910C
			12	131202C - 131209C
			15	131502C - 131507C
480	77 - 197	1036 - 2493	18	131802C - 131806C
			12	141204C - 141210C
			15	141503C - 141509C
530	63 - 237	1379 - 3064	18	141802C - 141808C
			12	151203C - 151212C
			15	151503C - 151511C
590	63 - 247	1828 - 3828	18	151802C - 151808C
			12	161204C - 161212C
			15	161503C - 161509C
650	77 - 247	2036 - 4676	18	161802C - 161810C
			15	171503C - 171511C
			18	171803C - 171810C
750	92 - 283	3194 - 6278	21	172103C - 172108C
			18	181803C - 181811C
810	101 - 283	3893 - 7353	21	182103C - 182110C
			18	191804C - 191811C
880	101 - 309	4727 - 8713	21	192103C - 192110C
			18	201804C - 201812C
			21	202103C - 202111C



Example shown AS171506C
Ø 650 mm x 137mm (height)
AS 5100.4



Other bearing sizes and specifications can be designed upon request to suit applications where standard sizes are not applicable.

Refer to AS5100.4:2017 for detailed performance specification. Special designs available upon request.

DESIGN

Freyssinet has a full design capability and can custom design non-standard sized laminated bearings for unique project requirements as per Australian Standard.

Material Properties:

- Elastomer Hardness: 50 IRHD
- Chord Shear Modulus: 0.69 MPa
- Bulk Modulus: 2000 MPa

These bearings may have a rectangular, square or circular plan, and can be made with holes for fixing dowels or locating pins. Horizontal restraint may also be incorporated using external devices.



PRODUCTION AND QUALITY

Freyssinet offers natural rubber bearings to meet the Australian standard (AS5100.49-2017)

Production quality of these bearings is guaranteed by appropriate formulation, control of mix preparation and steel plate surface treatment, as well as by the care applied to construction and moulding. Inspections are made at each production stage.

Bearings are individually moulded and the reinforcing plates are completely moulded in the elastomer.

Steel plates are lightly rounded and the corners chamfered.

Freyssinet conducts a policy of permanently improving its products through research and development of new processes and materials.



TESTING

All bearings are tested according to the requirements set out in the Australian standards, and additional local specification requirements. Bearings are tested in a laboratory with the appropriate NATA recognition (or equivalent) as per AS 5100.4 - 2017.





Over 60 locations worldwide

THE AMERICAS · Argentina · Brazil · Canada · Chile · Colombia · Salvador · United States · Mexico · Panama · Venezuela ·

EUROPE · Belgium · Bulgaria · Denmark · Spain · Estonia · France · Hungary · Ireland · Iceland · Latvia · Lithuania · Macedonia · Norway · Netherlands · Poland · Portugal · Romania · United Kingdom · Russia · Czech Republic · Serbia · Slovenia · Sweden · Switzerland · Turkey ·

AFRICA & MIDDLE EAST · Snnb · Abu Dhabi · South Africa · Algeria · Saudi Arabia · Dubai · Egypt · Jordan · Kuwait · Morocco · Oman · Qatar · Sharjah · Tunisia ·

ASIA · South Korea · Hong Kong · India · Indonesia · Japan · Macau · Malaysia · Pakistan · Philippines · Singapore · Taiwan · Thailand · Vietnam ·

OCEANIA · Australia · New Zealand ·



FREYSSINET
SUSTAINABLE TECHNOLOGY

Australia Head Office
Level 3, 13-15 Lyonpark Road
Macquarie Park NSW 2113
Australia
Tel: +61 2 9491 7177
www.freyssinet.com.au

New Zealand Head Office
Unit A / 6 Polaris Place
East Tamaki Auckland 2013
New Zealand
Tel: +64 9 950 7744
www.freyssinet.co.nz