Polymer Products Impex (Private) Limited


# PPI – Elastomeric Bearing  Pads and Strips

# Elastomeric Bearing Pads and Strips

In today's competitive business environment and rising operating costs, any industry cannot afford to have bridges, construction sites or any other commercial facilities out of service because of damage caused by improper elastomeric bearing pads. For this reason, a good understanding of the latest in elastomeric bearing pad technology could prove to be an industrial operator's competitive edge in attracting future business and retaining existing business. Trust PPI elastomeric bearing pads to inform you of the elastomeric bearing pad technology and recommend the appropriate elastomeric bearing pad system for your structure. Our engineers can design the perfect system, then custom fabricate it for quick and easy installation. Or, for a unique application, we will custom design and manufacture a special elastomeric bearing pad solution. For years, our highly effective, reliable elastomeric bearing pad solutions have been used in a large variety of military, marine, transportation, highway and bridge, and industrial applications around the world.

Unlike suppliers who use reclaim rubber and other lower cost compounds to make their products, PPI elastomeric bearing pad and strips are manufactured using only highest-quality Natural rubber grades and superior synthetic rubber compounds with proven performance. Believe us, there is a difference.

PPI Specialized elastomeric bearing pads' outstanding properties are unaffected by ozone, which can cause cracking in traditional rubber compounds such as natural rubber and butyl, particularly under stress. Our Rubber formulations have much greater resistance to sunlight and oxidation. When exposed to natural elements, PPI Compounds should outlast other rubber compounds by a substantial margin. It can perform up to 5x longer resulting in substantial savings on replacement costs. Unless your elastomeric bearing pad and strips are made from PPI Specialized rubber, you're getting an inferior product.

## Benefits of using PPI elastomeric bearing pad

⇒ PPI elastomeric bearing pad are virtually maintenance free

⇒ Provides maximum protection against structural damages to bridges, and all construction structures

⇒ Eliminates costly repairs to severe shocks/damages to all construction structures

⇒ Constructed to last long and provide years of protection

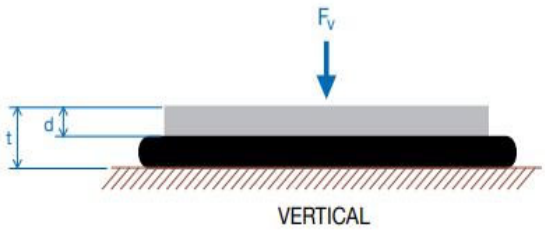
⇒ Performs on any commercial structure and in any type of weather condition

# Elastomeric Bearing Pads and Strips

PPI elastomeric structural bearing pads and strips are manufactured from premium quality Natural and Synthetic rubber as required by the application. The compounds comply with ASTM D 2000. A range of hardness's are available from SDH 50 to SDH 70 to suit special applications.

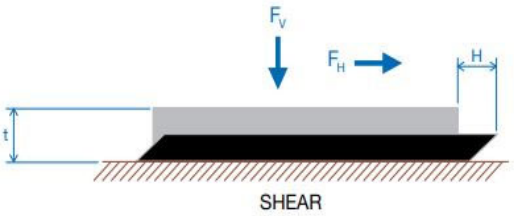
## Vertical Loads

Loadings shown in the table are the maximum recommended working loads. At these loads a deflection of up to 15% of the initial pad height could be expected. As these pads are not bonded to the mating surfaces, the actual deflection is determined by the frictional characteristic of the contact surfaces. Care should be taken as holes or cut outs in the pads/strips may have a substantial effect by reducing the load carrying capacity and increasing the deflection of the pad or strip.



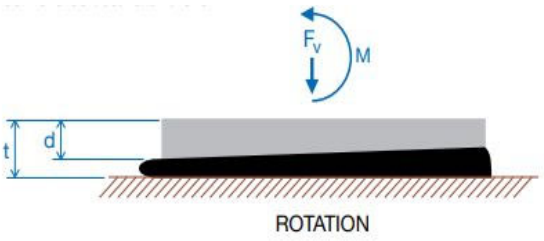

## Shear Deflection/Stiffness

The allowable shear deformation is normally in the order of 30% to 50% of the compressed pad/strip thickness from the neutral position. Shear deflections of up to 70% may be considered but careful consideration must take of possible slippage due to the frictional coefficient of the rubber to structure mating surfaces



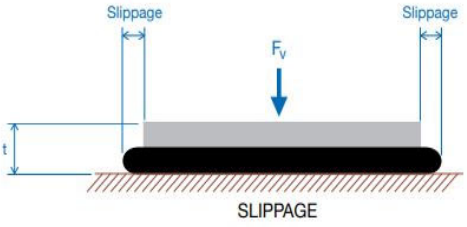

## Rotation

Tilting of the load bearing surfaces relative to each other causes a "rotation" of the bearing pad/strip. The basic limiting criterion is that no gap occurs between the structure and the pad/strip. The rotational capacity tables include the 0.0035 radians that should be allowed to accommodate design tolerances.




## Slippage

Non-reinforced bearing pads will "spread" in surface contact area when under load. The amount of "spread" is largely determined by the frictional coefficients of the structures surfaces mating with the rubber pad/strip. It is important to allow clearances around the pad/strip to allow for this slippage once the structures weight is imposed on the pad/strip.



## Installation

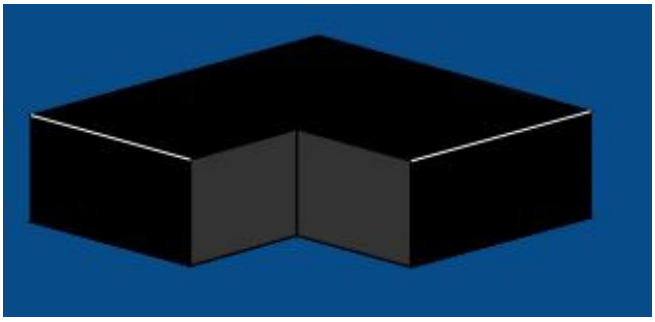
The mating surfaces should be flat, parallel and free from cavities, gaps or protrusions. It is preferable for the structures surfaces to have a rough texture without lubrication, particularly oils and hydrocarbons. Due to slippage when compressed, a gap around all sides of the pad/strip must be provided. It is recommended that this gap be a minimum of 12mm.

## Friction

The bearing is restrained in lateral movement by the frictional coefficient between the rubber and the structure. The ratio of lateral load over vertical load should not exceed the following values:

- 0.35 Elastomer/wood float finish
- 0.30 Elastomer/steel float finish
- 0.25 Elastomer/steel, elastomer/ in-situ concrete finish

## Plain Elastomeric Bearing Pad

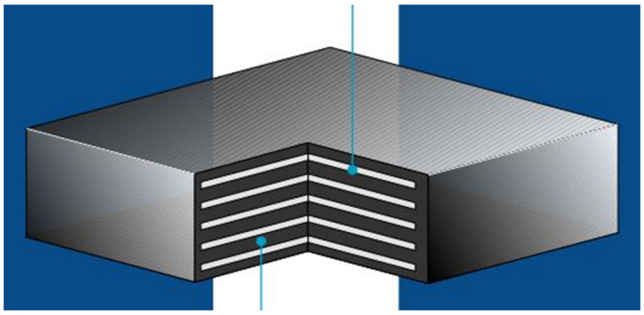


This is the simplest kind of elastomeric bearing pad, since it only consists of one sheet of elastomeric material. PPI used different rubber grades ranging from Chloroprene (Commonly known as Neoprene), EPDM, NR and other appropriate blends of rubber compounds. Allowable working loads is approximately 10 N/mm2. Furthermore, it allows all-ways movements and rotations.

## Steel Laminated Elastomeric Bearing Pad

The basic components are elastomer and steel plates, yet there are certain types of bearings that include other materials, which will be defined in the corresponding section. PPI has created the formula of elastomer from a mixture of rubber and synthetic chloroprene that ensures the resistance to ageing required in the different international legislations. Our bearings' design and standard materials meet most usual regulations However, if the project specifications require so, PPI can produce bearings with special designs or using materials other than the usual standards, always guaranteeing the quality of the final product.

Steel plates Minimal tensile strength 3.700 kg/cm2



Elastomer Hardness shore A 60+/- 5
Minimal tensile strength 176 kg/cm2
Ultimate elongation 400%

# Elastomeric Properties

PPI Elastomeric Bearing pads are manufactured from the highest quality Neoprene, EPDM, Natural Rubber (NR) and other synthetic rubber compound-based compounds which meet or exceed the performance requirements of ASTM D2000 M3AA614Z1 (Z1= 65 +/- 5). Typical Performance of the PPI Impact protection polymer compounds are listed in the table below.

| Property | Test Method | Specification |
|---|---|---|
| Original Properties: | | |
| Color | | Black (Default) Any other color could be provided |
| Hardness (IRHD) | AS1683.15.2, ASTM D2240, BS903A.Z | 65 ± 5 |
| Tensile strength at failure | AS1683.11, ASTM D412, BS903A.Z | > 21 MPa |
| Elongation at failure | AS1683.11, ASTM D412, BS903A.Z | > 450% |
| Tensile strength after heat aging for 96 hr at 70°C | AS1180.3, ASTM D573, BS903A.Z | > 80% of tensile strength before aging |
| Water absorption for 168 hr at 20°C | ASTM D471 | < 5% (by weight) |
| Resistance to ozone cracking for 100pphm at 20% strain at 40°C for 96hr | AS1683.13B, ASTM D395, BS903A/6A | No cracks |
| Compression set after 22hr at 70°C | AS1683.13B, ASTM D395, BS903A/6A | < 30% |
| Tear resistance | AS1683.12, ASTM D624, BS903A.3 | > 70 kN/m |
| Abrasion resistance | AS1683.21, ASTM D1630, BS903A.9 | < 0.5 ml |

** If a report is required on the rubber specifications it could be provided under a special request

# Elastomeric Bearing Pads and Strips

| Strip Dimensions mm x mm | Working Load per Meter kN/m | Compressive Stiffness kN/mm/m | Shear Stiffness kN/mm/m | Shear Capacity +/- mm | Rotation Capacity rad |
|---|---|---|---|---|---|
| 5 x 50 | 200 | 550 | 9.0 | 2 | 0.022 |
| 5 x 75 | 300 | 1163 | 13.5 | 2 | 0.010 |
| 5 x 100 | 400 | 2001 | 18.0 | 2 | 0.006 |
| 5 x 125 | 500 | 3061 | 22.5 | 2 | 0.004 |
| 5 x 150 | 600 | 4348 | 27.0 | 2 | 0.003 |
| 5 x 200 | 800 | 7599 | 36.0 | 2 | 0.002 |
| 10 x 50 | 100 | 138 | 4.5 | 5 | 0.044 |
| 10 x 75 | 225 | 309 | 6.8 | 5 | 0.029 |
| 10 x 100 | 400 | 550 | 9.0 | 5 | 0.022 |
| 10 x 125 | 500 | 828 | 11.3 | 5 | 0.014 |
| 10 x 150 | 600 | 1163 | 13.5 | 5 | 0.010 |
| 10 x 200 | 800 | 2001 | 18.0 | 5 | 0.006 |
| 15 x 75 | 150 | 138 | 4.5 | 8 | 0.044 |
| 15 x 100 | 265 | 244 | 6.0 | 8 | 0.033 |
| 15 x 125 | 415 | 381 | 7.5 | 8 | 0.026 |
| 15 x 150 | 600 | 550 | 9.0 | 8 | 0.022 |
| 15 x 200 | 800 | 933 | 12.0 | 8 | 0.013 |
| 20 x 75 | 110 | 77 | 3.4 | 10 | 0.058 |
| 20 x 100 | 200 | 138 | 4.5 | 10 | 0.044 |
| 20 x 125 | 315 | 215 | 5.6 | 10 | 0.035 |
| 20 x 150 | 450 | 309 | 6.8 | 10 | 0.029 |
| 20 x 200 | 800 | 550 | 9.0 | 10 | 0.022 |
| 20 x 250 | 1000 | 828 | 11.3 | 10 | 0.014 |
| 25 x 100 | 160 | 88 | 3.6 | 13 | 0.055 |
| 25 x 125 | 250 | 138 | 4.5 | 13 | 0.044 |
| 25 x 150 | 360 | 198 | 5.4 | 13 | 0.036 |
| 25 x 200 | 640 | 352 | 7.2 | 13 | 0.027 |
| 25 x 250 | 1000 | 550 | 9.0 | 13 | 0.022 |

Other sizes available upon request

**Choose Wisely, choose "Polymer Products" for your Technical Elastomeric Bearing Pad and Strip requirements.**

**Why shouldn't you? Since we deliver beyond your expectations. That is a promise!**



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**Polymer Products Impex (Private) Limited**
200/2, Sri Indrasara Road, Aruggoda, Panadura
12500, Sri Lanka

Tel: +94 (0)3822 34515
Fax: +94 (0)3822 38725
E-mail: sales@polymerproducts.net
web: www.polymerproducts.net