Rail Track Isolation Systems
Trelleborg Queensland Rubber is a leading supplier of technically advanced solutions for rail track isolation. We have developed a comprehensive range of elastomeric-based products to significantly attenuate ground-borne vibrations resulting from train passes.

In general, structure borne noise isolation is a significant design issue in densely populated areas adjacent to subways, commuter lines and/or light rail systems. We have a broad range of products to provide the required degree of isolation for most applications involving rail track noise and vibration.

Our unique range of products includes :-

- **Floating Slab Track (FST) Bearings**
- **Resilient Bonded Baseplates / Track Fasteners**
- **Low Vibration Track (LVT) Boots and Pads**
- **Ballast Mat**

In conjunction with our US-based partner ATP we have in excess of 30 years experience supplying track isolation products for the rail industry.

Our focus is to supply high quality products with superior performance that have been fully tested and verified using our extensive in-house testing capabilities. The manufacturing sites in Brisbane, Australia, and Wuxi, China, are both certified to the Quality Standard ISO9001.

Our expertise includes the design of elastomeric bearings for anti-vibration mass-spring systems. Mass-spring systems are also installed to acoustically isolate neighbouring structures that are particularly vibration and noise sensitive such as concert halls and movie production studios. We have supplied customized acoustic bearings to fully isolate numerous structures located adjacent to rail systems, including the Theatres on the Bay complex in Singapore and Hong Kong Movie City.

We are focused on forming partnerships with our clients to develop cost effective and high performance solutions for track isolation.
In partnership with the US-based designer ATP, we are a leading supplier of resilient bonded baseplates for rail transit projects. We have developed numerous designs to suit a range of different axle loads. Our proven and reliable systems of track fasteners include:

- **Egg-type Baseplates**
- **Compression Baseplates**

Egg-type Baseplates have a unique design that provides excellent acoustic characteristics, failsafe long-term performance and good electrical isolation. The geometry of the top and bottom plates provides a combination of lateral integrity and vertical softness. The top plate floats and the forces are primarily transmitted in shear rather than in compression, thereby providing linear spring characteristics over the full operating range.

Compression Baseplates usually provide dual stiffness characteristics. Under low axle loads, such as empty passenger coaches and freight cars, the baseplate operates with significant deflection. However, under heavy loads the baseplate is designed to stiffen considerably to provide the necessary increased support.

Our range of track fasteners are suitable for bridges, viaducts and tunnels, and can be installed on either pre-existing slabs, in situ-slabs, pre-cast blocks, steel decks, or steel plates supported by timber sleepers. Special baseplates for turnouts and guard restraining track locations can also be supplied. Our baseplates are designed to reduce ground-borne vibrations, reduce impact on supporting structures and reduce maintenance.
Ballast Mat

Ballast mats are designed to reduce ground-borne vibrations, the degradation of ballast stones and the damaging effect of impact forces on support structures. They are easily installed on rigid support surfaces under the ballast, such as concrete tunnel floors or bridge decks.

Fabric-reinforced Natural Rubber is the ideal combination to provide consistent long-term performance. The Natural Rubber provides superior mechanical and dynamic properties. Flexible fabric reinforcement ensures track loads are distributed uniformly and prevents penetration of ballast stones.

Our ballast mats are typically supplied in rolls that can be simply handled with a forklift. Sections of the rolls are field cut to suit the particular application. Joints are covered by an inherent flap extending from the top surface on one side of the mat, thereby ensuring the covering of joints is a simple and efficient process.

Low Vibration Track (LVT) Boots and Pads

Trelleborg Queensland Rubber is a licenced supplier of Low Vibration Track (LVT) Boots and Pads. LVT is a non-ballasted track system comprising independent rail supports encased in a second pour concrete. The rubber boot isolates the rail support from the surrounding structure and the micro-cellular pad is designed with a certain spring rate to provide effective attenuation of the vibrations.

LVT provides a number of advantages including accurate track geometry, exceptional lateral resistance and a proven record of long term maintenance free operation.
Floating Slab Track (FST) Bearings

Floating Slab Tracks (FST’s) are a proven mass-spring system for achieving very high levels of vibration isolation. The degree of isolation achieved on our most recent installations is far superior to almost all other available systems of track form. In particular, FST bearings are suitable for reducing low frequency ground borne vibrations.

Our FST bearings are manufactured using a special dual compound design to ensure consistent long-term performance. The bearings are principally Natural Rubber to provide excellent mechanical properties, extended durability, low creep rates and low dynamic-to-static stiffness ratios. In regards to their proven record of long-term durability, some elastomeric bearings in bridge support applications have been operational for in excess of 100 years.

We have recently supplied FST bearings for the extensive Hong Kong rail system, including:

- KCRC West Rail
- KCRC East Rail Extensions
- MTRC Lantau and Airport Railway Phase 2

We supply custom designed bearings to support vertical, lateral and longitudinal loads applied to each specific Floating Slab Track unit. The bearings can be designed to support pre-cast and in-situ slab systems. In addition to extensive development trials and repeated cyclic tests on prototype samples, the bearings are comprehensively tested during manufacture to ensure consistent compliance with the specified performance requirements.
For superior performance we recommend a combined system of Trelleborg Floating Slab Track bearings and Trelleborg / ATP Egg Baseplates. This double isolation system has been installed on some of the quietest railways in the world.