



# **PPI – Rubber Gate Seal Systems<sup>®</sup>**



**Polymer Products Impex Private  
Limited**

**“35 Years of Excellence”**

**Your Trusted Partner in Rubber based  
engineering solutions**

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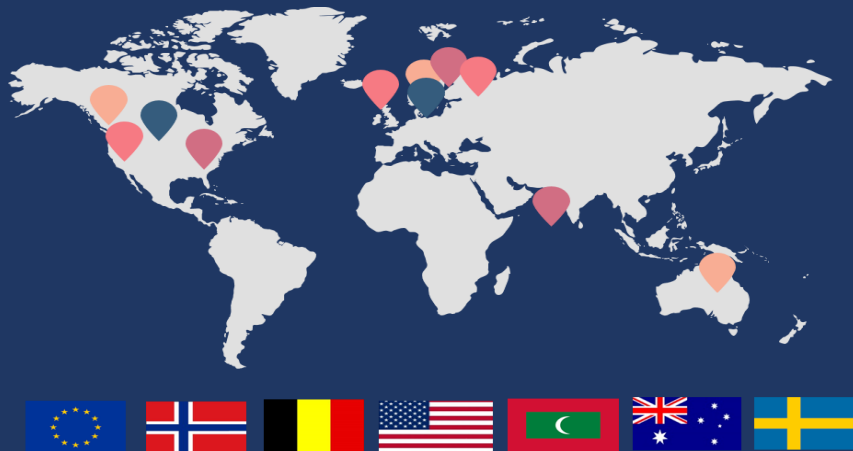
## Our History

Polymer Products Impex (Private) Limited (“PPI”) was **established over 35 years ago** and is one of Sri Lanka’s leading manufacturing companies specializing in the design and manufacture of engineered rubber and bonded metal/rubber composite products for marine, construction, power, irrigation, transportation, household, automotive and general industrial markets.

PPI’s products are exported worldwide having **achieved the status of ‘Approved Supplier’ to several major global companies including 3M**. PPI partners with its clients to deliver customized rubber product solutions utilizing in-depth technical knowledge, specialised material formulations and the latest technologies. Manufacturing processes at PPI include moulding, extrusion, fabrication with post bonding, metal and fabric reinforcing and assembly.

**ISO 9001 certification** (international quality standard) is testimony to PPI’s commitment to offering the highest quality. The manufacturing facility’s environmental management is certified according to the international **environmental standard ISO 14001**. This commitment to international standards has allowed PPI to be appointed as an **exclusive supplier to the world’s largest innovations company in 3M**. One of the main products in this portfolio includes respiratory hoses used widely across a number of safety applications by 3M including in welding masks as outlined below.

The material development and manufacturing process was developed solely by PPI. The company has **passed 3M audits and earned the status as ‘Approved Supplier’ to 3M globally**. In addition to over two decades of export experience supplying products to the following countries, PPI also supplies highly technical rubber products to the mining and oil and gas industry in Australia.



Just as PPI is dedicated to providing innovative and technical rubber product solutions, the company is equally devoted to ensuring its products, employees and sites are following the commitment to socially responsible business activities. PPI fully embraces the policies and principles of the UN Global Compact which is a public-private strategic policy initiative for businesses committed to aligning operations and strategies with ten universally accepted principals in the area of human rights, labour, environment and anti-corruption.

## OUR CAPABILITIES

PPI's engineers and chemists work in partnership with its clients to produce cost effective rubber-based solutions. The company's extensive experience in tool design, 3D drawing and prototype capability can verify design and performance parameters before committing to full scale tooling and production of rubber products. Various elastomers such as NR, SBR, CR, CPE, CSM EPDM, EPM, IIR, FKM, NBR, NBR/PVC, Q, ACM and AEM are developed to achieve superior performance as well as conformance to international requirements such as Reach and FDA. PPI's products are designed to meet unique characteristics including requirements in conductivity, anti-static, flame retardant, odorant, food grade and resistance to different environmental conditions.

PPI observes and adheres to strict quality requirements during the production process by means of its Quality Assurance Systems, whilst the manufacturing processes are subject to continuous in-process inspections. ISO 9001 Certification is testimony to Polymer Products Impex (Pvt) Ltd commitment to offering the highest quality products.

The company also has a state of the art and complete testing laboratory to measure: tensile properties including rubber to metal bonding, hardness, creep, relaxation and compression set, thermal properties, rheological properties, rubber compound characteristics (dispersion and specific gravity) as well as yarn testing.

partners with its clients in to deliver customized rubber product solutions utilizing in-depth technical knowledge, specialized material formulations and the latest technologies. Some examples of the products PPI manufactures are provided below:



## **PPI RUBBER GATE SEALS**

In today's competitive business environment and rising operating costs, Power and Irrigation industry cannot afford to have radial gates, dam gates, sluice gates or any other facilities out of service because of damages caused by improper rubber gate seal systems. For this reason, a good understanding of the latest in gate seal technology could prove to be an industrial operator's competitive edge in attracting future business and retaining existing business. Trust PPI Protection systems to inform you of the latest gate seal technology and recommend the appropriate gate seal system for your radial gate fabrication/repair project. 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 gate seal solution. For years, our highly effective, reliable gate seal 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 Rubber seals are manufactured using only highest-quality Natural rubber grades and superior synthetic rubber compounds with proven performance. There is a difference.

PPI Engineered Products uses its extensive engineering skills and experience to develop, manufacture, market and distribute engineered solutions based on polymer materials to leading customers in Sri Lanka and Global Markets.

PPI Engineered Products is an ISO9001-2015 certified manufacturer, designing and manufacturing Sri Lanka's widest range of rubber gate seals for all infrastructure applications such as dam gates, dam wall extensions, tunnels and concrete slab joints. These are designed to either retain water, increase storage capacity, prevent water penetration or limit contaminated run off or water table penetration. Unlike materials such as PVC, Trelleborg rubber seals remain dimensionally stable and functionally effective over many years, handling movement and ageing far beyond the capacity of PVC. Rubber also provides superior resistance to chemical attack and heat degradation.

PPI Specialized gate seals 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 gate seals are made from PPI Specialized rubber, you're getting an inferior product.

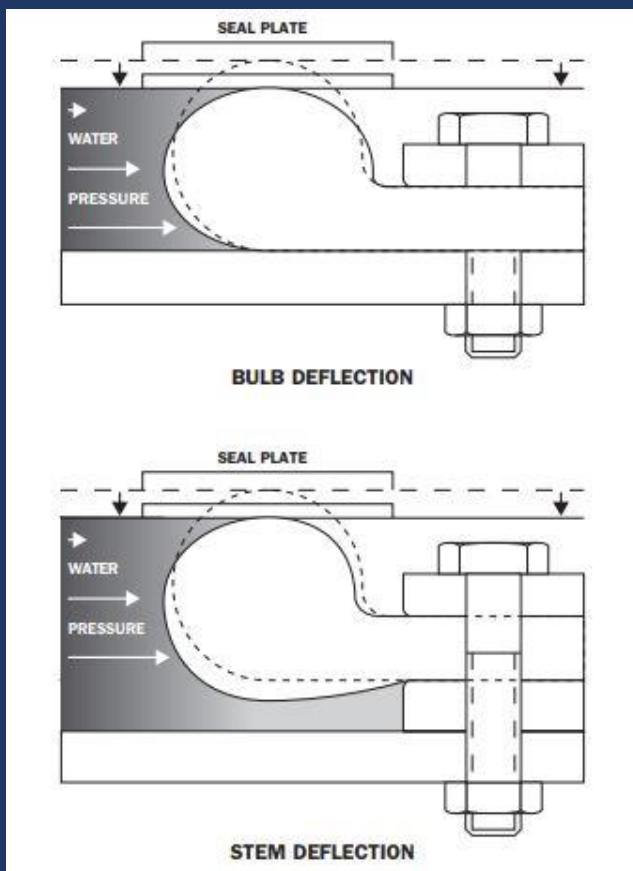
Moulded Joints and corners should be used for high tolerance seals manufactured using the moulding process. These seals provide the highest integrity solution. We recommend all joins should be carried out in our factory using the hot vulcanising process. On site joining can be done by PPI personnel by arrangement. Where hot vulcanising is not possible, one of our 'cold vulcanising' kits should be used. These kits contain all the essential materials to make an effective joint

## Benefits of using PPI Rubber gate seals

- PPI gate seals are virtually maintenance free
- Ensures sealing application
- Provides maximum protection against damages to the steel gates
- Eliminates costly repairs to severe shocks/damages to steel gates and other structures
- Constructed to last long and provide years of protection
- Anchored through thick steel angles to provide stability
- Performs on any gate model in any type of weather condition

## PPI GATE SEAL SOLUTIONS

Since the inception PPI has specialized in the manufacture of a comprehensive range of high-quality gate seals and components. Our engineering and manufacturing expertise deliver world-class rubber seal solutions that are built to withstand the harshest conditions. Our focus is on high performance, low maintenance products to ensure we deliver our clients solutions that improve plant/facility availability, reduce downtime and minimize maintenance expenditure. PPI has developed a diverse and market leading range of rubber seal systems to suit all applications and provide water sealing to your radial gates and other structures.



Our range of diverse rubber seal options are designed to be applied on any environment. PPI can both extrude and mould any sealing product as per the standard sizes or for custom sizes as per the customer request.

PPI delivers world-class products manufactured to withstand the harshest conditions. Our high performing products are designed to minimize the costs associated with the major repairs of the radial gates without compromising performance.

### MUSIC NOTE SEALS

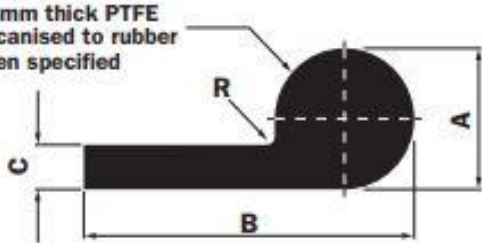
Trelleborg Music Note seals are manufactured with either a solid or hollow bulb depending on required load deflection criteria. The solid profile is less prone to compression set while the hollow profile is more suitable for low hydrostatic pressures. Trelleborg Music Note seals are often used for side seals and can be supplied with a required specification.

The bulb on the Music Note seal is designed to be forced against the seal seat when water pressure is applied. Sealing can be achieved by either bulb deflection, or stem deflection. Seals under high compression loads are usually designed with bulb deflection. Stem deflection is more suitable for:

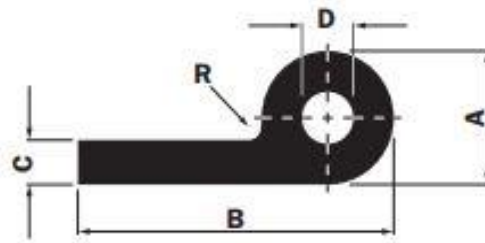
- Low compression loads
- Sealing irregular surfaces
- Large tolerances in the gate's dimensions

### Music Note Seals

1.6mm thick PTFE  
vulcanised to rubber  
when specified

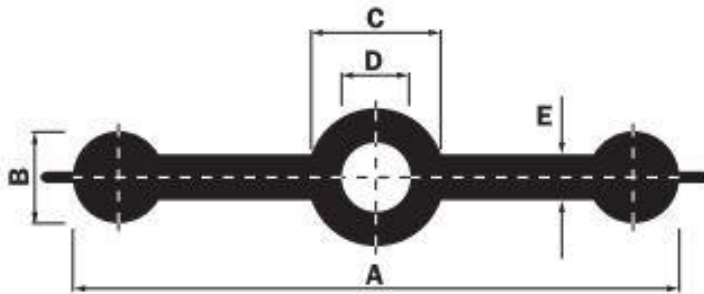


**Solid**

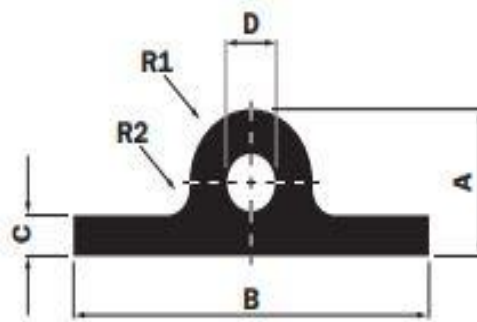
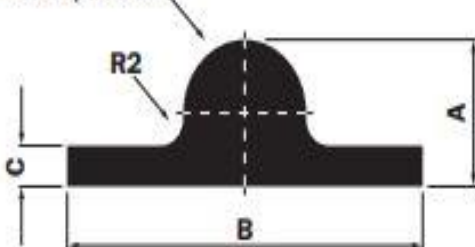


**Hollow**

### Centre Bulb Waterstop



1.6mm thick PTFE  
vulcanised to rubber  
when specified

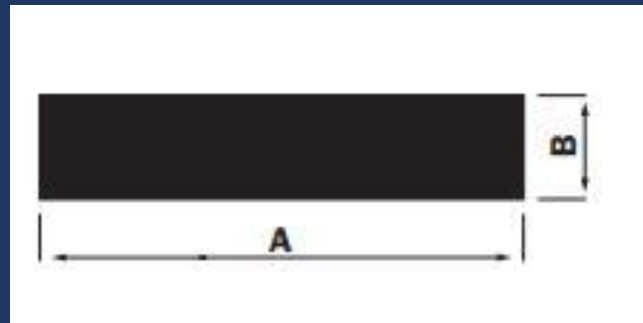
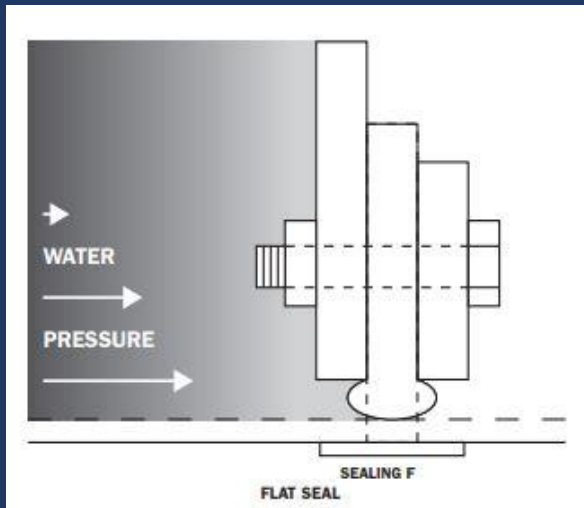


## Double Hump Seals



## Flat Seals

Trelleborg Flat seals can be supplied with either flat, chamfered or radiused seal faces. Chamfered and radiused seals reduce the seal's contact area for ready compression and provide space for the rubber to displace when deflecting. Flat seals are commonly installed as bottom seals. Flat bottom seals on high head gates should project no more than the deflection required to seal (e.g. 3-5mm)



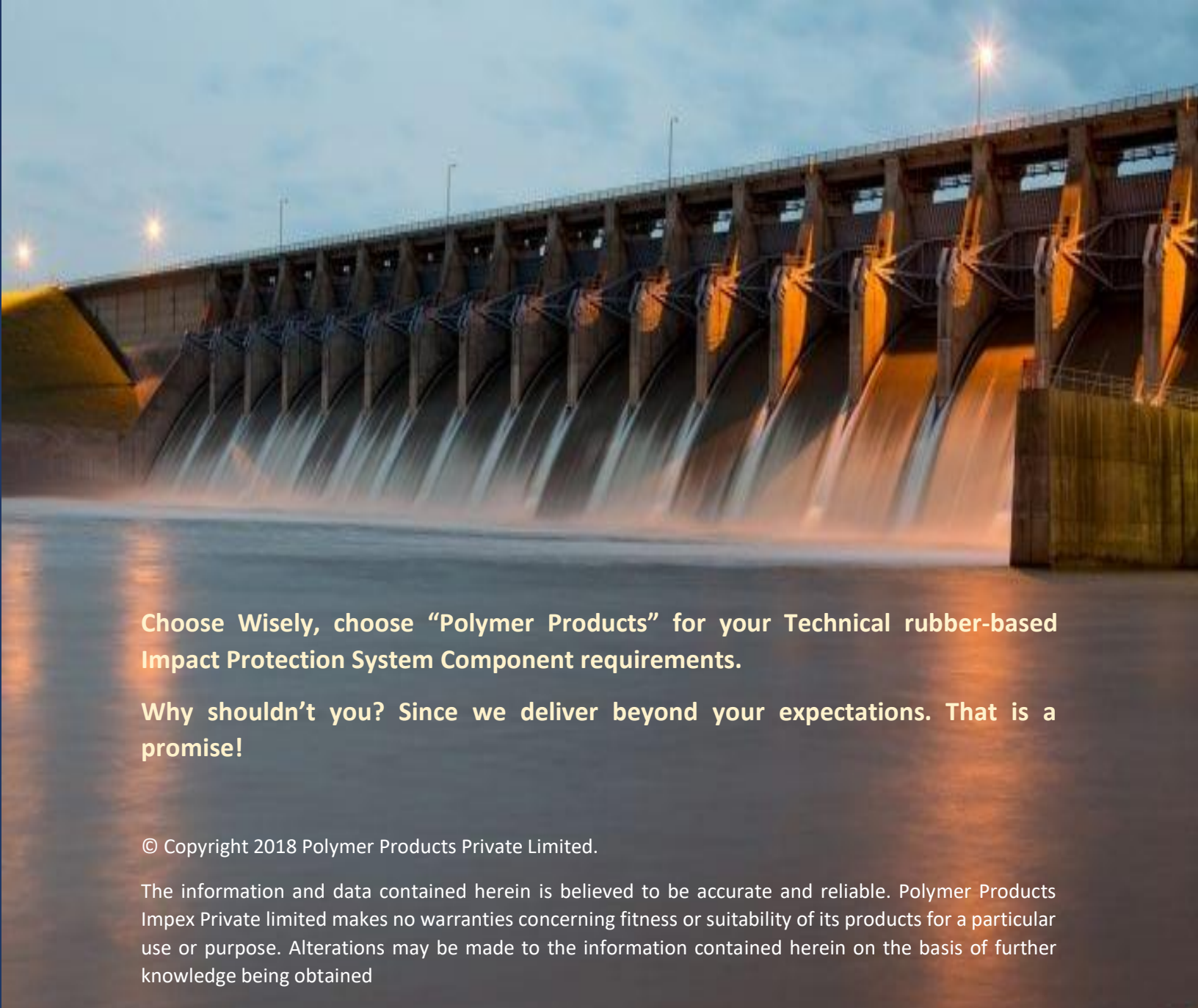


## Elastomer Properties

PPI Seals are moulded, or extruded, usually from compounds of Natural Rubber, EPDM or Neoprene. Natural Rubber has superior mechanical properties. If the seals are to be exposed to extended periods of sunlight then we recommend EPDM, Neoprene or blends with Natural Rubber for increased ozone resistance. Other synthetic rubbers can be used to cope with aggressive gases or fluids. In general, rubber gate seals should have high tensile strength, high tear resistance, good abrasion resistance, low water resistance and excellent weathering resistance. A typical specification for a Natural Rubber seal is shown below

Property	Test Method	Specification
Original Properties:		
Color		Black
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.



**Choose Wisely, choose “Polymer Products” for your Technical rubber-based Impact Protection System Component requirements.**

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

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