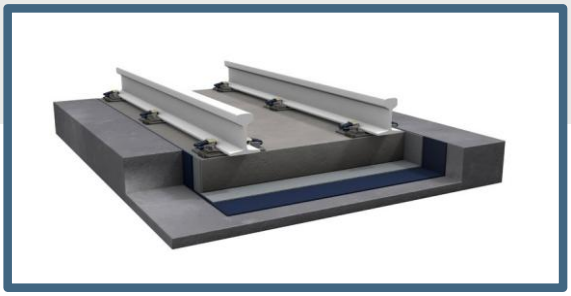
Pandrol Floating Slab Mat

EPD Summary Report

Pandrol's commitment to reducing the environmental impact of global railway infrastructure is being captured within its Sustainable Resilient Systems (SRS) product range, featuring systems composed of Pandrol's Recycled Rubber material. Leading the way, Pandrol is proud to be the first manufacturer in the field to have assessed its systems by an Environmental Product Declaration (EPD), which highlights their lower carbon footprint in comparison to alternative products based on Polyurethane foams.

Pandrol Floating Slab Mat (FSM) is a high-performing vibration attenuation floating slab system that combines best-in-class technical performance with an extremely low carbon footprint.



High performance

Noise and vibration attenuation are achieved while reducing the carbon footprint of the railway infrastructure.

Easy to install

Fast and easy to install, the Pandrol FSM is a maintenance-free system designed to last the entire slab lifetime.

Eco-friendly

All Pandrol Sustainable Resilient Systems (SRS) are made from recycled material and are 100% recyclable.

What is an Environmental Product Declaration?

Internationally accepted, an Environmental Product Declaration (EPD) is a transparent, third-party audited assessment tool, determining numerous parameters to quantify a product's environmental impact. The EPD process is not limited to the product itself, but instead considers the entire value chain, from the raw materials, their transport to the manufacturing site, the manufacturing process itself, then final delivery. Therefore, it provides a comprehensive environmental status of the product, offering insight into even further improvement actions where necessary.

The EPD Process

Lifecycle analysis

All elements are considered for a lifecycle analysis, from the generation of the raw materials, their transport, their transformation into a product and the delivery to the customer.

Third-party specialised auditors

Pandrol is working with specialised auditors in particular to cover the data collection related to all steps of the life cycle.

Real data from the lifecycle of the product

Data from real production and shipment examples have been considered to determine the impact of every lifecycle step of the product towards its environment.

Carbon footprint

The environmental impact is quantified through numerous parameters such as the carbon footprint. It allows comparing with other products assessed the same way.

Public report available online

The EPD report is freely available online. It details the scope of the study and the indicators obtained for each step.

Pandrol Floating Slab Mat EPD results

The example below is for FSM-L13. Pandrol can provide specific values for each system and project needs.

Acid rain

Sulphur dioxide (SO_2), reacts with water in the atmosphere to form sulfuric acid. The latter reaches the ground with precipitation, a phenomenon known as ”acid rain”.

The Acidification Potential (AP) quantifies the equivalent contribution of the product into SO_2 per installed m².

Pandrol FSM: 0.027 kg SO_2 eq / m²

Ozone depletion

Some gases, such as CFCs, halons and HCFCs damage the stratospheric ozone layer protecting the planet from the dangerous UV rays emitted from the Sun.

The Ozone Depletion Potential (ODP) quantifies the equivalent contribution of the product into CFC 11 per installed m².

Pandrol FSM: 0.000000002 kg CFC 11 eq / m²

Global warming

Human activities release greenhouse gases into the atmosphere, triggering global warming and climate change.

The Global Warming Potential (GWP), also known as ”carbon footprint”, quantifies the equivalent contribution of the product into CO_2 per installed m².

Pandrol FSM: 15.6 kg CO_2 eq / m²

Water pollution

Soils leaching by precipitation can bring fertilisers into the watercourse. This accumulation of nutrients, called “eutrophication”, allows for excessive algal growth that consumes oxygen, which asphyxiates aquatic wildlife.

The Eutrophication Potential (EP) quantifies the equivalent contribution of the product into PO_4^{3-} per installed m².

Pandrol FSM: 0.005 kg PO_4^{3-} eq / m²

Key facts

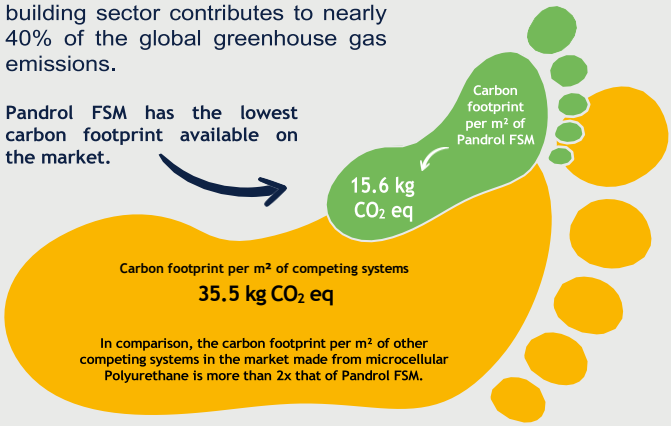
Every kilometre of railway track installed with Pandrol FSM saves 24,000 tyres from landfill or burning.

The use of Pandrol FSM avoids the emission of 160 tons of CO_2 per km of installed railway track compared to the use of microcellular Polyurethane. To give an idea of how much CO_2 this represents, these are the equivalent emissions of an average passenger vehicle driving 1.3 million km or, 33 times around the globe!

Carbon footprint comparison

According to the United Nations Environment Programme, the building sector contributes to nearly 40% of the global greenhouse gas emissions.

Pandrol FSM has the lowest carbon footprint available on the market.



Pandrol Under Sleeper Pad

EPD Summary Report

Pandrol's commitment to reducing the environmental impact of global railway infrastructure is being captured within its Sustainable Resilient Systems (SRS) product range, featuring systems composed of Pandrol's Recycled Rubber material. Leading the way, Pandrol is proud to be the first manufacturer in the field to have assessed its systems by an Environmental Product Declaration (EPD), which highlights their lower carbon footprint in comparison to alternative products based on Polyurethane foams.

Pandrol Under Sleeper Pad (USP) is a system reducing maintenance requirements, increasing track quality and providing vibration attenuation to ballasted track. This system is easy to install, maintenance free and compatible with all types of track design; with its use also proven to reduce the life-cycle cost of the railway.

High performance

Increasing track lifetime and reducing track maintenance while reducing the carbon footprint of the railway infrastructure.

Easy to install

Very easy to install without specific machinery, the Pandrol USP is a maintenance-free system designed to last the entire sleeper lifetime.

Eco-friendly

All Pandrol Sustainable Resilient Systems (SRS) are made from recycled material and are 100% recyclable.

What is an Environmental Product Declaration?

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The EPD Process

Lifecycle analysis

All elements are considered for a lifecycle analysis, from the generation of the raw materials, their transport, their transformation into a product and the delivery to the customer.

Third-party specialised auditors

Pandrol is working with specialised auditors in particular to cover the data collection related to all steps of the life cycle.

Real data from the lifecycle of the product

Data from real production and shipment examples have been considered to determine the impact of every lifecycle step of the product towards its environment.

Carbon footprint

The environmental impact is quantified through numerous parameters such as the carbon footprint. It allows comparing with other products assessed the same way.

Public report available online

The EPD report is freely available online. It details the scope of the study and the indicators obtained for each step.

Pandrol Under Sleeper Pad EPD results

The example below is for USP-I-07d-MFF. Pandrol can provide specific values for each system and project needs.

Acid rain

Sulphur dioxide (SO_2), reacts with water in the atmosphere to form sulfuric acid. The latter reaches the ground with precipitation, a phenomenon known as ”acid rain”.

The Acidification Potential (AP) quantifies the equivalent contribution of the product into SO_2 per installed USP.

Pandrol USP: 0.010 kg SO_2 eq / USP

Ozone depletion

Some gases, such as CFCs, halons and HCFCs damage the stratospheric ozone layer protecting the planet from the dangerous UV rays emitted from the Sun.

The Ozone Depletion Potential (ODP) quantifies the equivalent contribution of the product into CFC 11 per installed USP.

Pandrol USP: 0.0000000005 kg CFC 11 eq / USP

Global warming

Human activities release greenhouse gases into the atmosphere, triggering global warming and climate change.

The Global Warming Potential (GWP), also known as ”carbon footprint”, quantifies the equivalent contribution of the product into CO_2 per installed USP.

Pandrol USP: 8.3 kg CO_2 eq / USP

Water pollution

Soils leaching by precipitation can bring fertilisers into the watercourse. This accumulation of nutrients, called “eutrophication”, allows for excessive algal growth that consumes oxygen, which asphyxiates aquatic wildlife.

The Eutrophication Potential (EP) quantifies the equivalent contribution of the product into PO_4^{3-} per installed USP.

Pandrol USP: 0.002 kg PO_4^{3-} eq / USP

Key facts

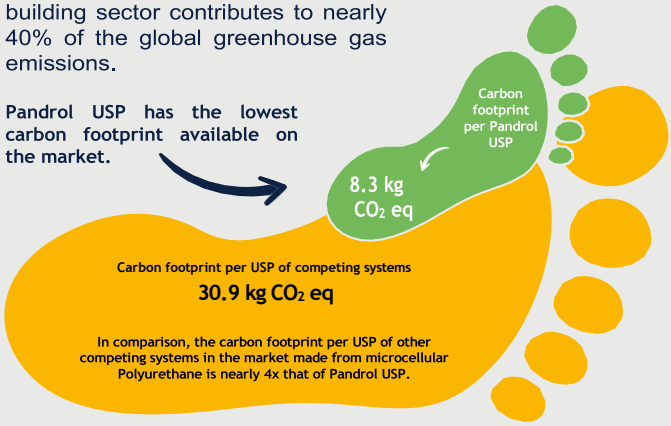
Every kilometre of railway track installed with Pandrol USP saves 3,000 tyres from landfill or burning.

The use of Pandrol USP avoids the emission of 80 tons of CO_2 per km of installed railway track compared to the use of microcellular Polyurethane. To give an idea of how much CO_2 this represents, these are the equivalent emissions of an average passenger vehicle driving 630,000 km or, 16 times around the globe!

Carbon footprint comparison

According to the United Nations Environment Programme, the building sector contributes to nearly 40% of the global greenhouse gas emissions.

Pandrol USP has the lowest carbon footprint available on the market.

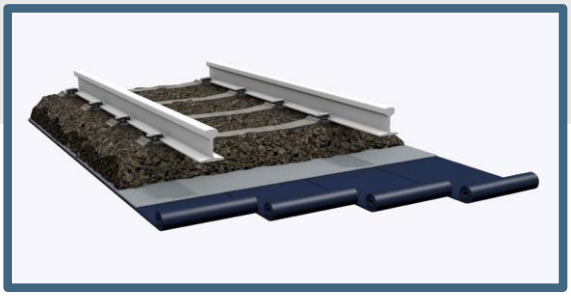


Pandrol Under Ballast Mat

EPD Summary Report

Pandrol's commitment to reducing the environmental impact of global railway infrastructure is being captured within its Sustainable Resilient Systems (SRS) product range, featuring systems composed of Pandrol's Recycled Rubber material. Leading the way, Pandrol is proud to be the first manufacturer in the field to have assessed its systems by an Environmental Product Declaration (EPD), which highlights their lower carbon footprint in comparison to alternative products based on Polyurethane foams.

Pandrol Under Ballast Mat (UBM) is a system performing vibration attenuation and reducing the life cycle cost of the ballasted railway track. Easy to install, compatible with all types of track design, it benefits from a low carbon footprint.



High performance

Noise and vibration attenuation are achieved while reducing the carbon footprint of the railway infrastructure.

Easy to install

Fast and easy to install, the Pandrol UBM is a maintenance-free system designed to last the entire ballast lifetime.

Eco-friendly

All Pandrol Sustainable Resilient Systems (SRS) are made from recycled material and are 100% recyclable.

What is an Environmental Product Declaration?

Internationally accepted, an Environmental Product Declaration (EPD) is a transparent, third-party audited assessment tool, determining numerous parameters to quantify a product's environmental impact. The EPD process is not limited to the product itself, but instead considers the entire value chain, from the raw materials, their transport to the manufacturing site, the manufacturing process itself, then final delivery. Therefore, it provides a comprehensive environmental status of the product, offering insight into even further improvement actions where necessary.

The EPD Process

Lifecycle analysis

All elements are considered for a lifecycle analysis, from the generation of the raw materials, their transport, their transformation into a product and the delivery to the customer.

Third-party specialised auditors

Pandrol is working with specialised auditors in particular to cover the data collection related to all steps of the life cycle.

Real data from the lifecycle of the product

Data from real production and shipment examples have been considered to determine the impact of every lifecycle step of the product towards its environment.

Carbon footprint

The environmental impact is quantified through numerous parameters such as the carbon footprint. It allows comparing with other products assessed the same way.

Public report available online

The EPD report is freely available online. It details the scope of the study and the indicators obtained for each step.

Pandrol Under Ballast Mat EPD results

The example below is for UBM-H35-C. Pandrol can provide specific values for each system and project needs.

Acid rain

Sulphur dioxide (SO_2), reacts with water in the atmosphere to form sulfuric acid. The latter reaches the ground with precipitation, a phenomenon known as ”acid rain”.

The Acidification Potential (AP) quantifies the equivalent contribution of the product into SO_2 per installed m².

Pandrol UBM: 0.020 kg SO_2 eq / m²

Ozone depletion

Some gases, such as CFCs, halons and HCFCs damage the stratospheric ozone layer protecting the planet from the dangerous UV rays emitted from the Sun.

The Ozone Depletion Potential (ODP) quantifies the equivalent contribution of the product into CFC 11 per installed m².

Pandrol UBM: 0.000000002 kg CFC 11 eq / m²

Global warming

Human activities release greenhouse gases into the atmosphere, triggering global warming and climate change.

The Global Warming Potential (GWP), also known as ”carbon footprint”, quantifies the equivalent contribution of the product into CO_2 per installed m².

Pandrol UBM: 11.0 kg CO_2 eq / m²

Water pollution

Soils leaching by precipitation can bring fertilisers into the watercourse. This accumulation of nutrients, called “eutrophication”, allows for excessive algal growth that consumes oxygen, which asphyxiates aquatic wildlife.

The Eutrophication Potential (EP) quantifies the equivalent contribution of the product into PO_4^{3-} per installed m².

Pandrol UBM: 0.003 kg PO_4^{3-} eq / m²

Key facts

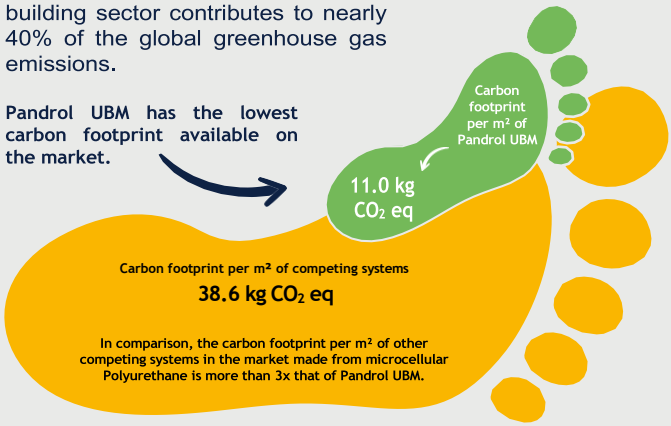
Every kilometre of railway track installed with Pandrol UBM saves 15,000 tyres from landfill or burning.

The use of Pandrol UBM avoids the emission of 190 tons of CO_2 per km of installed railway track compared to the use of microcellular Polyurethane. To give an idea of how much CO_2 this represents, these are the equivalent emissions of an average passenger vehicle driving 1.6 million km or, 40 times around the globe!

Carbon footprint comparison

According to the United Nations Environment Programme, the building sector contributes to nearly 40% of the global greenhouse gas emissions.

Pandrol UBM has the lowest carbon footprint available on the market.

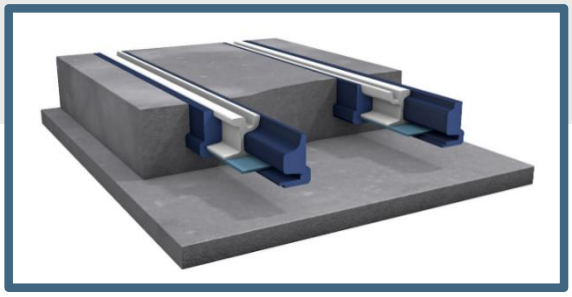


Pandrol QTrack®

EPD Summary Report

Pandrol's commitment to reducing the environmental impact of global railway infrastructure is being captured within its Sustainable Resilient Systems (SRS) product range, featuring systems composed of Pandrol's Recycled Rubber material. Leading the way, Pandrol is proud to be the first manufacturer in the field to have assessed its systems by an Environmental Product Declaration (EPD), which highlights their lower carbon footprint in comparison to alternative products based on Polyurethane foams.

Pandrol QTrack® (QT) is an embedded ballastless track system providing high-performing vibration attenuation with an extremely low carbon footprint. The system itself provides vertical, lateral and longitudinal support to the rail, while reducing vibration transmission from the rolling stock to the surrounding structures and mitigating electrical currents flows out of the rails (known as "stray currents").



High performance

Noise and vibration attenuation are achieved while reducing the carbon footprint of the railway infrastructure.

Easy to install

Fast and easy to install, the Pandrol QTrack® is a maintenance-free system designed to last the entire rail lifetime.

Eco-friendly

All Pandrol Sustainable Resilient Systems (SRS) are made from recycled material and are 100% recyclable.

What is an Environmental Product Declaration?

Internationally accepted, an Environmental Product Declaration (EPD) is a transparent, third-party audited assessment tool, determining numerous parameters to quantify a product's environmental impact. The EPD process is not limited to the product itself, but instead considers the entire value chain, from the raw materials, their transport to the manufacturing site, the manufacturing process itself, then final delivery. Therefore, it provides a comprehensive environmental status of the product, offering insight into even further improvement actions where necessary.

The EPD Process

Lifecycle analysis

All elements are considered for a lifecycle analysis, from the generation of the raw materials, their transport, their transformation into a product and the delivery to the customer.

Third-party specialised auditors

Pandrol is working with specialised auditors in particular to cover the data collection related to all steps of the life cycle.

Real data from the lifecycle of the product

Data from real production and shipment examples have been considered to determine the impact of every lifecycle step of the product towards its environment.

Carbon footprint

The environmental impact is quantified through numerous parameters such as the carbon footprint. It allows comparing with other products assessed the same way.

Public report available online

The EPD report is freely available online. It details the scope of the study and the indicators obtained for each step.

Pandrol QTrack® EPD results

The example below is for QT-55G2-HP-R-Strip-32 with ELEC-L. Pandrol can provide specific values for each system and project needs.

Acid rain

Sulphur dioxide (SO_2), reacts with water in the atmosphere to form sulfuric acid. The latter reaches the ground with precipitation, a phenomenon known as ”acid rain”.

The Acidification Potential (AP) quantifies the equivalent contribution of the product into SO_2 per installed linear metre of rail (lmr).

Pandrol QTrack®: 0.036 kg SO_2 eq / lmr

Ozone depletion

Some gases, such as CFCs, halons and HCFCs damage the stratospheric ozone layer protecting the planet from the dangerous UV rays emitted from the Sun.

The Ozone Depletion Potential (ODP) quantifies the equivalent contribution of the product into CFC 11 per installed lmr.

Pandrol QTrack®: 0.000000003 kg CFC 11 eq / lmr

Global warming

Human activities release greenhouse gases into the atmosphere, triggering global warming and climate change.

The Global Warming Potential (GWP), also known as ”carbon footprint”, quantifies the equivalent contribution of the product into CO_2 per installed lmr.

Pandrol QTrack®: 26.5 kg CO_2 eq / lmr

Water pollution

Soils leaching by precipitation can bring fertilisers into the watercourse. This accumulation of nutrients, called “eutrophication”, allows for excessive algal growth that consumes oxygen, which asphyxiates aquatic wildlife.

The Eutrophication Potential (EP) quantifies the equivalent contribution of the product into PO_4^{3-} per installed lmr.

Pandrol QTrack®: 0.006 kg PO_4^{3-} eq / lmr

Key facts

Every kilometre of railway track installed with Pandrol QTrack® saves 20,000 tyres from landfill or burning.

The use of Pandrol QTrack® avoids the emission of 340 tons of CO_2 per km of installed railway track compared to the use of microcellular Polyurethane. To give an idea of how much CO_2 this represents, these are the equivalent emissions of an average passenger vehicle driving 2.8 million km or, 71 times around the globe!

Carbon footprint comparison

According to the United Nations Environment Programme, the building sector contributes to nearly 40% of the global greenhouse gas emissions.

Pandrol QTrack® has the lowest carbon footprint available on the market.