

Supplier for  
the rail industry



## Rolling stock

Expertise in elastomers and composites  
for use in the rail industry

High-speed train, tramway, train, metro





# The group

**BORFLEX®** is a **French** and **Swiss** group company that manufactures rubber, polyurethane, composite materials, and TPEs. It specialises in small, medium, and large series production **for all types of industry**.

**BORFLEX®** has a European presences thanks to its eleven **French** sites and its site in **Switzerland**.

Its design offices can support you in all of your innovation and custom product design projects.

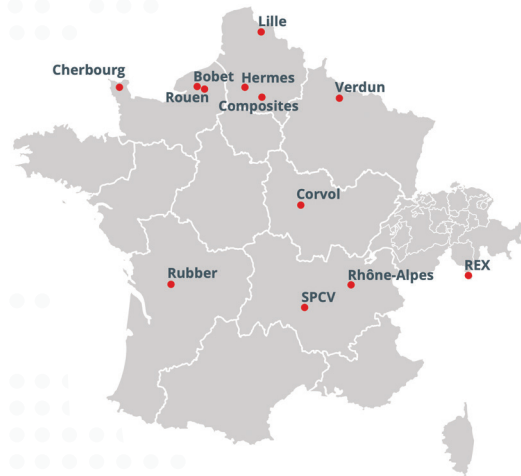
**BORFLEX®** is your specialist in the development, fine-tuning, design, prototyping, and manufacture of products in rubber, TPE, polyurethane, and composite materials, intended for use in industry, and in particular the rail transport industry (*door and window seals, bellows, safety edge profiles, pads, protectors, protective cushions, hoses, hand rails, railway crossings, etc.*). The **BORFLEX®** Group is also self-contained and formulates its own compounds, responding to the **requirements** of its pioneering clients.

From design to the overall control of the logistics chain, we **support** the largest rail builders and operators throughout the progression of their **projects**.



**Olivier Quintin**  
CEO of the **BORFLEX Group**

## Production monitoring in compliance with highly rigorous standards



## Some reference projects:



**Dubai Metro (United Arab Emirates)**  
Initial mounting and refurbishment  
door fittings



**O'train Ottawa (Canada)**  
Initial mounting  
door fittings

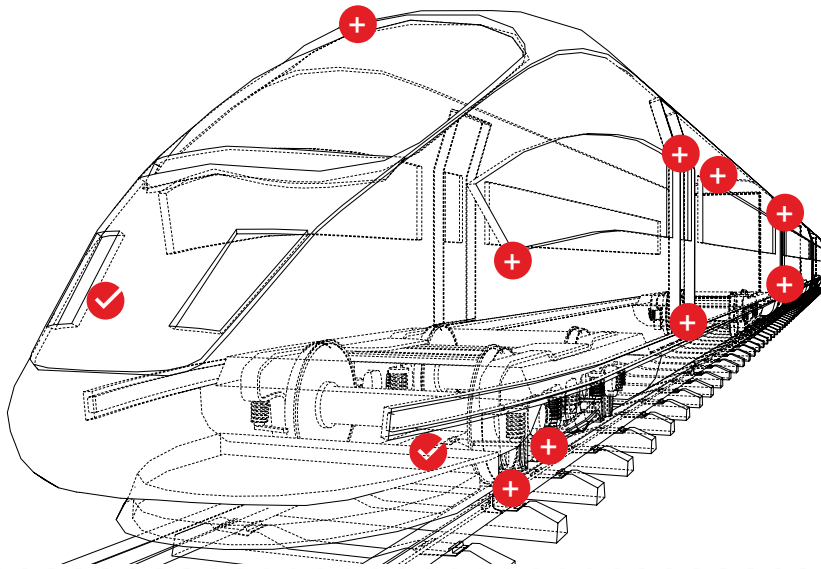


**TER 2N NG**  
Initial mounting and refurbishment  
Interior and exterior door fittings,  
corner pieces



# Rail Industry - Rolling stock

**BORFLEX®** develops multiple solutions with a view to ensuring safety and delivering high-precision mechanical properties, in accordance with your needs. The group is ready to step in to assist with your construction, maintenance and repair interventions, and works to restore compliance with standards.



- ✓ Seal
- ✓ Bellows
- ✓ Protectors

At the cutting edge of technology for 75 years, the BORFLEX® Group has become a melting pot of experience and expertise. Whatever form your rolling stock may take - high-speed train, train, metro, tramway - we incorporate your specific requirements and challenges into each step in the realisation of your projects.

- ✓ **Safety of users, onboard staff, and intervention staff.**
  - Impermeability to water, air, dust, sand
  - FLAMESTOP® - Worldwide compliance with standards relating to safety against fire and smoke:
    - European EN 45 545
    - North American NFPA 130
  - Securing of the doors by means of the incorporation of detector sensors
- ✓ **Durability and strength of the parts:**
  - Imperishable
  - Resistant to adverse weather conditions (UV, hot and cold - even extreme cases: -45°C/+100°C)
  - Exceptional abrasion resistance
- ✓ **Comfort of users, onboard staff, and intervention staff.**
  - Ease of assembly and disassembly (time-saving)
  - Acoustic comfort (soundproofing profile...)
  - Customisable visuals and aesthetics
  - Thermal inertia

# Rail Industry - Rolling stock

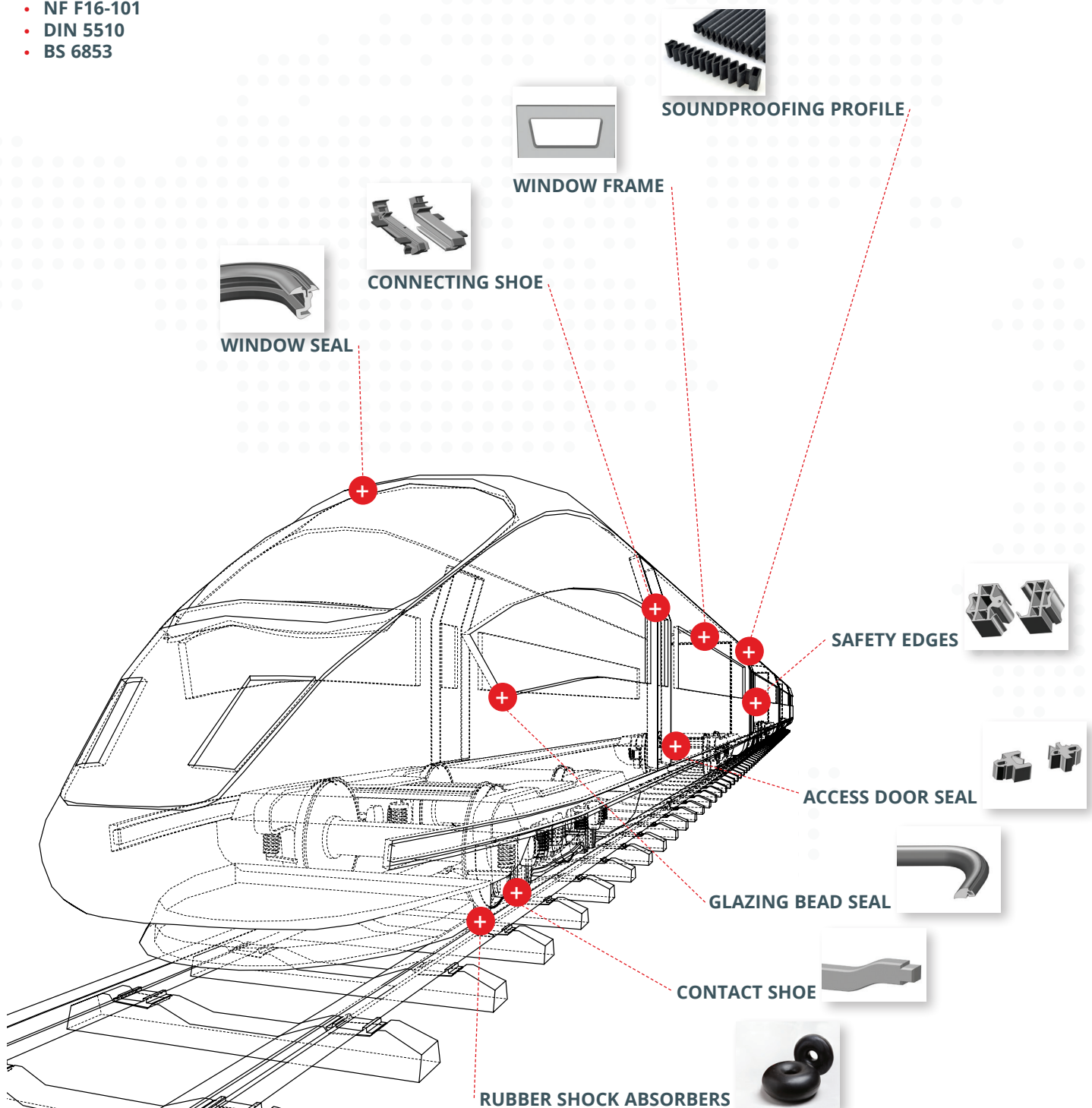
For rolling stock, BORFLEX® shares its expertise in the following systems:

- automatic doors
- windows, interior
- mechanical parts on the bogie

## ✓ Moulded rubber profiles and parts

• Fire resistant in accordance with:

- EN 45 545
- NFPA130
- NF F16-101
- DIN 5510
- BS 6853





# Rail Industry - Rolling stock

## ✓ Stereolithographic prototyping & 3D printing

- **Cost - deadline:** toolless manufacturing, reduced cost and optimised deadlines < 2 weeks
- **Safety:** passengers and drivers, **EN 45 545 / NFPA 130**
- **Ease of installation:** seal can be clipped directly onto the doors (anti-vandalism), simple assembly and disassembly of the window
- **Ergonomic comfort:** impermeable to water, air, dust and noise
- **Borflex® custom products:** ability to connect profiles with differing geometries
- **Characteristics:** PU, silicone, FLAMESTOP® - extruded seal, welded

### Areas of application:

- Door fittings



## ✓ Door fittings (seal)

- **Safety:** passengers and drivers, detection (safety feature) **EN 45 545 / NFPA 130**
- **Durability:** material intended for outdoor use, with good resistance to adverse weather conditions and variations in temperature (-45°C/+100°C)
- **Ease of installation:** seal can be clipped directly onto the doors (anti-vandalism)
- **Ergonomic comfort:** impermeable to water, air, dust and noise
- **Borflex® custom products:** ability to connect profiles with differing geometries
- **Characteristics:** FLAMESTOP® - extruded seal, welded

### Areas of application:

- Sealing system for all types of window/door/structure



## ✓ Gangway bellows (seal/tramway)

- **Safety:** passengers and drivers, **EN 45 545 / NFPA 130**
- **Durability:** material intended for outdoor use, with good resistance to adverse weather conditions and variations in temperature (-45°C/+100°C), resistant to abrasion and tearing
- **Ease of installation:** seal can be clipped directly onto the doors (anti-vandalism)
- **Ergonomic comfort:** impermeable to water, air, dust and noise
- **Borflex® custom products:** different lengths possible
- **Characteristics:** FLAMESTOP® - extruded seal, welded

### Areas of application:

- Soundproofing profile



## ✓ Special suspension parts

- **Safety:** drivers, **TSI WAG (ISO 5660 -1: 2015)**
- **Enhanced durability:** on account of being made of natural rubber
- **Ergonomic comfort:** noise reduction
- **Borflex® custom products:** special suspension systems for bogies used in the construction of low-floor wagons and wagons for use on track with a reduced curve radius.

- **Characteristics:** FLAMESTOP®

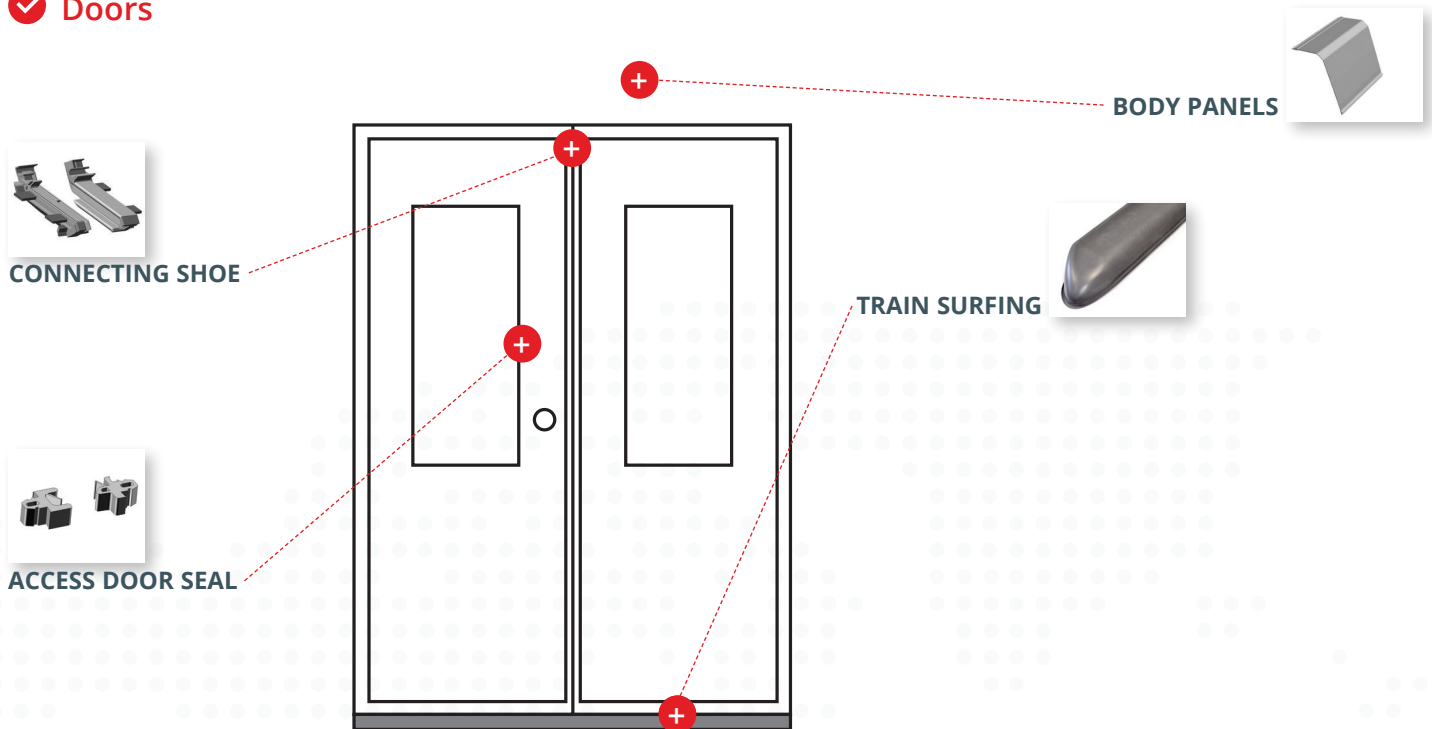
### Areas of application:

- Can be used in bogies as primary or secondary suspension



# Rail Industry - Rolling stock

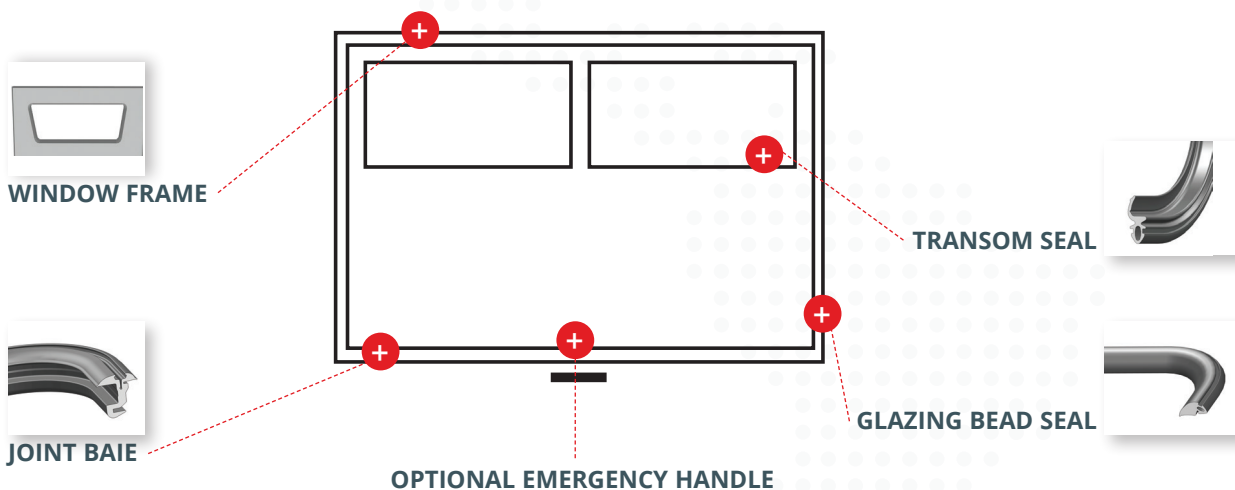
## ✓ Doors



### Doors

- Front, rear, and peripheral joints
- Visual and electrical safety edges, pressure wave with or without control unite
- Anti-drag system

## ✓ Window



### Window

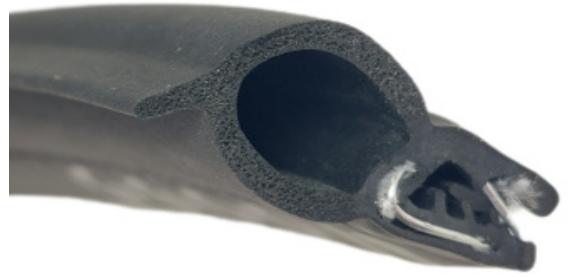
- Front, rear, and peripheral joints
- Visual and electrical safety edges, pressure wave with or without control unit
- Anti-drag system



# Rail Industry - Rolling stock

## ✓ Clip-on sealing joint

- **Safety:** passengers and drivers, **EN 45 545 / NFPA 130**
  - **Durability:** resistant to abrasion
  - **Ease of installation:** simple attachment, clippable (self-locking)
  - **Ergonomic comfort:** impermeable to water, air, dust and noise
  - **Borflex® custom products:** multi-material insert: steel, thermoplastic, cellular and/or compact rubber (EPDM)
  - **Characteristics:** FLAMESTOP® - extruded seal
- Areas of application:**
- Car body seal



## ✓ Door threshold (seal / tramway)

- **Safety:** passengers and drivers, **EN 45 545 / NFPA 130**, designed to eliminate door closing incidents, doors do not jam in winter
  - **Durability:** material intended for outdoor use, with good resistance to adverse weather conditions and variations in temperature (-45°C/+100°C)
  - **Ease of installation:** simple assembly and disassembly
  - **Ergonomic comfort:** impermeable to water, air, dust and noise
  - **Borflex® custom products:** designed by BORFLEX®
  - **Characteristics:** FLAMESTOP® - extruded seal, welded
- Areas of application:**
- Compensation for door control failures



## ✓ Drainage flap & non-return valve (seal/air conditioning system)

- **Safety:** passengers and drivers, **EN 45 545 / NFPA 130**
  - **Ease of installation:** simple assembly and disassembly
  - **Ergonomic comfort:** impermeable to water, air, dust and noise
  - **Borflex® custom products:** different diameters possible
  - **Characteristics:** FLAMESTOP® - extruded seal
- Areas of application:**
- Controlled condensation aid with drainage



## ✓ Protection

- **Safety:** passengers and drivers, **EN 45 545**  
Made from material that is resistant to -30°C.
  - **Durability:** material intended for outdoor use, with good resistance to adverse weather conditions and variations in temperature
  - **Ergonomic comfort:** cold and frost
  - **Characteristics:** FLAMESTOP®
- Areas of application:**
- Protection of mobile parts against snow and frost



# Rail Industry - Rolling stock

## ✓ Wheelset support pads

- **Durability:**
  - Up to 2,000 cycles
- **Ease of installation:**
  - Magnetic attachment for adhesion to the wheelset (time saving)
- **Visual comfort:**
  - Can be individually adapted with your logo
  - Fixing with straps available as an option

### Areas of application:

- Rim and tread protection for wheelsets and bogies
- Transport and storage of the wheelsets and bogies
- Designed for all diameters and widths of wheel



## ECO-CONCEPTION

👎 XXX thousands of wooden supports

VS

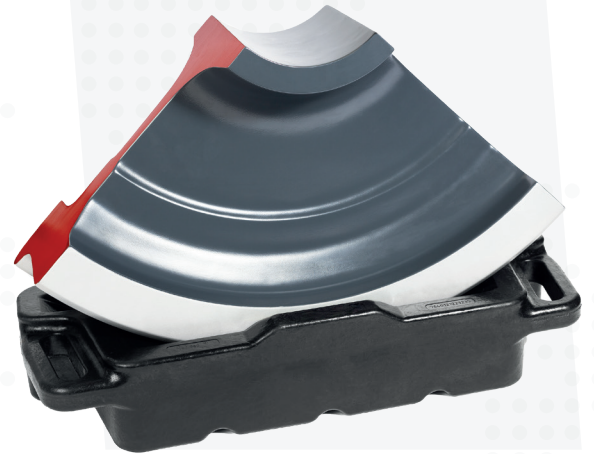
👍 2 wheelset support pads

=

>> 2'000 cycles

=

🌱 Forests and protected areas



## ✓ Shark fork

- **Safe and comfortable to use:**
  - System designed for moving wheelsets
- **Durability:**
  - Material designed for outdoor use with good resistance to temperature variations

### Areas of application:

- Easy wheelsets movement
- Developed for all wheel diameters and widths





# Rail Industry - Rolling stock

## ✓ Amortissement dans les bogies



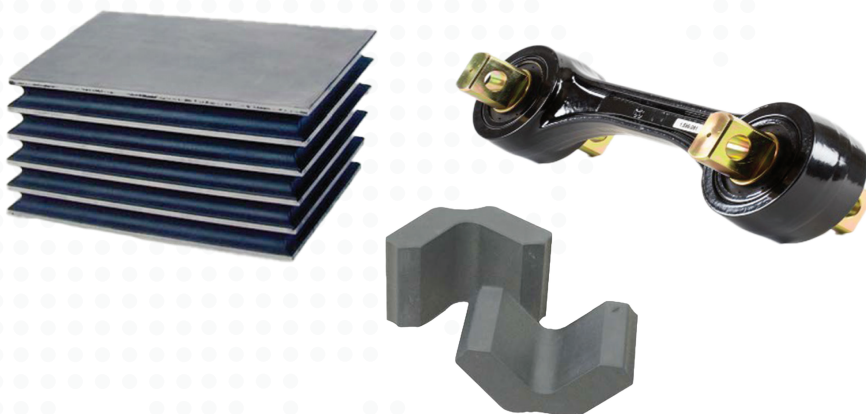
## ✓ Benefits

- **Safety:** passengers and drivers
- **Borflex® custom products:** the Borflex® Group designs and optimises elastic couplings specifically tailored to the client project, by adapting to the client's technical requirements

### Areas of application:

- Rubber/metal parts for shock absorption in the bogies
- Engineered for high static and dynamic stresses

## ✓ Antivibrations



## ✓ Special projects



TAILOR-MADE

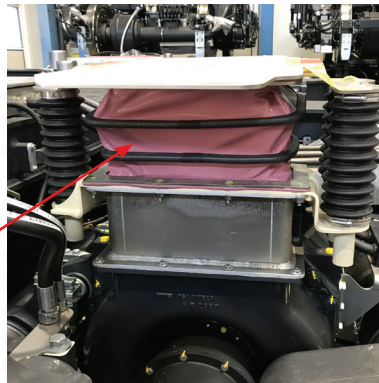
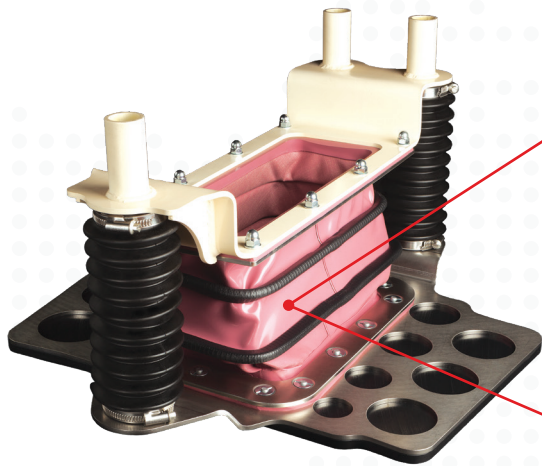
# Rail Industry - Rolling stock

## ✓ Bellows - complete system

- **Durability:**
  - Complete system resistant to high static and dynamic stresses
- **Quality:**
  - Practical tests are conducted in our laboratories

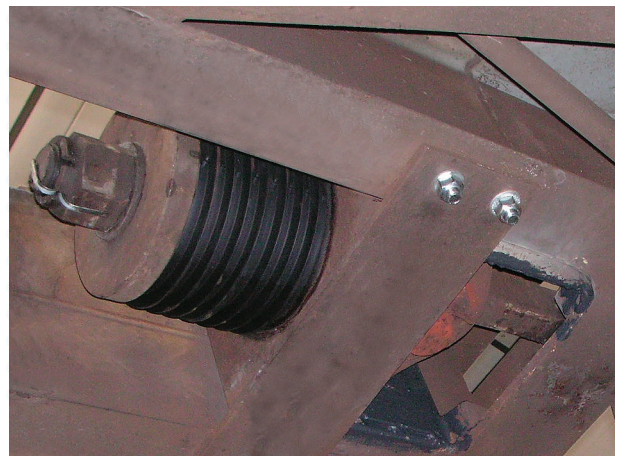
### Domaines d'applications:

- Flexible connections, bellows for engine air cooling connections



## ✓ Shock absorber for wagon coupling

- **Durability:**
  - Resistant to high static and dynamic stresses
- **Quality:**
  - The practical tests are endorsed with external laboratories





# Our eco-friendly innovations

## ✓ Recycled BORFLEX® rubber

BORFLEX® is able to substitute 20 to 40% natural rubber in its rubber compounds. This substitution ensures 100% recyclability of the products manufactured.

## ✓ Rubber reliability

### ✓ Substitution without compromise:

Experts in formulations and compounds for over 65 years, BORFLEX® has mastered rubber substitution while maintaining optimum performance.

### Guaranteed performance:

- ✓ Our materials meet the most rigorous requirements, guaranteeing reliable and durable products.

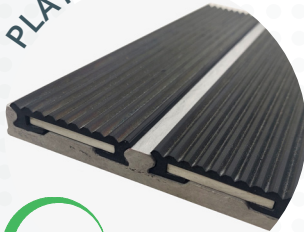
### Sustainability:

- ✓ Thanks to this virtuous, eco-responsible cycle, BORFLEX® is at the forefront of sustainable innovation.



## ✓ Examples of BORFLEX® products using recycled rubber

PLATFORM



20%

### RUBBER

- | NON-SLIPPERY
- | IMPUTRESCIBLE
- | RESISTANCE +++
- ✓ Abrasion
- ✓ Weatherproof
- ✓ UV

FLOOR TILE



40%

### COMPOUNDS

- | WAVE-PERMEABLE
- | DIELECTRIC
- | NO CORROSION
- | RESISTANCE
- ✓ Chemical
- ✓ UV

# Our commitments



## ✓ VALUE RUBBER by BORFLEX® Innovation in recycled rubber

The BORFLEX® Group stands out for its capacity for INNOVATION. Environmental issues affect all industrial activities. That's why the company's R&D department has taken a major step forward by proposing solutions for better resource management and waste reduction. This includes the recycling of BORFLEX® elastomers and the integration of recycled materials, known as VALUE-RUBBER, to optimise environmental impact without compromising product quality.

## ✓ Services

- Capacity to test and certify compounds and parts
- Cutting
- Design
- Formulation
- Ready-to-use system
- Restocking

## ✓ Standards



# Flamestop®

## WORLDWIDE COMPLIANCE

