



## Solutions for sound and vibration isolation in rail traffic

Providing  
peace and quiet  
along the track.





## KRAIBURG Relastec

Competent solutions  
for noise and vibration  
insulation in rail traffic

*DAMTEC® Project Wätern, Germany  
(with DAMTEC® SBM K)*

DAMTEC® products consist of special rubber granules, such as foamed rubber and polyurethane foam from the recycling of post-industrial materials, i. e. from unused new raw materials. This leads to the desired properties and takes environmental protection into account. An aging of the rubber granulate is thus excluded. In particular, used tyres are not used here. With the extensively tested formulations, the products meet special requirements resulting from the loads in the track area. These elastomer materials are also used in other demanding areas such as building construction, civil engineering and tunnelling. Particularly noteworthy is the long-term behaviour, which guarantees a constant high level of effectiveness over decades. In this way, they efficiently counteract the multi-frequency vibrations and shocks that are transmitted to the environment.

KRAIBURG Relastec, as part of the KRAIBURG Holding, specialises in sub-ballast mats and bearings for mass-spring systems with its DAMTEC® division.

KRAIBURG Relastec has already established itself through numerous international projects with its DAMTEC® products and offers its partners an extensive range of solutions to reduce noise and vibration problems in rail traffic.

DAMTEC® products have been tested in recognized external testing institutes and internally for the sometimes very demanding, project-specific conditions and specifications.

It goes without saying that KRAIBURG Relastec is ISO 9001 certified and thus guarantees consistently high quality and complete traceability of its products.

DAMTEC® products are tested according to DIN 45673-5, DIN 45673-7 and other national standards.

### Quality products - produced in harmony with nature

Environmental protection is a key strategic task at KRAIBURG Relastec. We are fully aware that sustainable growth is only possible if we live up to our commitments and responsibility for environmental protection. That's why KRAIBURG Relastec has a consistent course here: environmental protection is our daily program!

### Manufacturer-related product qualification (HPQ) and Q1 certification at Deutsche Bahn AG

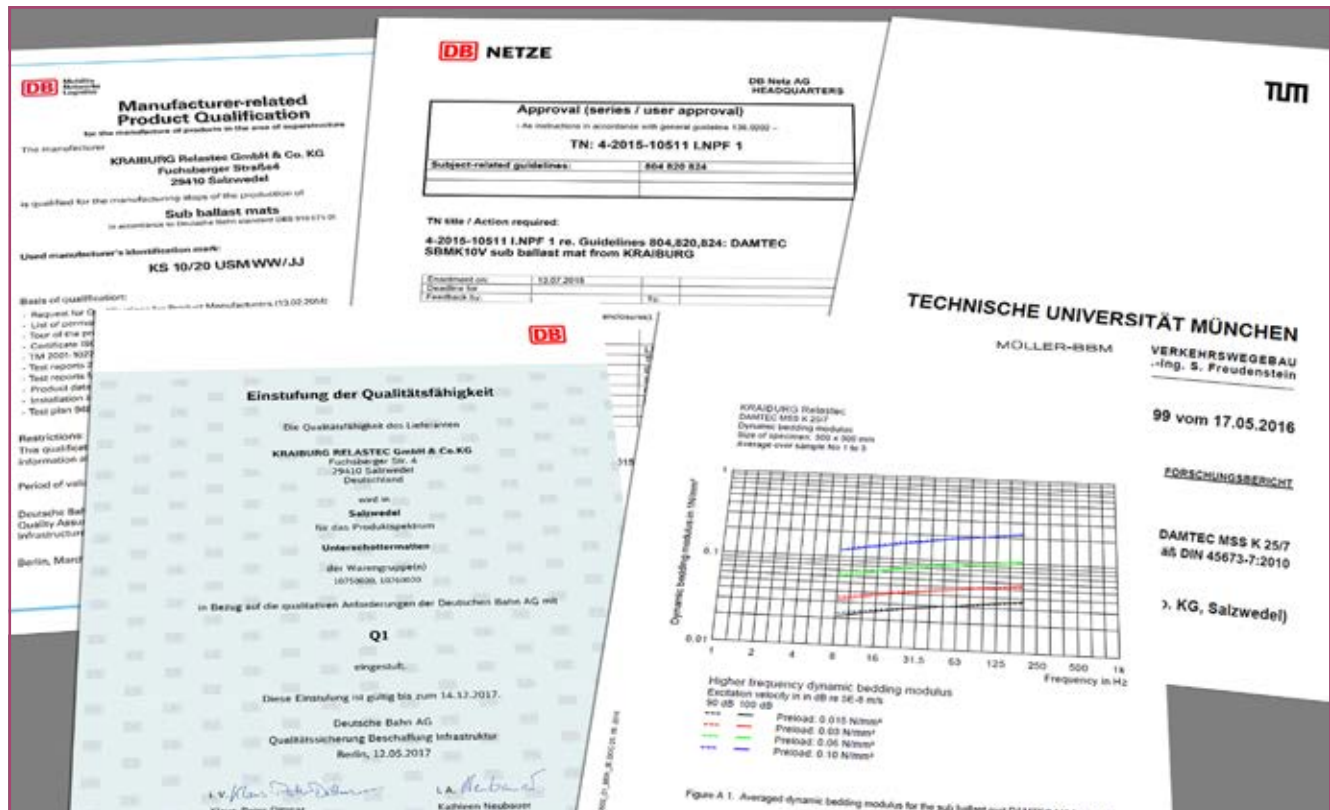


KRAIBURG Relastec has been awarded the „Manufacturer-related Product Qualification (HPQ)“ by Deutsche Bahn AG and the „Supplier's Quality Capability“ is classified as Q1 for the product range of sub-ballast mats by Deutsche Bahn AG (DB AG).

The HPQ qualifies a manufacturer to produce a particular product using specific processes already described in standards, drawings or other technical documentation. It is required every three years for the annual Q1 certification.

The Q1 certification is the classification of a company, which is audited within the scope of DB AG's supplier management with regard to quality capability. As a Q1-supplier of DB AG, one is authorised by the client DB AG to supervise prefabrication services on one's own responsibility. Project-related external production approvals are no longer mandatory.

Our sub-ballast mats comply with the technical delivery conditions and are approved for use in the DB AG network (according to DBTL 918071 and e. g. TM-2015-10511 LNPF 1).





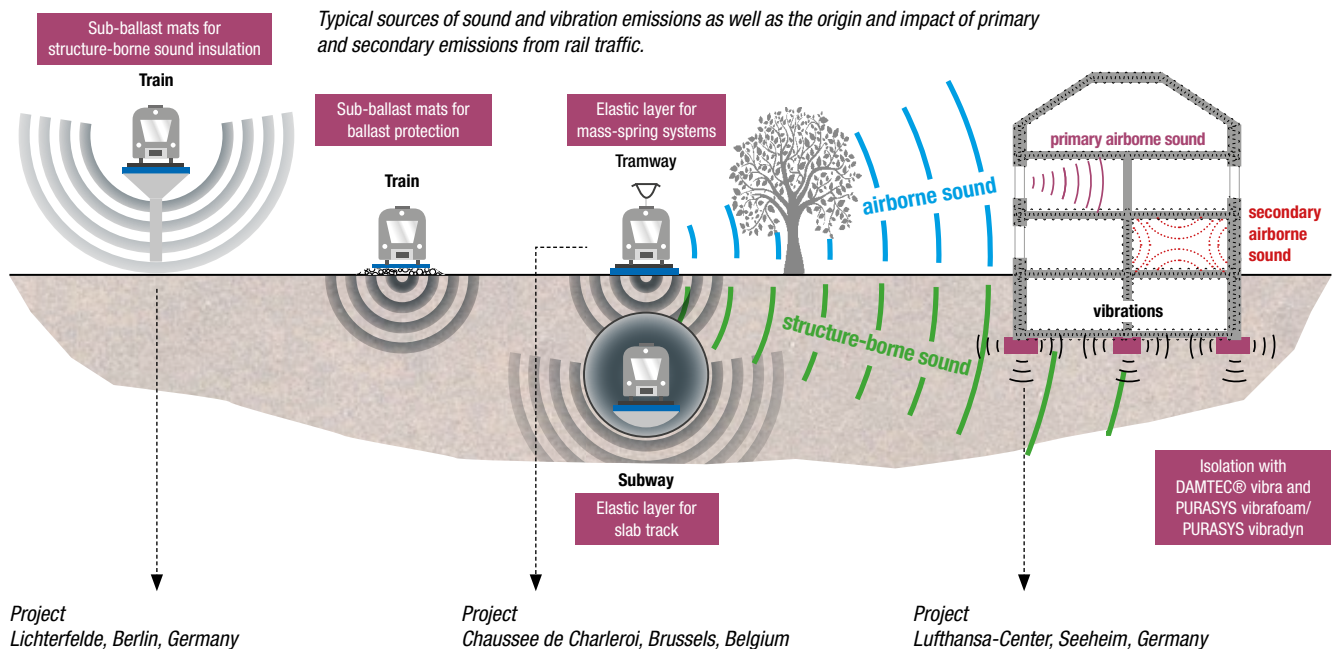
## Sound emission and immission

Noise sources due to  
railway traffic



Railway vehicles generate rolling noises and vibrations during operation. This is due to roughness and imbalances on both the wheels and the rail running surfaces. Surface defects such as head checks, corrugations and slip waves on the rails are known to be among the most common sources of interference.

These vibrations are transmitted to the ground via the roadway and spread as structure-borne noise. If buildings are located along or near the track, a transfer is also carried out via their foundations. The buildings begin to vibrate and, with the appropriate intensity, they are also preceived by humans as perceptible vibration or disturbing noise. Another consequence of this transmission chain is the emission of vibrations from building parts, e. g. ceilings and walls, to the environment. This takes place via the air, which begins to vibrate itself and then become audible as socalled secondary airborne sound.





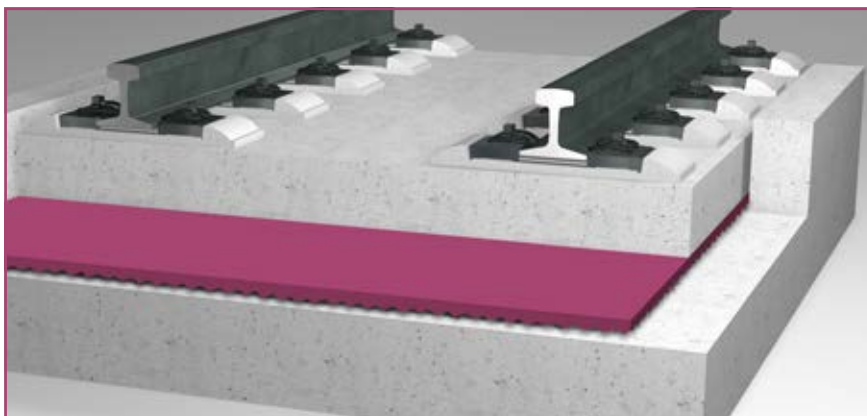
# DAMTEC® Products for use in railway traffic

## Product overview

DAMTEC® Project Kuala Lumpur, Malaysia  
(with DAMTEC® SBM K 25/7)

### DAMTEC® MSS

*Full surface bearings for mass-spring systems*

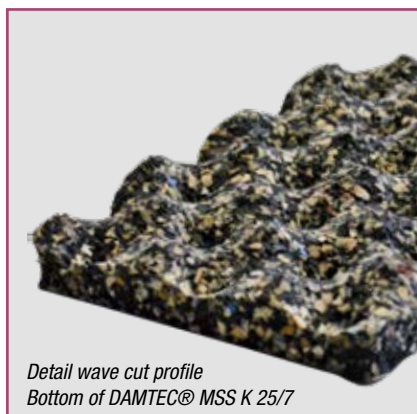


**DAMTEC® MSS** products are decoupling and protective mats under rail systems tested according to DIN 45673-7 (Mechanical vibration - Elastic elements of the superstructure of rail tracks). They reduce structure-borne and secondary airborne noise and vibration emissions when used in „slab track“ (mass-spring system).

DAMTEC® MSS products are supplied in rolls. Mats are available on request.



DAMTEC® MSS K 17/8 roll



Detail wave cut profile  
Bottom of DAMTEC® MSS K 25/7

#### Products:

DAMTEC® MSS K 10  
DAMTEC® MSS K 20  
DAMTEC® MSS K 23

#### Products with wave cut profile:

DAMTEC® MSS K 17/8  
DAMTEC® MSS K 25/7



DAMTEC® Project Schwieberdingen, Germany  
(with DAMTEC® SBM K 10 V)

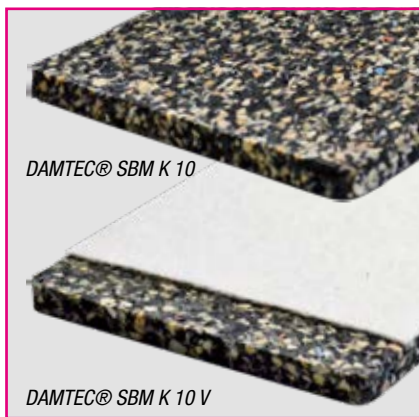
## **DAMTEC® SBM** Sub-ballast mats



**DAMTEC® SBM** products are decoupling and protective mats under rail systems tested according to DIN 45673-5 (Mechanical vibrations - Elastic elements of the superstructure of rail tracks). They reduce structure-borne noise and secondary airborne sound as well as vibration emissions. In the case of ballasted track, the service life is extended by a lower and more uniform load. At the same time, they also protect engineering structures and seals.



DAMTEC® SBM K 10  
roll



DAMTEC® SBM K 10

DAMTEC® SBM K 10 V

### Products:

DAMTEC® SBM K 10 • K 10 V\*  
 DAMTEC® SBM K 20 • K 20 V\*  
 DAMTEC® SBM K 23 • K 23 V\*

### Products with wave cut profile:

DAMTEC® SBM K 17/8 • K 17/8 V\*  
 DAMTEC® SBM K 25/7 • K 25/7 V\*

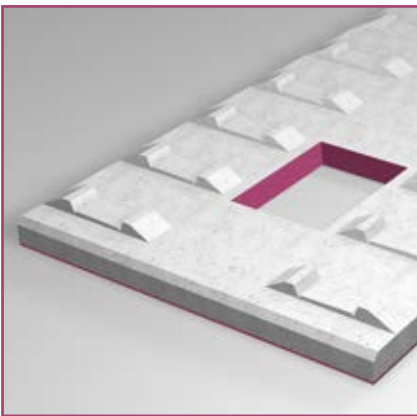
\* geotextile-laminated variant





DAMTEC® Project Berlin, Germany  
(with DAMTEC® STM)

## **DAMTEC® STM** *Full-surface bearings for track slabs*



**DAMTEC® STM** products are elastic separating layers for decoupling of track slabs. They are attached to both the plate sole and the conical grouting holes. This minimizes vibrations emitted into the ground. In combination with DAMTEC® STM, the slab becomes a lightweight mass-spring system with excellent structure-borne sound insulation.





Let us convince you of the outstanding properties of our products:

- |   |  |
|---|--|
| ■ environment-friendly  | ■ reduce secondary airborne sound                      |
| ■ reduce the transmission of structure-borne sound                        | ■ keep track position stable for longer period of time |
| ■ low water absorption  | ■ extremely durable                                    |
| ■ protect the sensitive waterproofing layer against damage by the ballast | ■ protect adjacent structures by reducing vibrations   |
| ■ extend the life of the ballast  | ■ easy installation                                    |
| ■ reduce track maintenance costs  | ■ extremely economical                                 |



## Our comprehensive services for you

We support you with the entire railway project



*DAMTEC® Project Central Station,  
Berlin, Germany  
(with DAMTEC® SBM K)*



## Solution Development & Detailed Solutions

Our many years of experience and our know-how with products for acoustic and vibration reduction are a guarantee for the solution of even very complex problems. Together with you, our specialists will develop effective systems to eliminate or minimize disruptive factors in the problem areas. In addition to standard solutions based on experience, we are of course also technically and personally in the position to implement completely new solutions, exactly adapted to your requirements.

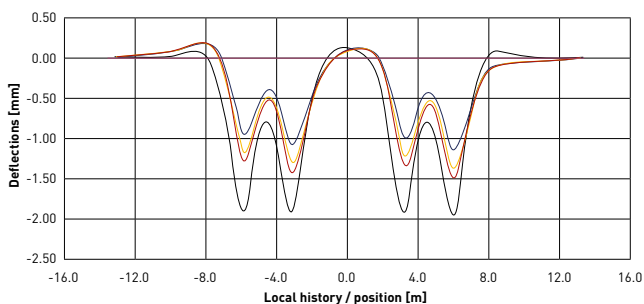
### Calculations, simulations and efficacy forecasts

To find out how effective measures can be in dealing with an emission problem, you don't have to wait until they are implemented. After a first inspection and analysis of the conditions on site, our specialists are able to create a calculation model in which all relevant factors regarding vibration and damping behaviour with different material properties are taken into account. This results in a realistic simulation that allows fine-tuning of these factors and enables our specialists to develop the optimum solution. At the end of the planning phase, you will receive proof of the expected effectiveness of the system. This efficacy forecast gives you the assurance in advance that your expectations will be met successfully.

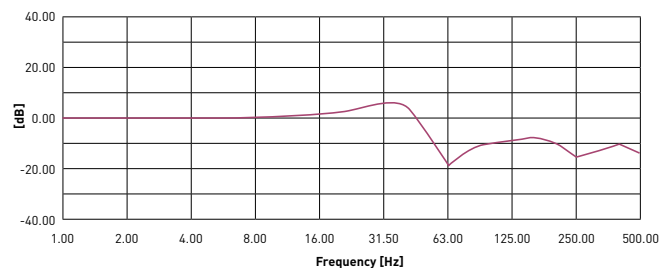
## Our services at a glance

- material testing and measurement on our own large scale test bench
- project support from the beginning
- installation advice and site support
- preparation of installation plans
- vibration-technical, mech. measurements
- solution development
- calculation and simulation
- efficacy forecasts

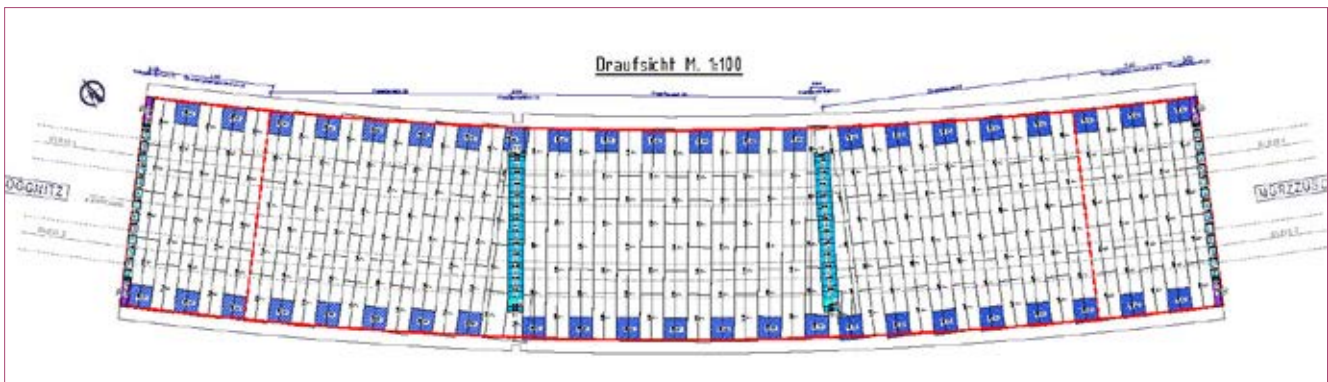
Example „deflection“



Example „insertion loss“



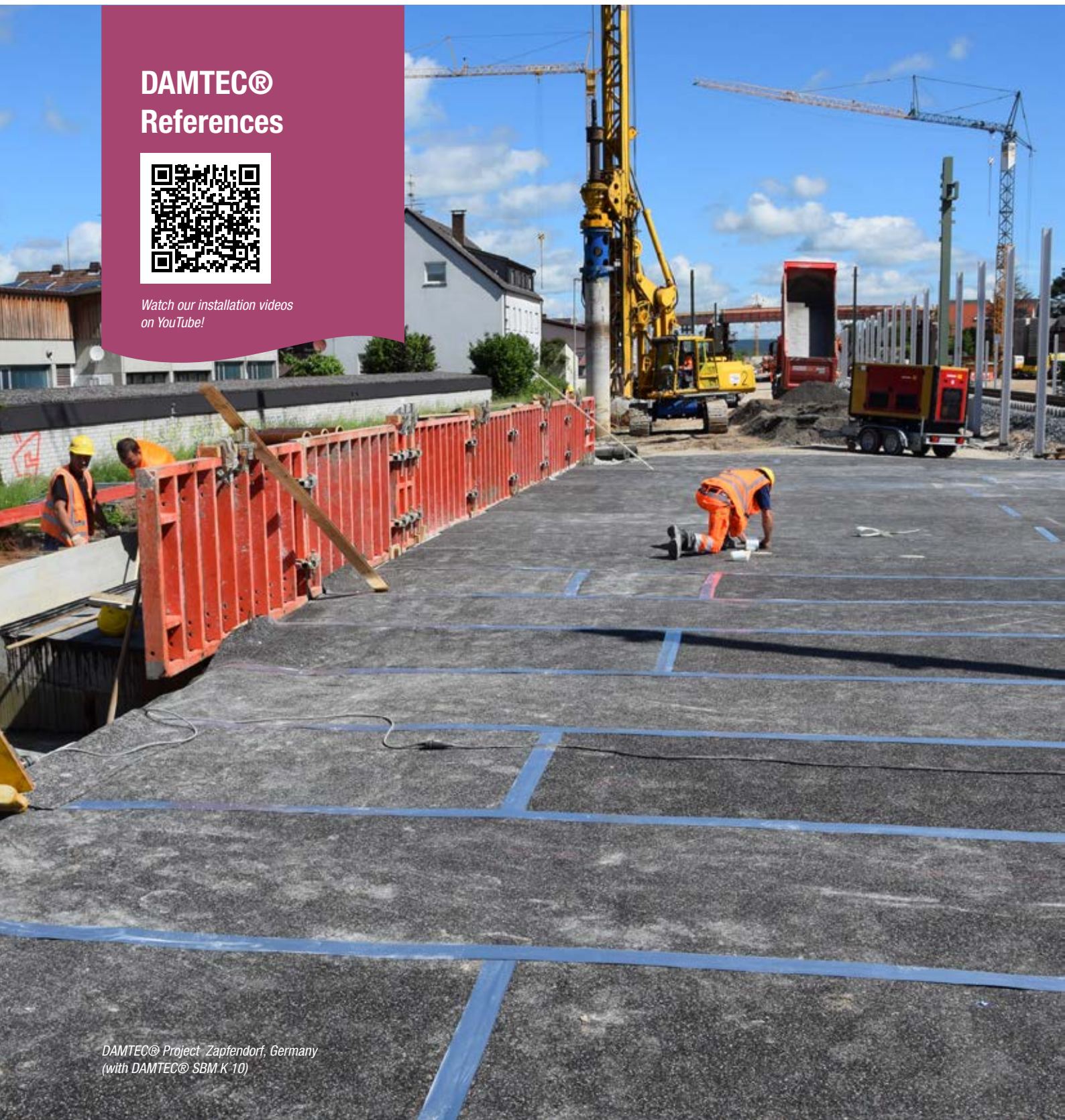
Installation plan for a mass-spring system



## DAMTEC® References



*Watch our installation videos  
on YouTube!*



*DAMTEC® Project Zapfendorf, Germany  
(with DAMTEC® SBM K 10)*



**Kuala Lumpur, Malaysia, 2018**

*DAMTEC® SBM K 25/7*



**Freilassing, Germany, 2017**

*DAMTEC® SBM K 10 V*



## Wiener Linien, Austria, 2005

DAMTEC® SBM K 23 V



## Officer Road, Officer, Australia 2013

DAMTEC® SBM K 10





### Kuvola Station, Finland, 2010

*Full surface DAMTEC® SBM K 10*



### Schwieberdingen, Germany, 2016

*DAMTEC® SBM K 10 V*





## Products for the railway industry made of polyetherurethane

Product overview



### **PuraSys GmbH & Co. KG**

Polyurethane is a fascinatingly versatile material. KRAIBURG PuraSys GmbH & Co. KG with its 110 employees is an efficient partner for a wide range of industries and branches of industry. It cooperates with the automotive industry, the rehabilitation, health and leisure sector, furniture manufacturing, power tool and mechanical engineering, the construction industry and rail transport companies. The railway sector has made a name for itself with its high-quality products in numerous projects worldwide.

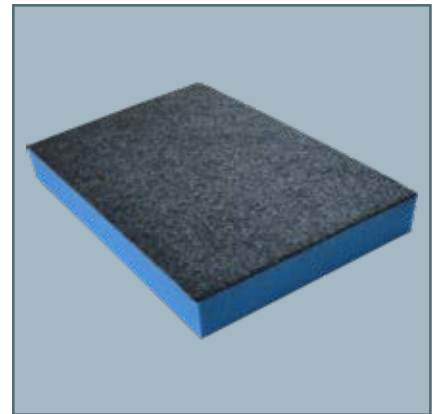
The products of our sister company, KRAIBURG PuraSys GmbH & Co. KG, consist of mixed-cell or closed-cell PU foam. These are cellular polyurethane elastomers with outstanding properties. Basic types with different properties are available for almost every application. Adaptation to individual applications is simple and is done by selecting the type.

PURASYS products are tested in recognized external testing institutes and internally for the sometimes very demanding conditions and specifications. KRAIBURG PuraSys is certified in accordance with ISO 9001, thus guaranteeing consistently high quality and complete traceability of its products.



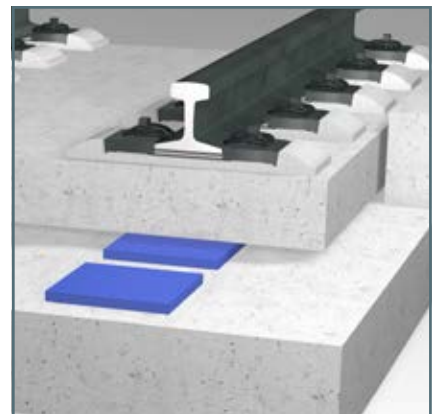
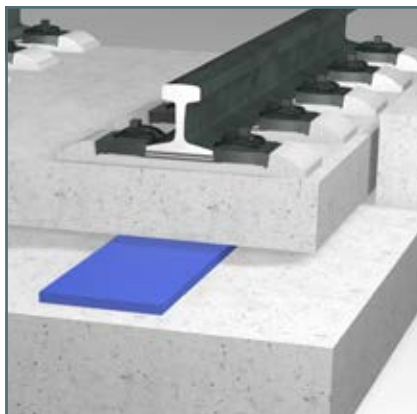
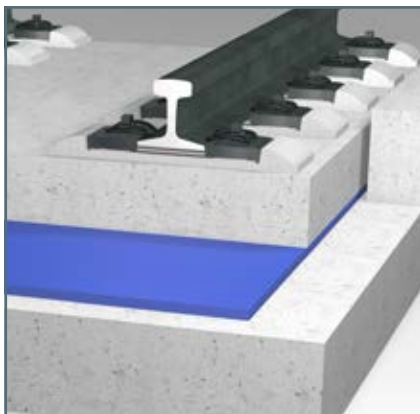
### **PURASYS SBM**

*Sub-ballast mats*



### **PURASYS MSS**

*Full surface bearings, strip-like support and point bearings for mass-spring systems*



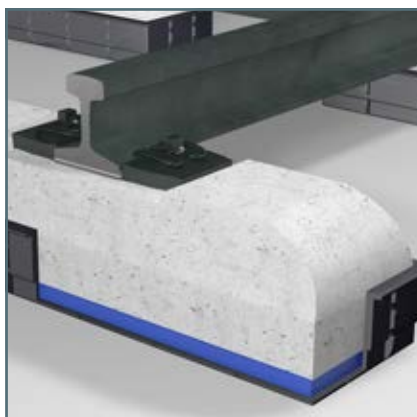
### **PURASYS BPP**

*Base plate pads*



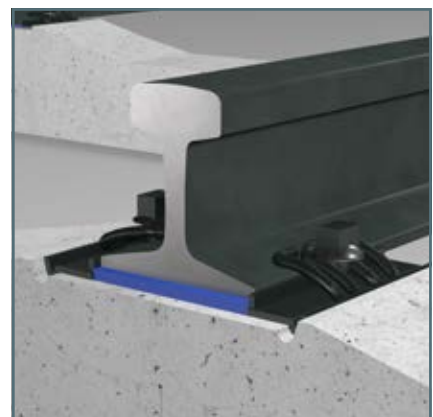
### **PURASYS ESB**

*Elastic sleeper boots*



### **PURASYS ERP**

*Elastic rail pads*



### **Esfahan Metro Line, Iran, 2015**

*PURASYS MSS P 2023*



### **Beijing Metro Line 6 , China, 2017**

*PURASYS SBM P 2025, SBM P 2032, MSS P 2025*





## Kartner Kogel, Austria, 2017

PURASYS MSS P 4025, P 3625 and PN 3225



## Kartner Kogel, Austria, 2017

PURASYS MSS P 4025, P 3625 and PN 3225



## Kontakt



ACOUSTIC & VIBRATION ISOLATION  
made of polyurethane

Products for reducing noise and  
vibration emissions in the rail sector

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ACOUSTICS & VIBRATION ISOLATION  
made of rubber granules

Products for reducing noise and vibration emissions in the rail sector

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