1. Application Sector

DAMTEC® SBM K V is an isolation, decoupling and protection mat for railway track systems, proofed in accordance to DIN 45673-5 - mechanical vibrations - resilient element used in railway tracks - part 5: laboratory test procedures for under ballast mats.

The under ballast mat absorbs vibrations and reduces acoustic emission as well as structure borne sound transmission. It is also effective in reducing the frequency of the ballast maintenance requirement through reduced vibration and better-balanced loading. It protects construction and waterproofing.

2. In General

With our data based on our tests and experience we want to advise you the best of our knowledge and belief.

The mats have been approved by German Railway DB AG. Until further notice, each application in the network of German Railway requires the approval of the DB AG. Furthermore, it must be observed in the network of German Railway the following DB - guidelines:

- 824.1510_Bettungsarbeiten_USM_einbauen,
- 824.1510_Z01_USM_einbauen_Brandrisiko und
- 824.1510_Z02_USM_einbauen_Verlegen_und_Verkleben
- 804.1101_A05_USM auf Brücken

3. Delivery and Storage

DAMTEC® SBM K V is generally supplied in shrink wrapped rolls on pallets but it can also be supplied in the form of purpose made slabs to suit specific dimensional requirements.

The product requires dry storage; for longer periods the material should remain shrink wrapped with rolls stored vertically.

Accessories should be treated and stored according to the data sheets. Adhesive may not be stored below 10°C.

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4. Substrata and Preparations

Suitable bedding layers are compacted gravel, cement and bitumen bound base courses. Plastic liners can cause degradation of the under ballast mat layer and should be checked for chemical compatibility. In case of doubt only a PE or PP geotextile of minimum weight 300 g/m² should be used between the liner material and the **DAMTEC® SBM K V** layer.

The elasticity of the under ballast mat allows for the absorption small undulations in the bedding layer. Large undulations and protruding edges as well as loose sharp objects that can puncture or damage the **DAMTEC® SBM K V** mat should however be avoided as these can reduce the sound isolation properties of the matting. If necessary, a concrete blinding layer should be applied.

In areas where the under ballast mat needs to be glued the bedding surface should be dry and dust free.

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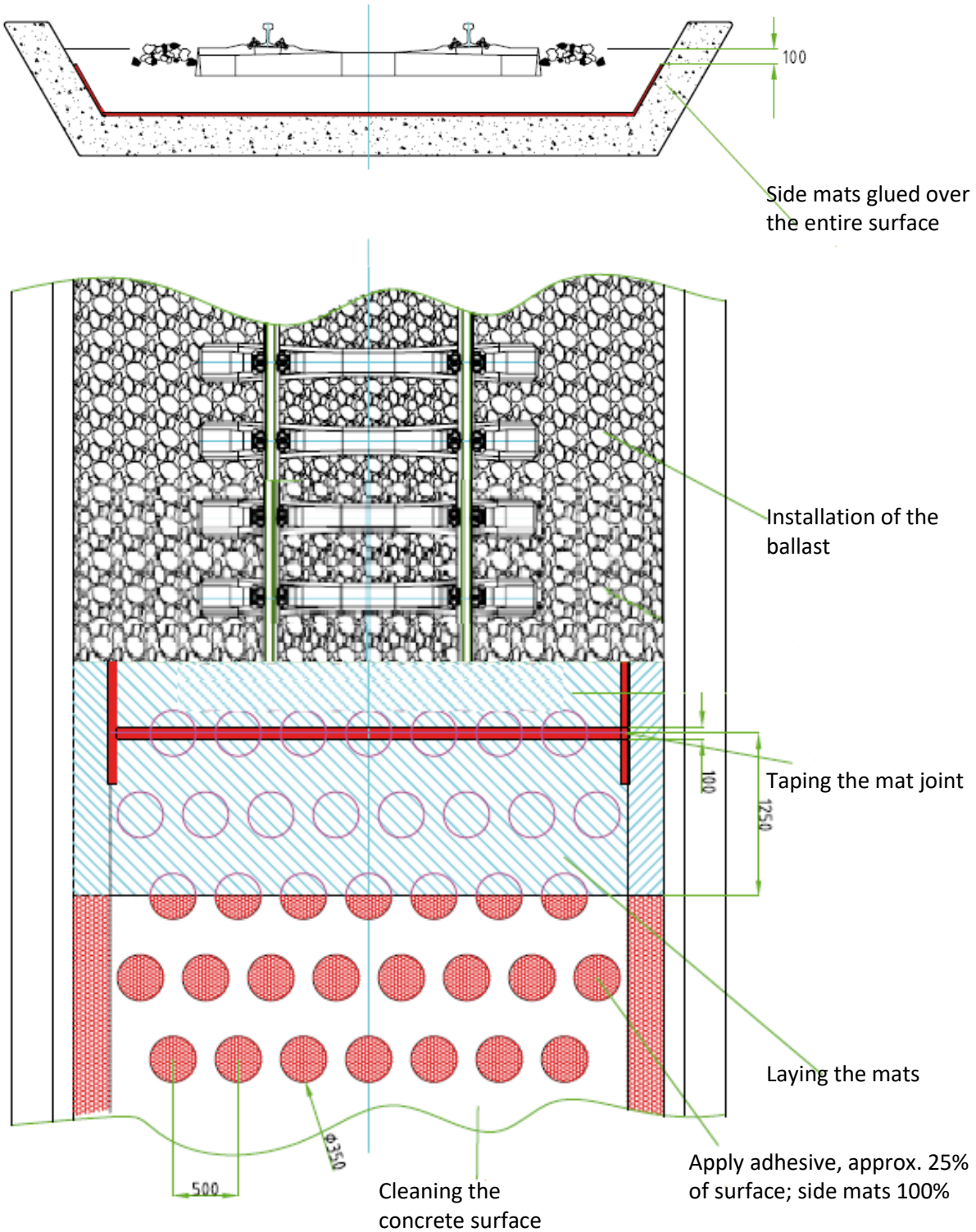
5. Schematic representation installation under ballast



The installation instruction is not subject to any change service! All information is without guarantee.
With the publication of this installation instruction all former issues cease to be valid.

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6. Installation of SBM

Especially at low temperatures, the sub-ballast mat should be rolled out on a flat surface about 1 hour before installation. Bulges on the front sides can be avoided.

The mats must be laid at right angles to the track axis. The mats can be cut using a low speed sabre tooth timber saw or carpet knife and a steel straight edge. Before cutting ensure that the material is supported on an even hard surface.

When installing the under ballast mat, they have to be glued on the substrate with a two-part polyurethane adhesive at certain points. The amount of adhesive should be about 25% substrate surface (for details see data sheet). The installation instructions of adhesive manufacturers have to be observed. The processing of the adhesive requires a dry and clean surface and a construction component- and air - temperature greater 10°C.

Side mats are glued over the entire surface whereby the adhesive must be distributed evenly, e.g. with a notched trowel. The mats can be temporarily attached with suitable mechanical devices (e.g. clamps, etc.). Ensure that no metal fixings are left in place that can cause sound bridging. The upper ends of the side mats must be covered with ballast. The overlap should be 0.10 m. If this overlap is not reached, the upper ends must be secured with end profiles.

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Adhesive consumption for horizontal surfaces:
- 12kg packs
- (10kg Körapur 672 + 2x 1kg Köracur TH650).
- selective bonding of 40m²
- **DAMTEC® SBM K V**. (5 Rollen = 37.5m²)

Adhesive consumption for vertical surfaces:
- 12kg packs
- (10kg Körapur 672 + 2x 1kg Köracur TH650).
- bonding of 12m²
- **DAMTEC® SBM K V**. (2 Rollen = 15.0m²)

Joints have to be sealed using a special approved 75mm wide tape (type Gerband 613). While sealing the sub ballast mat has to be dry.

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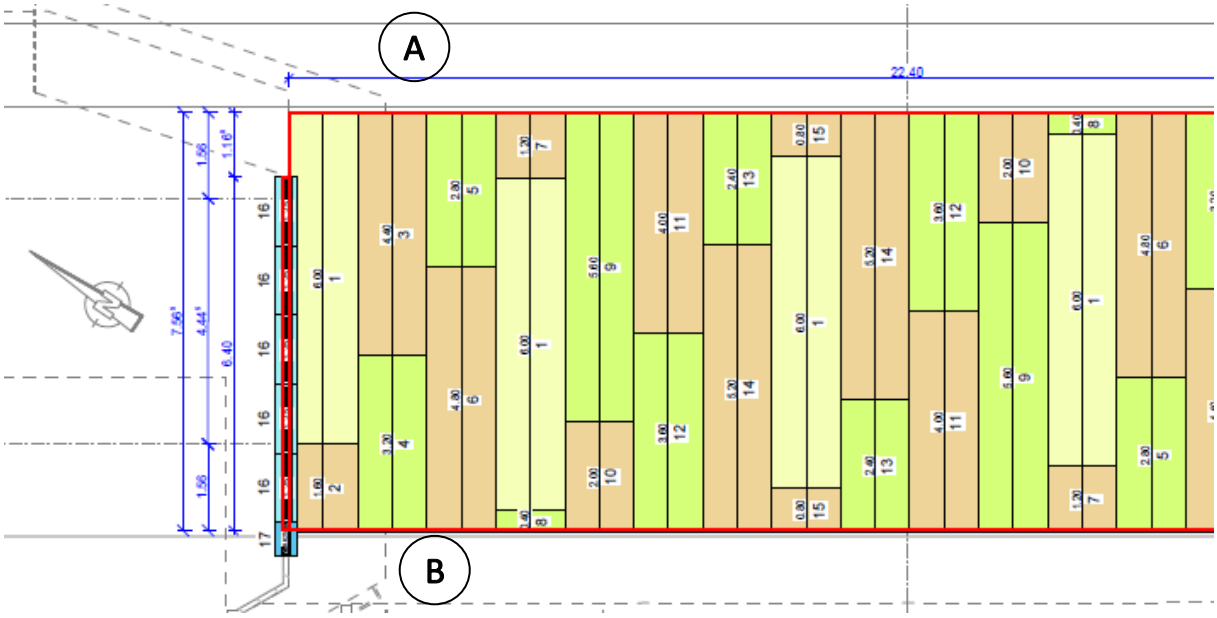
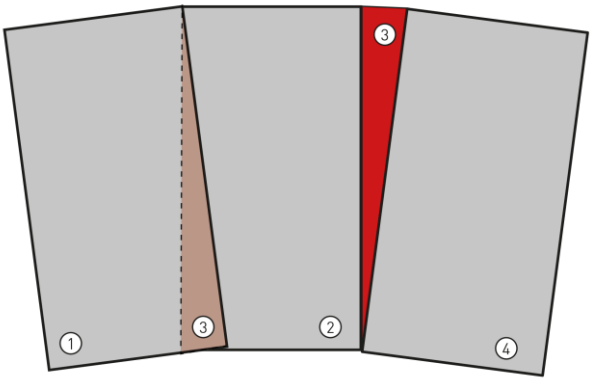
If the mats are not made in special lengths start with installation from one side (A) and cut the mat on the other side (B). The leftover is the start for the next row and start again on the first side (A) without turning the mat.



Laying in curves:
Choose the size of the overlaps according to the desired curve radius. Overlap the mats of two rows (1 and 2) and cut a triangle in the size and shape of the overlap (3). Rotate this triangle (3) 180° and insert it between the adjacent rows (2 and 4) before rolling out the next row (4).



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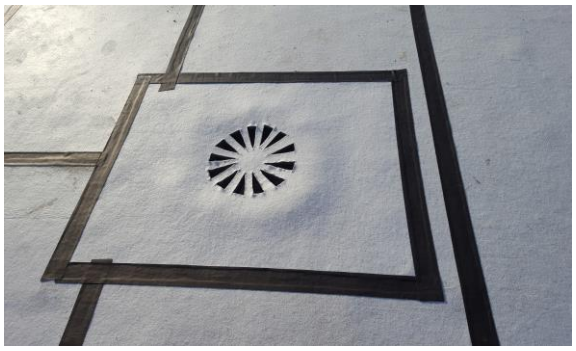
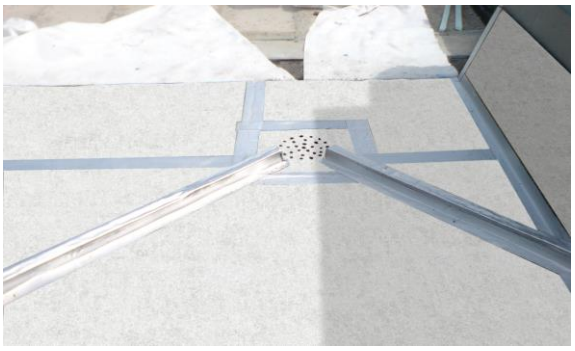
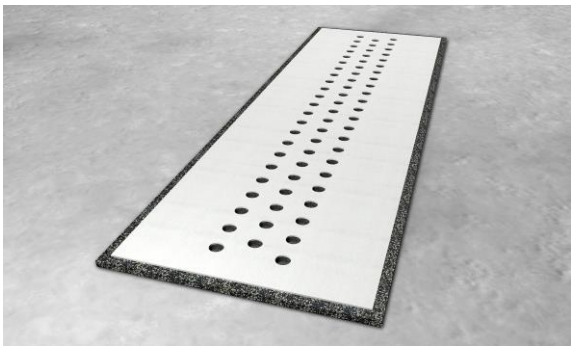
7. Drainage paths

Depending on the construction of the building, an inflow to the drainage system must be provided. The mat is to be perforated over the drainage openings. The hole pattern must be adapted to the structural drainage underneath. In the case of seepage walls, the mat must be perforated. Ril 804.1101_A05 "Sub ballast mats on bridges" must be observed.







Sufficiently large recesses are to be provided in the mats over seepage walls and inlets.

Drainage walls: diameter 22mm, 3 rows, offset,
a = 5 cm

Inlets: Dimensions approx. 1.00 m x 1.00 m, with the hole pattern marked, recess in laid sub-ballast mat approx. 0.80 m x 0.80 m, insert precisely by cutting off the protruding edges, covering and fitting with joint tape.

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8. Installation of SBM on expansion joints on bridges

A protective geotextile must be laid loosely on the superstructure or the solidified substrate in the area of approx. 1m on both sides of the joint structure. The protective fleece is to be glued pointwise to the sub-ballast mat above, but not to the roadway slab / joint construction or the solidified base layer.

9. Ballast

To avoid the risk of fire, the mats must be immediately covered with crushed stone. When driving on the installed ballast with construction vehicles, it must be ensured that the ballast is at least 0.2 m thick. Avoid sharp acceleration or braking, turning, wheel spin and steering movements while stationary.

9. Accessories

- adhesives for horizontal areas: Körapur 672 / Köracur TH 650
- adhesive tape: Gerband 613

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