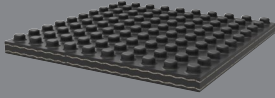


## USM 4010

### Track Bed Mat

## TENDER TEXT



The track bed mat type USM 4010 consists of a fabric reinforced rubber plate (sandwich design), which carries lenticular spring elements on the underside facing the solid ground. The surface layer facing the ballast or concrete base slab must be abrasion-resistant, oil and ozone-resistant and weatherproof.

High-quality natural rubber compounds shall be used for the lenticular spring elements, which have excellent dynamic properties. Besides the constant protective effect, even on uneven surfaces, the nubbed structure of the spring elements must also ensure targeted surface drainage under the track bed mat along the gradient of the substrate.

The vulcanised track bed mat shall not absorb water, adherence of water on its surface however, shall be allowed.

The maximum test value for water absorption shall be less than 3%.

For an easy installation of the USM track bed mats a lateral overlap strip shall be vulcanised to the mat. Hereby a joint-free, tight installation must be guaranteed.

The use of high rubber qualities without volatile softening agents and synthetic indecomposable fabrics, which guarantee the functional efficiency of the track bed mat over its entire service life, must be proven.

The USM 4010 track bed mats are used for vibration insulation and structure-borne sound decoupling in track superstructures, especially on high-speed lines for standard-gauge railways with and without ballasted track systems close to buildings sensitive to vibrations and noise. The ballast is protected against premature wear.

## PARAMETERS

Standard size (cuts on request)	Thickness: 14 mm Width: approx. 1.55 m Length: max. approx. 200 m
Weight	approx. 12.5 kg/m <sup>2</sup>
Water absorbency	< 3 %
Flammability	class E
Service life	at least 60 years

PRINCIPLE CHARACTERISTICS  
OF THE TRACK BED MAT ACC. DIN 45673-5

Stat. bed modulus	Dyn. bed modulus
Preload $\sigma = 0.020 - 0.100 \text{ N/mm}^2$ $C_{\text{stat.}} = 0.100 \text{ N/mm}^3 (\pm 15\%)$	Preload $\sigma = 0.060 \text{ N/mm}^2$ (at 40 Hz) $C_{\text{dyn.}} = 0.175 \text{ N/mm}^3 (\pm 15\%)$

## MATERIAL CHARACTERISTICS OF TRACK BED MAT TYPE USM 4010 SHALL BE AS FOLLOWS:

Item	Cover Layer	Natural Rubber Damping Layer
Tensile strength (DIN 53504)	$\geq 10 \text{ Mpa}$	$\geq 15 \text{ MPa}$
Elongation at break (DIN 53504)	$\geq 350 \%$	$\geq 400 \%$
Tear resistance (DIN ISO 34-1:A)	$\geq 5 \text{ N/mm}$	$\geq 5 \text{ N/mm}$
Compression set (DIN ISO 815-1)	$\leq 30 \%$	$\leq 25 \%$
After ageing at 70°C for 168 hrs (DIN 53508)		
Tensile strength	-	$\geq 13 \text{ MPa}$
Elongation at break	-	$\geq 350 \%$

## Supplier:

Calenberg Ingenieure GmbH | Am Knübel 2-4 | 31020 Salzhemmendorf | Germany  
Tel. +49 51 53 - 94 00-0 | Fax: +49 51 53 - 94 00-49 | info@calenberg-ingenieure.de | www.calenberg-ingenieure.de