

MSS 2022 (single-layer Ciprotec 2022)

Resilient element for floating slab system (REFS)

Field of Application

The profiled MSS 2022 REFS is a proven elastomeric product providing effective reduction of vibration and structure-borne sound emissions caused by rail-bound traffic. The mat is designed for ballast tracks and floating slab tracks, covering various axle loads and speeds, and guarantees maximum effectiveness. The mat is mainly used in tunnels underneath buildings, track sections adjacent to buildings, and on bridges. MSS 2022 provides high-grade rubber qualities, such as recycled rubber fibers with excellent dynamic properties.

Description

MSS 2022 is a black elastic mat made of PU-bound rubber fibers, laminated on top with a geotextile layer of robustness class GRK 5. The lower side of type 2022 is profiled. The table below shows the main properties of the product.

Product Structure and Data



Dimensions and Weight	Values
Length [m]	≈ 10
Width [mm]	≈ 1250
Thickness [mm]	≈ 23.5
Weight [kg/m ²]	≈ 9

Installation and Quality Standards

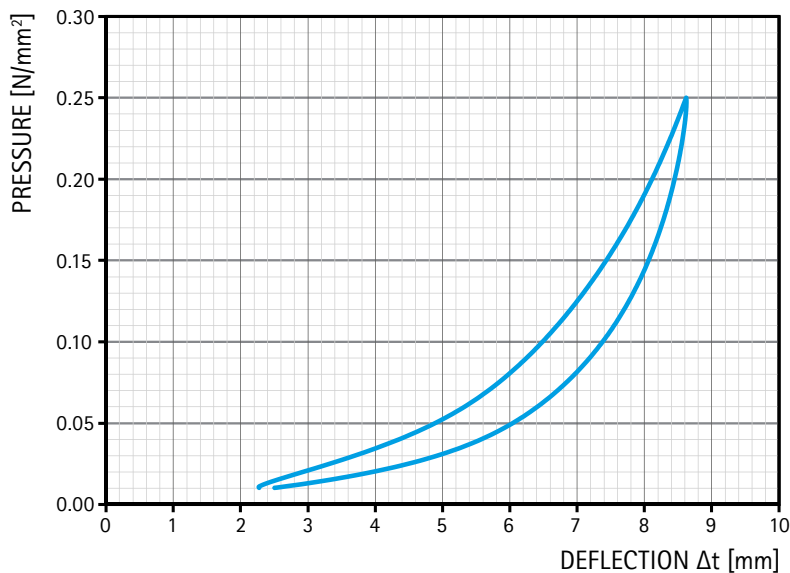
The MSS 2022 is laid to a well-swept subfloor. Projecting concrete edges or similar, protruding reinforcement parts, etc. must be removed. Longitudinal or transverse joints between single mats facing the concrete slab track shall be closed with a suitable covering strip or tape. The same applies to possible corner joints between floor- and side mats. If requested, the mat can also be glued in whole or in part to the surface of the subfloor.

Testing according to DIN 45673-7. The test according to DIN45673-7 was carried out in the load range between 0.01 N/mm² and 0.10 N/mm².

MSS 2022 (single-layer Ciprotec 2022)

Resilient element for floating slab system (REFS)

Diagram



DEFLECTION CURVE

The figure shows the examination of static bedding modulus C_{stat} in accordance to DIN 45673-7.

Deflection at:

$$S_{0,01} \text{ N/mm}^2 = 2.22 \text{ mm}$$

$$S_0 = 2.22 \text{ mm}$$

$$S_1 = 3.70 \text{ mm}$$

$$S_2 = 5.25 \text{ mm}$$

$C_{stat, Z1}$	0.0135 N/mm ³
$C_{stat, Z2}$	0.0165 N/mm ³
$C_{stat, Z3}$	0.0165 N/mm ³

Vertical preloads (dynamic)

(determination of the dynamic bedding modulus)

$\sigma_{V,1}$	0.01 N/mm ²
$\sigma_{V,2}$	0.03 N/mm ²
$\sigma_{V,3}$	0.06 N/mm ²

Test frequency	Vertical dynamic bedding modulus [N/mm ³]		
	$C_{dyn,1}$	$C_{dyn,2}$	$C_{dyn,3}$
Vertical preload	$\sigma_{V,1}$	$\sigma_{V,2}$	$\sigma_{V,3}$
5 Hz	0.0166	0.0376	0.0770
10 Hz	0.0190	0.0400	0.0830
20 Hz	0.0220	0.0460	0.0960
30 Hz	0.0188	0.0454	0.0936

The contents of this publication are the result of many years of research and experience gained in the application of this technology. All information is given in good faith; it does not represent a guarantee with respect to characteristics and does not exempt the user from testing the suitability of products and from ascertaining that the industrial property rights of third parties are not violated. No liability whatsoever will be accepted for damage – regardless of its nature and its legal basis – arising from advice given in this publication. We reserve the right to make technical modifications in the course of product development.

© Copyright – Calenberg Ingenieure GmbH – 2025

Version 0

13 February 2025

Calenberg Ingenieure GmbH | Am Knübel 2-4 | 31020 Salzhemmendorf | Germany | info@calenberg-ingenieure.de | www.calenberg-ingenieure.com