

UNDER BALLAST MATS for Heavy Haul transport

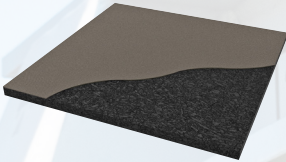
Designed for effective noise and vibration reduction

REDUCED VIBRATIONS UNDER HIGH AXLE LOADS

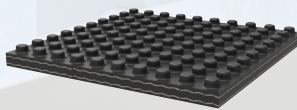
A SMOOTH RIDE ON QUIET RAILS WITH CALENBERG

Product range
Under Ballast Mats for Heavy Haul transport

CIPROTEC 1515



USM 4015



Quality assurance according to standards

Our product Ciprotec is manufactured and reused in Germany.



Calenberg quality management is carried out in accordance with recognised procedures that meet the quality requirements of established standard regulations. Ciprotec 1515 and USM 4015 have been tested extensively in accordance with DIN EN 17282 by renowned testing institutes (TU München, BAM Berlin and MPA NRW). All test reports are available upon customer request.

Focus on heavy haul transport



Rail freight transport is confronted with various challenges: The railway infrastructure has to cope with very high axle loads as well as increasing travel speeds without any problems and without limiting the service life of the superstructure. Reliability, performance and economic efficiency of the railway system should be guaranteed or even increased.

For this purpose, Calenberg has adapted its product range with Ciprotec 1515 and USM 4015 accordingly in order to cope with heavy axle loads in ballasted tracks. These permanently elastic sub ballast mats increase service life, availability, reliability, ease of maintenance of the superstructure and thus reduce effort and expenses required for track maintenance. In addition, the products provide optimal vibration protection for the benefit of residents.

The solution for your project

- improved track performance
- extended service life
- reduced life cycle costs
- increased elasticity of the superstructure
- higher track position stability
- increased ride comfort due to vibration isolating properties
- Quick and simple installation

Product features

Ciprotec 1515: Acting with an eye on the future – conserving resources – potential in heavy haul transport

The two-layered product Ciprotec 1515 consists of 100% recyclable elastomers and a geotextile (GRK 5) protective layer on its upper surface. Ciprotec helps to reduce environmental impact and conserve resources. The composition of the elastomer layer made of bonded rubber fibres in combination with the selected mat thickness and the geotextile protective layer represents an optimum solution in the area of heavy haul transport to ensure the required elasticity and positional stability in the ballast superstructure.



USM 4015

This specially designed USM type with its unique shape consists of a high-quality synthetic and natural rubber mixture. USM 4015 has a high mechanical load capacity, is permanently weather-resistant, absorbs virtually no water, is characterised by high electrical insulation resistance and provides drainage on the mat level. The mat effectively reduces vibration and shock emissions and is therefore ideal for use in heavy haul transport: to ensure the elasticity and positional stability of the ballast superstructure, especially when solutions with extensive drainage below the mat are required. USM 4015 is also used as a transition mat to adjust the stiffness of different neighbouring track sections.

The product types on offer

Values determined according to DIN EN 17282.

CIPROTEC 1515 UP TO 35 T AXLE LOAD TRACK CATEGORY TC 4 SPECIAL CASE			Thickness: ≈ 16.5 mm
Static Bed Modulus C_{stat}	Load Range 0.02 – 0.164 N/mm ²	0.0729 ± 15 % N/mm ³	
Dynamic Bed Modulus C_{dyn} (Evaluation range 0.02 – 0.164 N/mm ²)	5 Hz	0.0969 ± 15 % N/mm ³	
	10 Hz	0.1003 ± 15 % N/mm ³	
	20 Hz	0.1048 ± 15 % N/mm ³	
USM 4015 UP TO 35 T AXLE LOAD TRACK CATEGORY TC 4 SPECIAL CASE			Thickness: ≈ 14 mm
Static Bed Modulus C_{stat}	Load Range 0.02 – 0.164 N/mm ²	0.094 ± 15 % N/mm ³	
Dynamic Bed Modulus C_{dyn} (Evaluation range 0.02 – 0.164 N/mm ²)	5 Hz	0.117 ± 15 % N/mm ³	
	10 Hz	0.125 ± 15 % N/mm ³	
	20 Hz	0.129 ± 15 % N/mm ³	



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