



# UIC Y-SERIES BOGIES ROLLING STOCK CATALOGUE



# TENMAT

ADVANCED MATERIALS

## INNOVATION

## SAFETY

**TENMAT** is a leading manufacturer of specialised, high performance engineering materials and components with over 100 years of experience.

## SERVICE

**TENMAT** stands for innovation, safety products, commitment to our customers and the latest quality standards worldwide.

## QUALITY

### A Leading Supplier of the Railways Industry

**TENMAT's** proprietary self-lubricating composite materials RAILKO and FEROFORM are widely recognized as the industry standard for demanding applications within the railways industry.

### Commitment to Quality

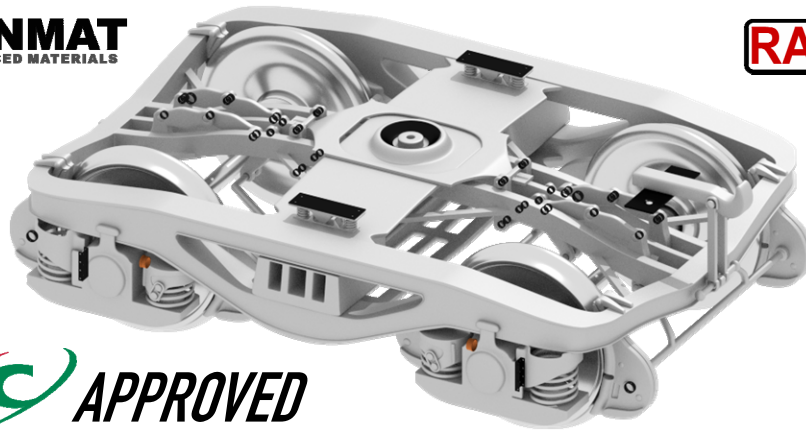
**TENMAT** operates an ISO 9001:2008 Quality Management System for the design, development and manufacture of specialised high performance engineering materials and components.





# COMPLETE Y-SERIES PACKAGE

**TENMAT** is your one-stop supplier for all safety critical wear parts in bogies.



## Centre Pivot Liner

Fibre reinforced thermoset composite  
UIC Reference: 3.00.04.108.8

[More Information on Page 3](#)



## Side Bearer Liner

Fibre reinforced thermoset composite  
UIC Reference: 3.00.04.84.G

[More Information on Page 4](#)



## Brake Linkage Bushes

Fibre reinforced thermoset composite  
Approved and used by major European railway authorities

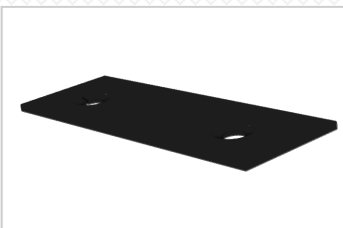
[More Information on Page 5](#)



## Friction Damper Bushes

Aramid fibre phenolic composite  
Approved solution for a longer service life

[More Information on Page 6](#)



## Hook Guide Plates

Fibre reinforced thermoset composite  
A proven solution for decades

[More Information on Page 7](#)



## Horn Block Axle Guide Plates

Fibre reinforced thermoset composite  
Approved and used by major European railway authorities

[More Information on Page 8](#)

# CENTRE PIVOT LINERS

## Key Features:

- Specified and Approved
- Increased Reliability & Safety
- High Wear Resistance
- Lightweight
- Excellent Shock Absorption
- Long Life & Maintenance Free
- Superior Cost-Benefit Ratio

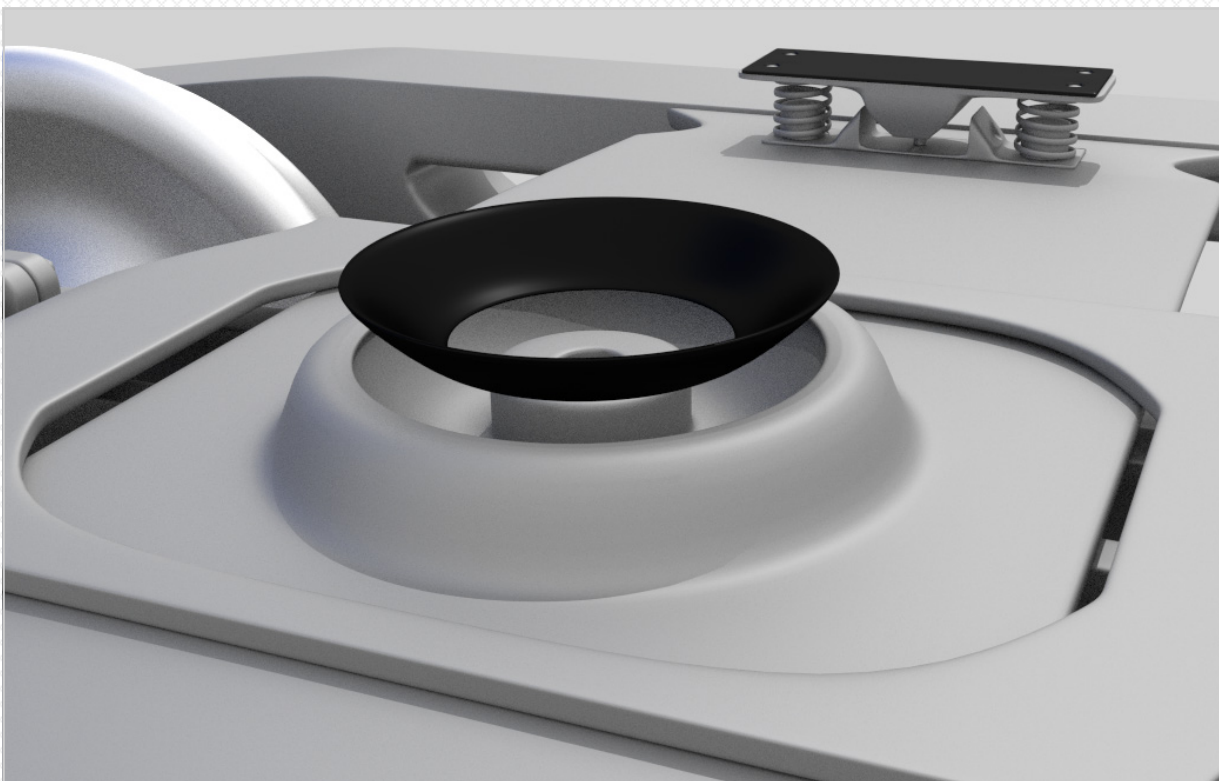


**TENMAT's** proprietary RAILKO NF21 is the only material specified in all types of freight wagons including coal hopper wagons, oil tankers, salt / silt / aggregate wagons, heavy duty wagons and tankers for hazardous chemicals.

**TENMAT's** RAILKO CPL are recognised as the high-performing, long-lasting replacement for steel and plastic wear parts.

Wagon owners specifically require RAILKO NF due to the added wear protection and extended maintenance cycles, while operators value the safety aspect of extremely durable NF material to avoid disastrous accidents.

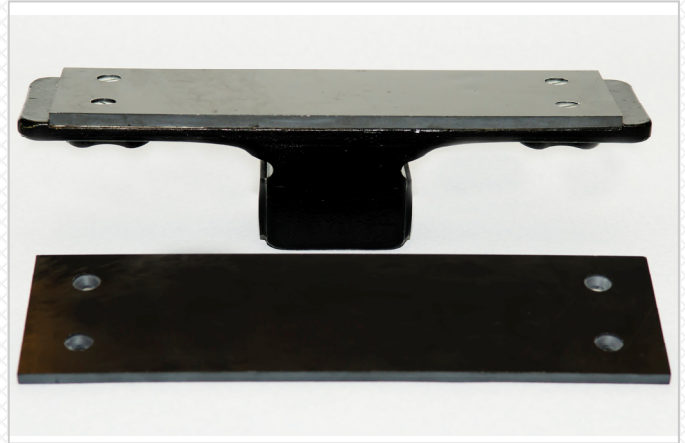
RAILKO is recommended by the French Railway Authority (SNCF) and is the exclusive specified material of the Italian Railways (Trenitalia).



# SIDE BEARER LINERS

## Key Features:

- Fully UIC Approved
- Significantly lower wear rates compared to thermoplastics
- Controlled, stable friction
- Low water swell and thermal expansion
- Excellent compressive strength

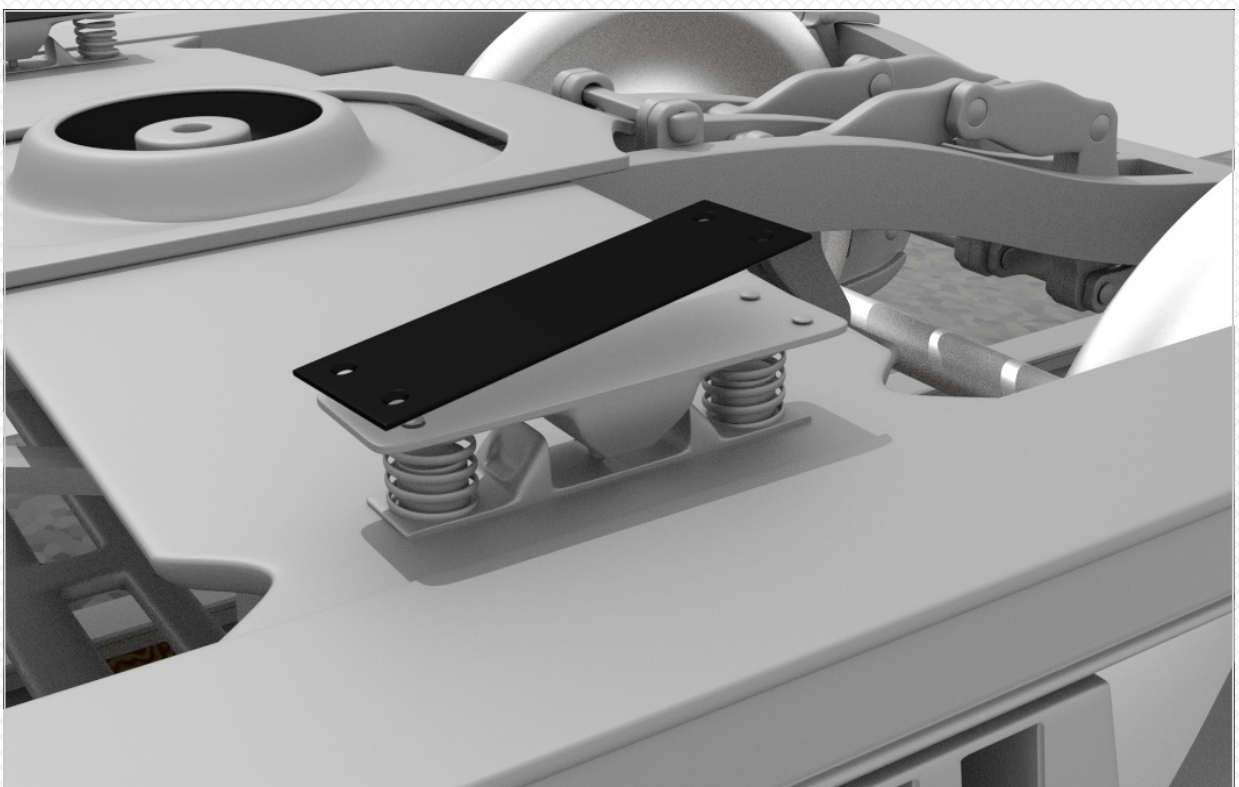


**TENMAT's** RAILKO NF21 fully UIC approved Side Bearer Liners are installed onto the sides of the freight bogie to provide support to the car body. RAILKO plates are used to help safely manoeuvre the bogie and car body around curves on the track.

RAILKO NF21 Side Bearer Liners are recognised as the industry's leading product for this safety critical application and give its end user long service life.

RAILKO NF21 Side Bearer Liners (SBLs) significantly improve train safety as they do not creep, are resistant to water swell, and exhibit excellent thermal stability.

RAILKO NF21 Side Bearer Liners are manufactured into a range of thicknesses and dimensions to suit customer specifications, making them the product of choice at SNCF, Deutsche Bahn, Renfe, Trenitalia and other major railway authorities.

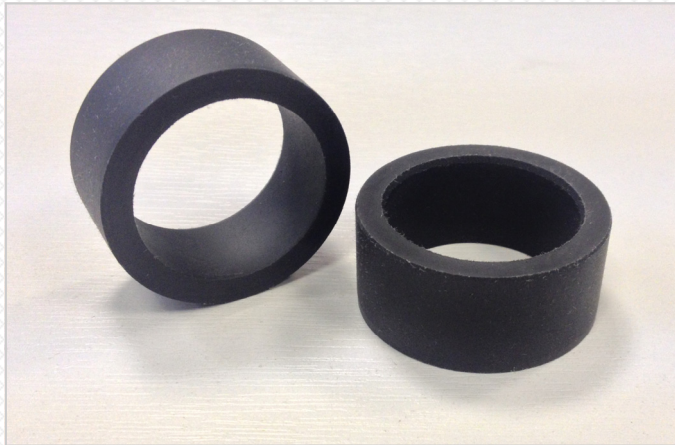




# BRAKE LINKAGE BUSHES

## Key Features:

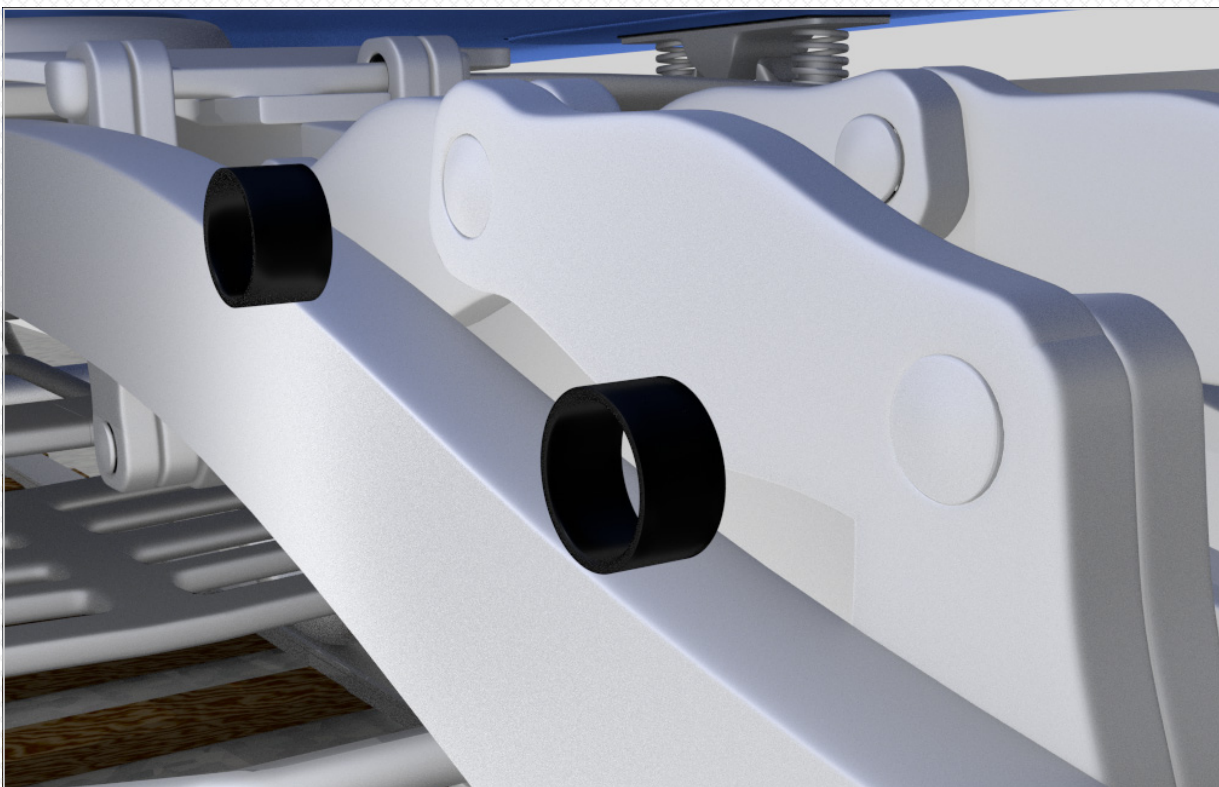
- Significantly lower noise than steel
- High resistance to abrasive particles
- Low water swell and thermal expansion
- Corrosion-free



**TENMAT**'s reinforced composite bushes are proven to lower noise by 13 dB (A) compared to steel bushes and contribute to comply with the European Union's stringent technical specifications for interoperability (TSIs) regarding noise reduction.

RAILKO NF22 and FEROFORM T11 composite bushes are easy to install and provide protection to pins, shafts and housings, reducing the need for costly metal repairs and replacements. **TENMAT** Brake Bushes have a very low water swell and thermal expansion. Together, these enable tighter running clearances and long bearing life.

Rail operators continually put their trust in **TENMAT** Brake Linkage Bushes for a wide range of bogies, including standard freight wagons, as well as heavy haulage, dangerous goods, nuclear and aggregate wagons.



# FRICTION DAMPER BUSHES

## Key Features:

- Protection against housing ovalisation
- Excellent impact and vibration absorption
- Lower noise than steel
- High temperature resistance
- Corrosion-free



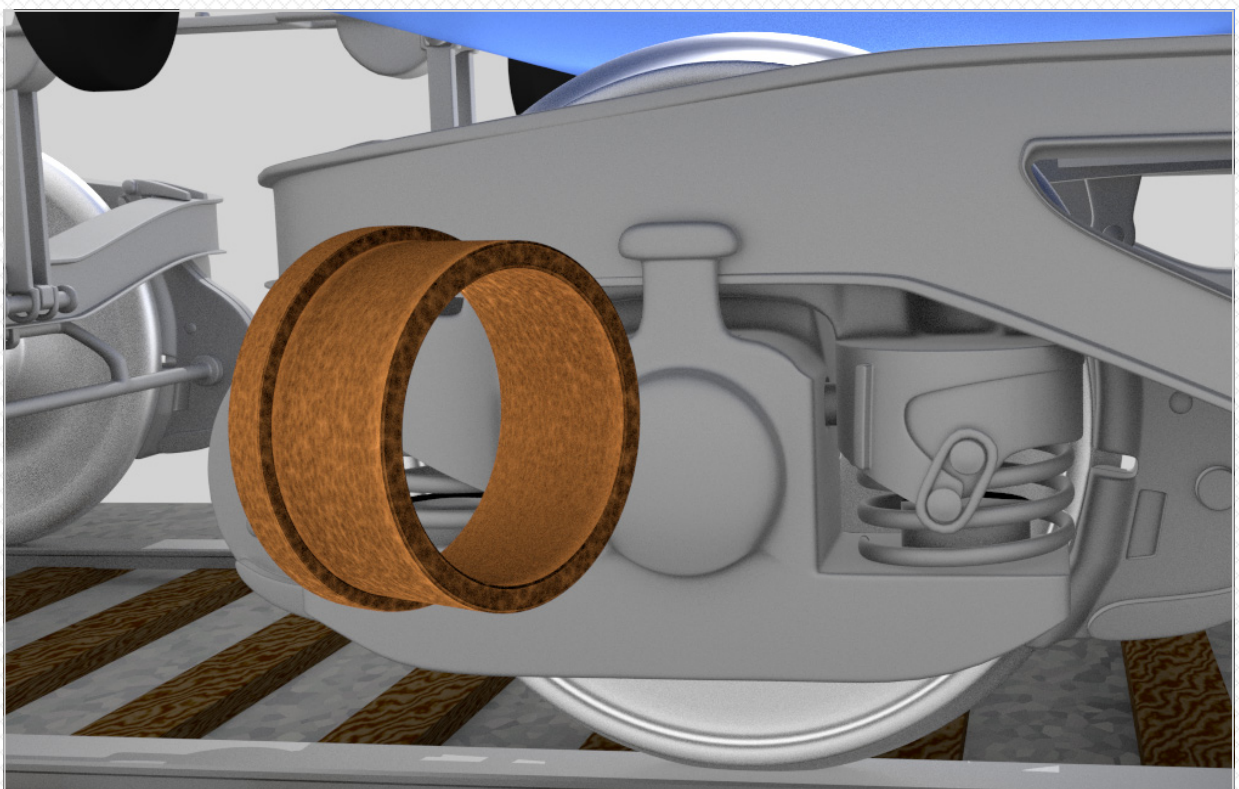
**TENMAT's** proprietary material RAILKO RG15 is a reinforced composite material exhibiting a high strength and excellent dimensional stability. The material is a non-metallic, high performance aramid fibre phenolic composite.

RAILKO RG15 has been specified as the guide bush for friction dampers used in Y type freight bogies.

Easy to install, durable Railko RG15 Friction Damper Bushes absorb large impacts to provide complete protection to the bush housing against costly ovalisation.

These bushes have been tested and approved by major European transit authorities, including the French Railway (SNCF).

The use of RAILKO RG15 bushes avoids any risk of seizing and allows a tighter running clearance with the pin resulting in a longer service life.

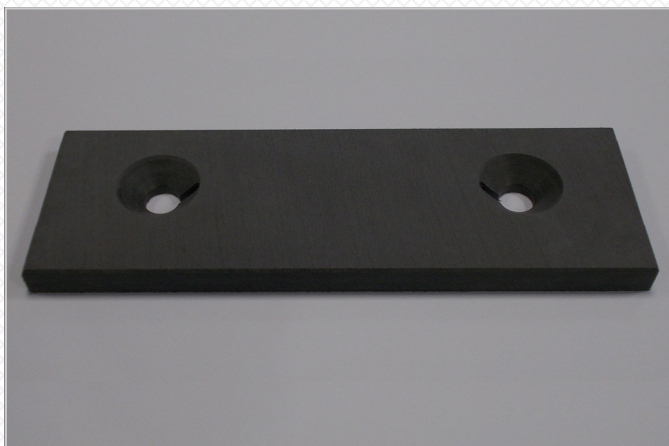




# HOOK GUIDE PLATES

## Key Features:

- Superior protection to the draw hook
- High resistance to abrasive environments
- Noise reduction
- Maintenance free
- Corrosion free



**TENMAT's** RAILKO NF21 Hook Guide Plates are installed to provide support to the draw hook as it slides across when the train is maneuvering around curves on the track.

RAILKO NF21 Hook Guide Plates are the material of choice over standard steel and low quality plastics. The reinforced matrix structure of RAILKO NF21 withstands even the most abrasive environments.

RAILKO NF21 Hook Guide Plates are corrosion free and self-lubricating, providing complete protection to the expensive draw hook.

RAILKO NF21 Hook Guide Plates eliminate costly maintenance to the draw hook and thus improve train service life.

RAILKO NF21 Hook Guide Plates are manufactured into a range of thickness's and





# HORN BLOCK AXLE GUIDE PLATES

## Key Features:

- High resistance to abrasive environments
- High dimensional stability
- Superior protection from wear
- Lower noise compared to metal
- Corrosion-free
- Self-lubricating



**TENMAT's** RAILKO NF21 Horn Block Axial Guide Plates provide vital dampening to the suspension system and give complete protection against corrosion.

RAILKO NF21 Horn Block Axial Guide Plates exert a high resistance to abrasive particles providing excellent protection to the axial box and other components.

RAILKO NF21 Horn Block Axial Guide Plates also reduce running noise compared with manganese steel.

RAILKO NF21 Horn Block Axial Guide Plates are specified and approved by major European transit authorities, including DB in Germany.



# COMPOSITES IN MOTION

**TENMAT's** range of technically advanced wear parts materials include world renowned composites such as RAILKO™ and FEROFORM®.

**TENMAT** materials are extremely versatile and suitable for the most demanding applications in the most arduous environments.

**TENMAT** and RAILKO products are THE industry standard for railway applications worldwide and specified by all major transit authorities and railway companies such as:

DB - Germany  
Trenitalia - Italy  
SNCF - France  
SNCB - Belgium  
SBB - Switzerland  
RENFE - Spain  
Network Rail - UK  
British Railways - UK  
Irish Rail - Ireland





# LEADERS IN INNOVATION

**TENMAT**'s ongoing commitment to the development of new products and solutions in the field of composite and engineering materials has been recognised in 2012 and 2013 by receiving the highest official award in Great Britain, the prestigious Queen's Award for Enterprise in the categories Innovation and International Trade.

## Custom Component Manufacture

**TENMAT** materials can be supplied as semi-finished products or, if required by the customer, our ISO9001-2008 certified machine shop can produce fully machined items to specification.

## Materials Expertise

With over 100 years of experience in Composite Engineering Materials, **TENMAT** offers customers information on material developments, characteristics, suitability, and applications.

## Technical Ingenuity

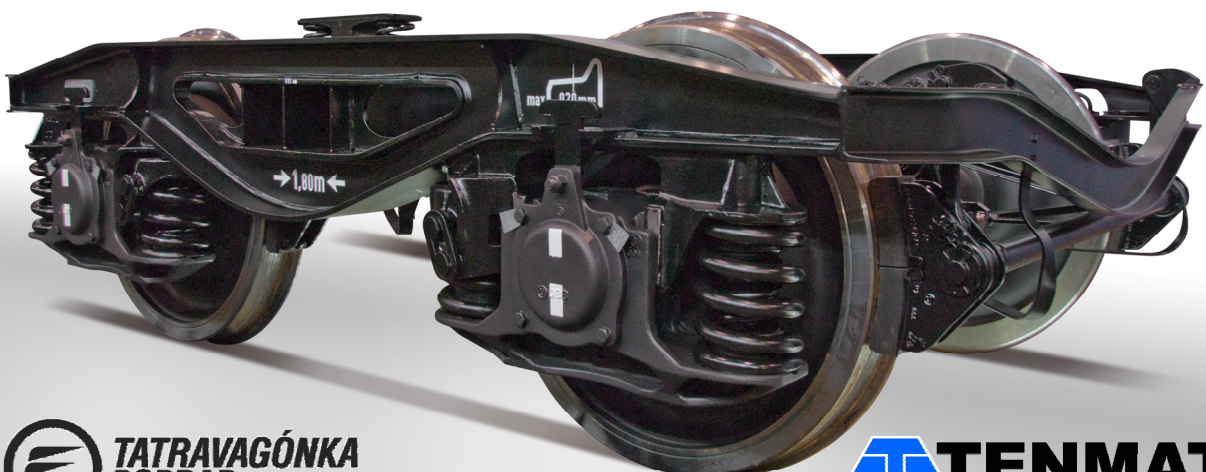
**TENMAT** has been proven to consistently produce industry leading advanced composites, developed in our in-house R&D Technical Laboratories.

## Problem Solvers

The diverse range of high performance composite materials manufactured by **TENMAT**, offer the engineer a wide array of solutions to improve wear resistance, withstand extreme temperatures, resist high impacts, and survive in harsh, corrosive environments. Our Technical Services department is available to provide guidance on material selection, part design and technical solutions.

## Component Design

If design services, drawings and fitting instructions are required, **TENMAT** will work with customers in developing the most suitable solution to their particular problem.





***FEROFORM*** **RAILKO** ***FEROGLIDE*** **FEROBIDE**

**REFRAVER** **REFEL** **ARCLEX**

***FIREFLY*** **NITRASIL** **SINDANYO**

**TENMAT** is committed to the highest standards in customer service and our international staff is looking forward to assist you.

**CORPORATE HQ**

**TENMAT Ltd.**

Ashburton Rd West  
Trafford Park  
Manchester M17 1TD  
England  
Tel.: +44(0)161 872 2181  
Fax: +44(0)161 872 7596  
Email: [info@tenmat.com](mailto:info@tenmat.com)  
Web: [www.tenmat.com](http://www.tenmat.com)

**NORTH AMERICA**

**TENMAT Inc.**

23 Copper Drive  
Newport, DE 19804  
USA  
Tel.: +1 302-633-6600  
Fax: +1 302-633-6838  
Email: [info@tenmatus.com](mailto:info@tenmatus.com)  
Web: [www.tenmatus.com](http://www.tenmatus.com)

**SCANDINAVIA**

**TENMAT**

Stureplan 13  
111 45 Stockholm  
Sweden  
Tel: +46 (0) 8 612 68 50  
Fax: +44 (0) 161 872 7596  
Email: [info@tenmat.com](mailto:info@tenmat.com)  
Web: [www.tenmat.com](http://www.tenmat.com)

Visit us on the web at [www.TENMAT.com](http://www.TENMAT.com)

**ITALY**

**TENMAT**

Via Dante, 2/48  
16121 Genova  
Italy  
Tel.: +39 (0) 10 5451343  
Fax: +39 (0) 10 5760553  
Email: [info@tenmat.it](mailto:info@tenmat.it)  
Web: [www.tenmat.it](http://www.tenmat.it)

**FRANCE**

**TENMAT**

56 Avenue Foch  
77370 Nangis  
France  
Tel.: +33 (0) 1 60 585656  
Fax: +33 (0) 1 64 083617  
Email: [info@tenmat.fr](mailto:info@tenmat.fr)  
Web: [www.tenmat.fr](http://www.tenmat.fr)

**GERMANY**

**TENMAT**

Tel.: +49 (0) 7151 1338468  
Fax: +44 (0) 161 872 7596  
Email: [info@tenmat.de](mailto:info@tenmat.de)  
Web: [www.tenmat.de](http://www.tenmat.de)