TEXTAR

AIR DISC BRAKE PADS
CATALOG
TMD COMMERCIAL VEHICLE FRICTION PRODUCTS

TMD FRICTION is the world’s largest supplier of Air Disc Brake pads to the Commercial Vehicle market.

If it moves,
IT IS OUR JOB TO STOP IT
...Pure Friction For effective, reliable and safe braking solutions
WHY TMD FRICTION IS THE O.E. BRAKING TECHNOLOGY FOR TRUCK FLEETS AND OWNER OPERATORS

TMD FRICTION is the world’s largest supplier of air disc brake pads to the Commercial Vehicle market.

- As the leading O.E. friction supplier for the commercial vehicle market, TMD FRICTION works closely with vehicle and brake system manufacturers to engineer a range of friction materials that are specific to individual vehicles and their braking systems.

- TMD FRICTION has the most advanced technology for brake products, friction design and manufacturing. TMD FRICTION dominates the global O.E. friction market.

- TMD FRICTION supports its customers with technical & engineering expertise designed to assist in the selection of the right friction for the application and designed to enhance your knowledge of brake systems & friction products.

- TMD FRICTION provides friction materials for specific applications; from buses to on-highway tractor trailers & vocational trucks. TMD FRICTION provides the optimum braking solution.

www.tmdfriction.us
WHAT IS SPECIAL ABOUT TEXTAR AIR DISC BRAKE PADS?

• TEXTAR friction materials are O.E. designed, approved & released.

• TEXTAR provides friction materials for the major caliper & vehicle applications for the North American market.

• TEXTAR T7400 Friction is the Industry Standard for Transit & Refuse applications.

• TEXTAR pads eliminate noise and provide long service life and reduced rotor wear.

• TEXTAR pads withstand extremely high temperatures and will not fade like drum brake lining.

• Most TEXTAR pads include a special layer for cleaning the surface of the rotor, allowing a perfect match between the pad and the rotor from the beginning (even with used discs).

• TEXTAR pads feature TMD’s patented technology for mechanical attachment using retention posts and a high shear strength underlayer.

• TEXTAR pads are available with hardware kits.
When your **customers depend on you** to deliver, **you rely on your vehicle** to perform **SAFELY & EFFICIENTLY**, even in the harshest of conditions, at highway speeds and under heavy loads.
TMD FRICTION – a Nisshinbo Group Company- is the world's leading manufacturer of brake friction materials for the Original Equipment (O.E.) market.

TMD FRICTION is also the largest supplier of Air Disc Brake pads to the commercial vehicle sector.

It is the goal of both Nisshinbo and TMD FRICTION to create the broadest geographic coverage of any brake friction manufacturer. The combined expertise will ensure that we remain the most capable global brake friction manufacturer in the world, establishing a clear TECHNOLOGY LEADER.

With an extensive range of materials and strong capabilities in all grades of friction materials and applications, we produce more than one million brake friction products each day globally for the O.E. and aftermarket sectors, with total friction sales in excess of $1.3 billion per year with over 6,000 employees dedicated to providing engineered solutions for all friction requirements.

Our business is structured to meet the challenges and opportunities of tomorrow, with global operations positioned to support our customers and to match the rising demand from emerging markets.

The TMD FRICTION product portfolio comprises

- Disc brake pads and drum brake linings for passenger cars and commercial vehicles
- Brake pads for racing vehicles
- Friction materials for rail and industrial applications

Because of our continual evolving technology, we have been chosen to provide effective and safe braking for vehicles participating in some of the world’s most prestigious racing series, such as the 24 Hours of Le Mans.

This extensive experience forms the platform for our O.E. and aftermarket friction brands Textar, Don, Pagid, Mintex, Cobreq, Cosid and Dynotherm. Through these brands, we provide a wide range of replacement friction parts with market-leading positions in the global O.E., O.E.S. and Aftermarket business.

We proudly serve customers like VIPAR Heavy Duty, Paccar, Navistar, Daimler, Volvo, DAF, Knorr-Bremse, Meritor, and Bendix-Spicer among many others.
TMD FRICTION / Nisshinbo manufactures under rigorous quality standards that are uniform and upheld the world over.

**LOCAL SOLUTIONS FROM A GLOBAL BRAND**

We create friction products for vehicles worldwide, providing the most effective and appropriate braking solutions for each vehicle on a localized basis.

TMD FRICTION / Nisshinbo manufactures under rigorous quality standards that are uniform and upheld the world over.

**WE HAVE**

- **25** production sites
- **6** R&D centers

**IN**

- **14 COUNTRIES**
- **4 CONTINENTS**

**AMERICA**
- USA
  - Cape Coral (S)
  - Covington (P)
  - Troy (R&D/P)
  - Sterling Heights (R&D)
- MEXICO
  - Queretaro (P&S)
- BRAZIL
  - Indaiatuba (R&D/P)

**ASIA**
- JAPAN
  - Yokohama (S)
  - Tatebayashi (R&D/P)
  - Toyota (P)
- CHINA
  - Beijing (P)
  - Changshu (P)
  - Hangzhou (P)
  - Shanghai (S)
  - Shijiazhuang (P)
- INDIA*
  - Chennai (R&D/P)
  - Hyderabad (P)
  - Puducherry (P)
  - Trichy (P)
- SOUTH KOREA
  - Cheonan (R&D/P)
- THAILAND
  - Rayong (P)
- SOUTH AFRICA
  - Merrivale (R&D/P)

**AFRICA**

**EUROPE**
- GERMANY
  - Coswig (R&D/P)
  - Essen (R&D/P)
  - Friedrichsdorf (R&D)
  - Hamm (P)
  - Leverkusen (R&D/P)
  - Rosbach (R&D)
- FRANCE
  - Creutzwald (P)
  - La Courneuve (S)
- SPAIN
  - Valencia (P)
- ROMANIA
  - Caransebes (P)
- RUSSIA
  - Moscow (S)

*Including Nisshinbo affiliate & licensee

P=Production, S=Sales, R&D=Research & Development

**SUPPLIES OF ORIGINAL EQUIPMENT**
With over a hundred years in the friction business, we have grown and prospered and have become the world’s leading supplier of brake friction.

Our continued success is based on providing technical excellence, consistent quality and constant innovation through intensive R&D investment.

Tomorrow's solutions developed today

TMD FRICTION believes in a continuous process of developing and refining braking products to improve performance for quieter, smoother, more efficient and environmentally responsible braking.

An Annual INVESTMENT OF $32 million in R&D ensures that our products remain at the very highest level, worldwide

Together with vehicle and brake manufacturers TMD FRICTION engineers design, develop and test brake friction products which meet the highest requirements related to comfort, performance and wear expectancy.

Our objective is not only to sell disc brake pads and drum brake linings - but also to develop the perfect technical solution for each respective vehicle application.

Our O.E. experience is such that we have been chosen to supply friction for the smallest cars, such as the Fiat 500, to the world’s fastest and most powerful supercars, such as the Bugatti Veyron, as well as for truck, trailer, bus and coach applications.

Our expertise is not just restricted to public highways: we also put our knowledge and experience to the ultimate test by developing high performance friction for racing and motorsport, as well as for rail and industrial applications.

Part of TMD FRICTION’s business philosophy and a fact of the company’s success is the close geographical proximity of its R&D centers to O.E. vehicle production sites.
Safety is a key aspect in road traffic and industrial manufacturing

At TMD FRICTION we consider quality as a significant factor for the long-term success of our company. Quality management is therefore a key duty for the organization as a whole and for each and every employee: we are striving to achieve perfection in every process. From all of our international locations in Europe, America and Asia, we strive to produce premium quality friction, to consistently high standards.

TMD FRICTION’s global directives encompass all divisions and processes within the company. In terms of process control, TMD FRICTION applies methods such as Six Sigma and C.I. (Continuous Improvement). A reporting system records and monitors all processes and procedures relevant to quality for identifying problems and correct them in real time.

The TMD FRICTION quality assurance program starts from the development of suppliers and their respective raw materials per global TMD FRICTION guidelines and continues with modern production process control measures and techniques, and finished goods inspection.

This overall validation process is based on:

1. **Tests** routinely performed by our own or certified external labs:
   - FMVSS-121
   - TMD O.E. Wear vs. Temp Test
   - Chase Test
   - Transverse Rupture Strength
   - Krauss Test
   - Hardness
   - Density
   - Acetone Extraction
   - Swell / Growth
   - Particle Size
   - Moisture Content
   - Bulk Density
   - Compressibility
   - Shear Strength
   - Salt Spray Corrosion

2. **Lean Management** is a fundamental principle included in the global directives. By optimizing all cycles, we increase speed and flexibility improving product quality. Optimum process control helps greatly in preventing any form of waste, such as overproduction, repairs and waiting times.

   Some of the points covered by our lean program are:
   - Both the material flow within the factories and the required supply chains are simplified and organized to minimize stocks and improve customer service.
   - For every location there is an overall plan which integrates all activities.
   - Lean production at every location is measured by six parameters: scrap, on-time delivery, inventory turnover, throughput times, overall equipment effectiveness and unit labor costs.
   - The result of our Lean Management system is incorporated in the long-term planning process.

   Lean Management does not just play a significant role in production - it equally affects all functions of the organization from replacement sales to the purchasing department to logistics.

   Analysis, improvement and standardization of processes lead to a better understanding of our products, less sources of error and a higher level of quality for our brake linings.

3. **Extensive testing.** TMD FRICION also performs controlled vehicle tests in the field supervised by TMD FRICION’s technical and engineering personnel, generating follow up results on friction and braking performance, wear of lining or pads, and impact on other brake system components. With this, you can rely on our products to offer value for your money and effective, safe braking every time.

   Every product we create is subjected to:
   - Up to 300,000 kilometers of testing
   - Intensive NVH testing (Noise, Vibration, Harshness) and comfort engineering
   - Up to 2,000 hours of dynamometer testing
   - Computerized evaluation of braking performance and wear pattern
   - Rigorous homologation testing in real-life conditions
The consolidation of all aspects of this quality program would not be feasible without the right trained people. Based on this, the global Quality process is supported by the training program for our employees.

You can rely on TMD FRICTION to provide experienced customer service representatives who will answer all your questions concerning our products, technical specifications, applications, pricing, order process & tracking, billing, and any other request that you may have.

TEXTAR air disc brake pads are available through
- Most O.E. & O.E.S. Parts programs
- Vipar Heavy Duty distributors

For further information visit: www.tmdfriction.us
AIR DISC BRAKE PADS
As the leading supplier of O.E. friction to the commercial vehicle market, TMD FRICTION / TEXTAR works closely with the vehicle and brake system manufacturers to engineer a range of friction materials that are specific to individual vehicles and their braking systems – TMD FRICTION provides the optimum braking solution.

TMD TEXTAR is fitted by the leading brake and vehicle manufacturers worldwide to service a full range of commercial vehicles including trucks, trailers, buses and coaches.

TEXTAR is the O.E. brand choice for 70% of Europe’s commercial vehicles.

It is no surprise that all major brake and vehicle manufacturers use Textar:

- Arvin Meritor
- Bendix
- BPW
- DAF
- Dennis Bus
- Daimler
- EvoBus
- Haldex
- International
- Iveco
- Irisbus
- Kamaz
- Kässbohrer
- Knorr-Bremse
- MAN
- Mercedes-Benz
- Neoplan
- Paccar
- Perrot / Wabco
- Renault Trucks
- SAF-Holland
- Scania Truck & Bus
- Solaris
- Van Hool
- Valx-Achsen
- Volkswagen
- Volvo Trucks & Buses
- WarsteinAchsen

TEXTAR PREMIUM O.E. QUALITY products are also designed for discerning long life focused customers and fleets.

From transit & coach buses to on-highway trailers and vocational trucks, TMD TEXTAR provides the optimum braking solution.

All TMD TEXTAR formulas have the following qualities and characteristics:

- O.E.releases and approvals
- Excellent safety and performance properties
- Sophisticated braking comfort and feel
- Long service life, providing excellent cost per mile value
- Are designed to meet or exceed computerized evaluation standards for braking performance and wear
TMD TEXTAR brand is a unique PREMIUM O.E. QUALITY line specifically designed for discerning long life focused customers and fleets, and has been since 1913 the leading supplier of friction to the world’s automotive and commercial vehicle manufacturers.

TMD TEXTAR formulas are specifically designed to meet today's O.E. performance standards and demands, including new stopping distance regulations, as well as the demands of heavy duty applications.

### NORTH AMERICAN BRAKES

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<tr>
<th>Brake Manufacturer</th>
<th>Brake Model</th>
<th>Application</th>
<th>WVA</th>
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### EUROPEAN BRAKES

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**BEDDING IN COATING**

Most TEXTAR pads include a special layer for cleaning the surface of the rotor, allowing a perfect match between the pad and the rotor from the beginning (even with used discs).

**SPECIAL ADHESIVES & MECHANICAL PROCESSES**

TEXTAR pads feature TMD FRICTION’s patented technology for mechanical attachment using retention posts and a high shear strength underlayer.

**ORIGINAL HARDWARE KIT**

Brakes are one of the vehicles most damaged parts due to impacts and vibrations they take every day.

Adequate brake pad retention is fundamental for braking safety. Having the correct hardware kit for your brake pad and caliper is critical.

**All TEXTAR sets include hardware kits that meet or exceed O.E. specifications.**
TECHNICAL SHEETS
AIR DISC BRAKE PADS
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27  ........................................  2911303
29  ........................................  2911307
31  ........................................  2913103
33  ........................................  2913111
35  ........................................  2909006
37  ........................................  2903009
TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet North American vehicle & caliper performance demands.

- Premium grade friction material
- Meets FMVSS-121 requirements
- Includes wear indicator slot
- Specific to meet Tractor & Coach vehicle requirements
- Excellent NVH properties
- Excellent frictional stability
- High strength
- Excellent disc compatibility
- Asbestos free material

**PHYSICAL PROPERTIES:**

- Density: 2.7 g/cm³
- Compressibility: 217 microns @5Mpa
- Shear Strength: 5.3 N/mm²

**RETARDATION**

**FMVSS-121 CONDITIONS:**
- Caliper: ADB22X
- Axle Rating: 23,000 lb
- Rolling Radius: 20.5 inch
- Air Chamber T22

**WEAR CONDITIONS:**
- Caliper: ADB22X
- Axle Load: 22,000 lb
- Rolling Radius: 20.7 inch
- Air Chamber T22

**BRAKE POWER & RECOVERY**

**TMD OE WEAR & TEMPERATURE TEST**
For further information contact:

*This application guide is described as general reference. The correct material for your application should be reviewed with a brake friction professional.*

www.tmdfriction.us
BENDIX ADB22X CALIPER
FOR LONG LIFE TRANSIT & REFUSE
T7400 formulation for front & rear axle

TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet North American vehicle & caliper performance demands.

- Premium long life grade friction material
- Meets FMVSS-121 requirements
- Includes wear indicator slot
- Specific to meet Refuse vehicle requirements
- Excellent NVH properties
- Excellent frictional stability
- High strength
- Excellent disc compatibility
- Asbestos free material

FMVSS-121 CONDITIONS:
Caliper: ADB22X
Axle Rating: 23,000 lb
Rolling Radius: 20.5 inch
Air Chamber T22

WEAR CONDITIONS:
Caliper: ADB22X
Axle Load: 22,000 lb
Rolling Radius: 20.7 inch
Air Chamber T22

PHYSICAL PROPERTIES:
- Density: 2.9 g/cm³
- Compressibility: 177 microns @5Mpa
- Shear Strength: 4.7 N/mm²

RETARDATION

BRAKE POWER & RECOVERY

TMD OE WEAR & TEMPERATURE TEST
OE PART NUMBER: 802078
FMSI: 8479-D1369
WVA: 29158 / 29269

Single Drive Axle Tractor
Tandem Drive Axle Tractor
Spread Tandem
Multiple Trailer
Van Trailer
Straight Truck
Flat Bed Trailer
Dry Bulk
Logging Trailer
Car Hauler
Livestock Trailer
Tanker
School Bus
Fire Engine
Refuse Truck
Tandem Drive Axle Mixer Truck
Single Drive Axle Dump
Tandem Drive Axle Dump
Transit
Coach

For further information contact:

HARDWARE KIT INCLUDED
Recommended  Optional

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www.tmdfriction.us
TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet NA vehicle & caliper performance demands.

- Premium long life grade friction material
- Meets FMVSSI-121 requirements
- Specific to meet Trailer vehicle requirements
- Excellent NVH properties
- Includes wear indicator slot
- Excellent frictional stability
- High strength
- Excellent disc compatibility
- Asbestos free material

**RETARDATION**

<table>
<thead>
<tr>
<th>Pressure (psi)</th>
<th>Retardation Ratio</th>
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<tr>
<td>0</td>
<td>0.000</td>
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<tr>
<td>10</td>
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**BRAKE POWER & RECOVERY**

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<th>Brake Power Stops</th>
<th>Pressure (psi)</th>
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<td>20</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
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<td>6</td>
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<table>
<thead>
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<th>Recovery Stops</th>
<th>Pressure (psi)</th>
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<td>200</td>
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<td>2</td>
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<td>4</td>
<td>800</td>
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<tr>
<td>5</td>
<td>1000</td>
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**FMVSS-121 CONDITIONS:**
- Caliper: ADB22X
- Axle Rating: 23,000 lb
- Rolling Radius: 20.5 inch
- Air Chamber T22

**WEAR CONDITIONS:**
- Caliper: ADB22X
- Axle Load: 22,000 lb
- Rolling Radius: 20.7 inch
- Air Chamber T22

**PHYSICAL PROPERTIES:**
- Density: 2.5 g/cm³
- Compressibility: 170 microns @5Mpa
- Shear Strength: 3.9 N/mm²

**TMD OE WEAR & TEMPERATURE TEST**

<table>
<thead>
<tr>
<th>Temperature °C</th>
<th>Volume CC/250 stops</th>
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<tbody>
<tr>
<td>100</td>
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<tr>
<td>200</td>
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<td>500</td>
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For further information contact:

*This application guide is described as general reference. The correct material for your application should be reviewed with a brake friction professional.
TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet North American vehicle & caliper performance demands.

- Premium long life grade friction material
- Meets FMVSS-121 requirements
- Specific to meet Transit, Coach & Refuse vehicle requirements
- Excellent NVH properties
- Excellent friction stability
- Excellent disc compatibility
- Asbestos free material
- Includes wear indicator slot

**RETARDATION**

![Retardation Graph](image)

**BRAKE POWER & RECOVERY**

![Brake Power & Recovery Graph](image)

**PHYSICAL PROPERTIES:**

- **Density:** 3.03 g/cm³
- **Compressibility:** 139 microns @ 50KN
- **Shear Strength:** 4.4 N/mm²

**FMVSS-121 CONDITIONS:**

- Caliper: EX225H2
- Axle Rating: 28,600 lb
- Rolling Radius: 18.7 inch
- Air Chamber T24

**WEAR CONDITIONS:**

- Caliper: EX225H2
- Axle Load: 20,000 lb
- Rolling Radius: 19.7 inch
- Air Chamber T20

**TMD OE WEAR & TEMPERATURE TEST**

![Temperature Graph](image)
OE PART NUMBER: KIT225H2CD
FMSI: 8426-D1311
WVA: 29187

For further information contact:

*This application guide is described as general reference. The correct material for your application should be reviewed with a brake friction professional.
TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet European vehicle & caliper performance demands.

- Premium grade friction material
- Meets ECR-90 requirements
- Includes wear indicator slot
- Specific to meet Coach vehicle requirements
- Excellent friction stability
- High strength & disc compatibility
- Asbestos free material

TEST CONDITIONS: Caliper: ADB22X
Axle Rating: 20,000 lb
Rolling Radius: 20.5 inch
Air Chamber T24

PHYSICAL PROPERTIES:

<table>
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<th>Property</th>
<th>Value</th>
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<td>Shear Strength</td>
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TEMPERATURE SENSITIVITY

SPEED SENSITIVITY
OE PART NUMBER: 5013257
FMSI: 8323-D1203
WVA: 29179 / 29278

For further information contact:

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TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet NA & European vehicle & caliper performance demands.

- Premium long life grade friction material
- Meets ECR-90 requirements
- Specific to meet Transit vehicle requirements
- Excellent friction stability
- Excellent disc compatibility
- Asbestos free material
- Includes wear indicator slot

**TEST CONDITIONS:**
- Caliper: SB/SN 7
- Axle Rating: 20,000 lb
- Rolling Radius: 19.2 inch
- Air Chamber T24

**PHYSICAL PROPERTIES:**

- Density: 3.1 g/cm³
- Compressibility: 90-140 µm
- Shear Strength: 7.0-9.0 N/mm²

**TEMPERATURE SENSITIVITY**

**SPEED SENSITIVITY**
OE PART NUMBER: 5013257
FMSI: 8323-D1203
WVA: 29179 / 29087

Single Drive Axle Tractor
Tandem Drive Axle Tractor
Spread Tandem
Multiple Trailer
Van Trailer
Straight Truck
Flat Bed Trailer
Dry Bulk
Logging Trailer
Car Hauler
Livestock Trailer
Tanker
School Bus
Fire Engine
Refuse Truck
Tandem Drive Axle Mixer Truck
Single Drive Axle Dump
Tandem Drive Axle Dump
Transit
Coach

HARDWARE KIT INCLUDED

Recommended  Optional

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www.tmdfriction.us
TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market

OE designed, approved & released formula to meet European vehicle and caliper performance demands.

- Premium grade friction material
- Meets ECR-90 requirements
- Specific to meet Coach vehicle requirements
- Excellent friction stability
- Very low disc wear
- Asbestos free material
- Includes wear indicator slot

TEST CONDITIONS:
- Caliper: D-ELSA 1
- Axle Rating: 20,000 lb
- Rolling Radius: 19.2 inch
- Air Chamber T24

PHYSICAL PROPERTIES:
- Density: 2.6-2.7 g/cm³
- Compressibility: 90-140 µm
- Shear Strength: 6.5-7.8 N/mm²
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- Excellent friction stability
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- Asbestos free material
- Includes wear indicator slot

TEST CONDITIONS:
- Caliper: D-ELSA 1
- Axle Rating: 20,000 lb
- Rolling Radius: 19.2 inch
- Air Chamber T24

PHYSICAL PROPERTIES:
- Density: 2.95 g/cm³
- Compressibility: 110-180 µm
- Shear Strength: 6 N/mm²

TEMPERATURE SENSITIVITY

SPEED SENSITIVITY
OE PART NUMBER: MDP5065
FMSI: 8515-D1407
WVA: 29210 / 29113

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- Premium grade friction material
- Meets ECR-90 requirements
- Specific to meet Coach vehicle requirements
- Excellent friction stability
- Very low disc wear
- Asbestos free material
- Includes wear indicator slot

TEST CONDITIONS:
- Caliper: D-ELSA 2
- Axle Rating: 20,000 lb
- Rolling Radius: 20.7 inch
- Air Chamber T24

PHYSICAL PROPERTIES:
- Density: 2.6-2.7g/cm³
- Compressibility: 90-140 µm
- Shear Strength: 6.5-7.8 N/mm²

TEMPERATURE SENSITIVITY

SPEED SENSITIVITY
For further information contact:

For further information contact:

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**PHYSICAL PROPERTIES:**

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<th>Property</th>
<th>Value</th>
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<td>Compressibility</td>
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<td>Shear Strength</td>
<td>7-9 N/mm²</td>
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</tbody>
</table>

**TEST CONDITIONS:**

- Caliper: D-ELSA 2
- Axle Rating: 20,000 lb
- Rolling Radius: 20.7 inch
- Air Chamber T24

**TMD / TEXTAR Air Disc Brake pads are the global leaders in the ADB market**

OE designed, approved & released formula to meet European vehicle & caliper performance demands.

- Premium long life grade friction material
- Meets ECR-90 requirements
- Specific to meet Transit vehicle requirements
- Excellent friction stability
- Very low disc wear
- Asbestos free material
- Includes wear indicator slot

**TEMPERATURE SENSITIVITY**

**SPEED SENSITIVITY**
For further information contact:

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**PHYSICAL PROPERTIES:**

- **Density**: 2.5-2.7 g/cm³
- **Compressibility**: 110-180 µm
- **Shear Strength**: 4-5 N/mm²

**TEST CONDITIONS:**

- Caliper: D-LISA
- Axle Rating: 20,000 lb
- Rolling Radius: 19.2 inch
- Air Chamber T24

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OE designed, approved, released formula to meet European vehicle & caliper performance demands.

- Premium grade friction material
- Meets ECR-90 requirements
- Specific to meet Transit vehicle requirements
- Excellent friction stability
- Excellent disc compatibility
- Asbestos free material
- Includes wear indicator slot

---

**TEMPERATURE SENSITIVITY**

![Temperature Sensitivity Graph](image)

**SPEED SENSITIVITY**

![Speed Sensitivity Graph](image)
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- Premium long life grade friction material
- Meets ECR-90 requirements
- Specific to meet Transit vehicle requirements
- Excellent friction stability
- Excellent disc compatibility
- Asbestos free material
- Includes wear indicator slot

TEST CONDITIONS:
- Caliper: D-3
- Axle Rating: 20,000 lb
- Rolling Radius: 19.2 inch
- Air Chamber T24

PHYSICAL PROPERTIES:
- Density: 3.1 g/cm³
- Compressibility: 90-140 µm
- Shear Strength: 7.0-9.0 N/mm²

TEMPERATURE SENSITIVITY

SPEED SENSITIVITY
For further information contact:

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ECOLOGICAL STANDARDS FOR FRICTION MATERIALS

At TMD FRICTION we have been at the forefront of environmental protection within the friction industry for a number of years.

Almost a decade ago the company was instrumental in the development of the ECO-Table, a set of ecological / environmental classification standards for friction materials. It ranges from ECO I to ECO IV and today it is a universally recognized standard.

The product portfolio of TMD FRICTION has been constructed in line with the corresponding environmental requirements and it is constantly being improved.

We believe that we have a responsibility to conserve the planet’s precious resources wherever possible therefore we have set ourselves ambitious energy reduction targets and strict recycling processes.

WARRANTY LIMITATIONS

TMD FRICTION warrants that all of its products are merchantable, free from defects and fit their intended use, in conformity to North American laws, rules and regulations, with such conformity properly certified.

All products are covered by TMD FRICTION’s standard product warranty, consistent with standard practices within the industry.

IT IS IMPORTANT TO NOTE THAT THE USE OF THE "APPLICATIONS CHART" IN THIS CATALOG SHOULD ONLY BE USED AS A GENERAL REFERENCE GUIDE. THE CORRECT MATERIAL FOR YOUR APPLICATION DEPENDS ON VEHICLE DESIGN / USE / DRIVING CONDITIONS, AND IT IS RECOMMENDED TO BE REVIEWED WITH EXPERIENCED PROFESSIONALS.
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### APPLICATIONS Chart

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</table>

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BECAUSE WE ARE NOT THE SAME YOU CAN ALWAYS TRUST IN