RANGE BROCHURE
METRO

MICHELIN

THE RIGHT TIRE,
FOR INCREASED PRODUCTIVITY

Our customers have constant concerns:

No vibration:
Thanks to its damping properties, the tire transmits low vibration to the environment, thus offering greater comfort to passengers.

Grip:
Thanks to a high adhesion coefficient, there is a marked improvement in levels of acceleration, braking and passing gradients, in all weather conditions, thus offering enhanced network operation.

Noise:
There is reduced rolling noise, squealing and friction in tight short radius curves.

Steering:
The tire allows for a tight bend radius, thus offering the possibility of being integrated in network environments with limited space.

Reduced operating costs:
Maintenance is optimized as the absence of vibration reduces mechanical stress on equipment and infrastructure.

SAFETY IS PART OF OUR TIRES' DNA

No compromise

When you buy MICHELIN tires, you cannot imagine all the tests to which they were subjected before their commercial launch.

Indeed, all tires undergo endurance testing in order to measure their resistance.
Thus, tires spend over 400,000 hours on rollers and 50,000,000 km of monitored driving is performed each year.

You **also** benefit from dedicated technical assistance during a tire's service life:
- We provide you with a monitoring guide.
- We provide your personnel with tire training.

Did you know that your tire pressure has a significant impact on tire performance and safety?

Under inflation causes abnormal flexing of the carcass, which results in overheating the tire, increasing its rolling resistance and its premature wear. Under inflation can lead to tire destruction. Also, over inflation can decrease mileage. It causes greater tire slip and thus irregular and more rapid wear, especially on driving axles.

Your MICHELIN advisers are experts, who can help you to choose the correct pressure according to the characteristics of your area of activity. Do not hesitate to contact them.

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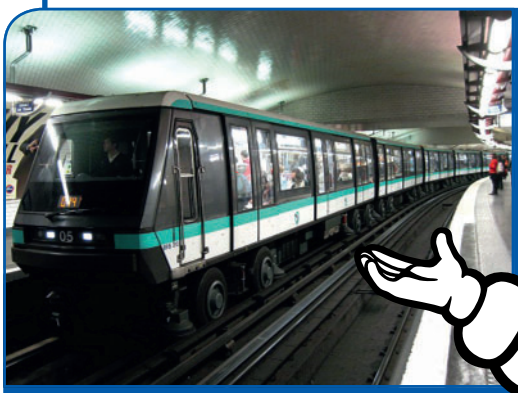
IMPORTANT INSTRUCTIONS
FOR SAFE INFLATION

A few tips before inflation

- Weigh the laden vehicle, axle by axle, to determine the correct tire pressure.
- Measure cold pressure (after the vehicle has been stationary for several hours):
  the tire pressure must be checked regularly and during each workshop maintenance session.
- Important safeguard:
  the tire pressure increases while rolling, so you must never reduce the pressure of a warm tire.
- Pressure controllers: these must be accurate,
  handled with care and calibrated regularly,
  like all measuring equipment.



WARNING

THERE IS ONLY ONE ADEQUATE PRESSURE
FOR A GIVEN LOAD OR WORK
UNDER SPECIFIC CONDITIONS.

Low-pressure rolling can damage your tire.
Remove the tire if the loss of pressure exceeds 2 bars
in relation to nominal pressure.

Inflation

Flat and locked seat rims

Tires mounted with circle rims:

- Firstly, check that all elements are firmly in place.
- For flat rims (with circle) and locked seat rims (without circle), never stand facing the mounted tire, but always stand to its side.
- Use a 3 m pipe (between the inflator gun and tire). This is essential in order to be far enough if a tire bursts.
- Perform inflation in a fully- equipped area and ensure that nobody faces the mounted tire. A safety cage and helmet (ear protection) are required.
- Nitrogen inflation.

All these precautions are essential, especially when pressurizing a tire that has already run. If the carcass of your tire is damaged, regardless of the cause, there is a risk of rupture of the tire during the inflation.

ONLY WITH INFLATION CAGE

- Place tire upright in inflation cage
- See cage operating procedure

HOW TO CORRECTLY
MOUNT YOUR TIRES

Mounting on rims

Mount tires on rims of the correct size and in good condition.

For flat rims (with circles):
- Tubeless: mount the tire with a new sealing ring.
- With tube: mount the tire with new equipment (tube and flap).

For locked seat rims (without circles):
- Install new valve seal.

Accurately center the tire on the rim.

Circle rims or rims with several elements:
- Check that all elements match and are in good condition.

Warning:
There is a high risk of serious injury or death if a circle is projected.

Twin tires:
- Check that the size, brand, type, wear and pressure of both twin tires are strictly identical and suited to service conditions to avoid damage and abnormal wear.

Check that the rim and all parts are clean.

Remove rust and paint lightly, if required.

A Metro tire that has been dismantled, for any reason, must never be refitted.

COMMITTED
FOR A BETTER MOBILITY FOR EVERYONE

Because we believe that mobility is essential for human development,
we are innovating passionately to make it safer, more efficient and more environmentally friendly.

Use fewer natural resources

Our strategy:

- **Reducing** CO_2 consumption with lighter MICHELIN tires, which last longer and save fuel.
- **Recycling** and recovering used tires.
- **Renewing** by using renewable raw materials such as natural rubber, biosourced isoprene and butadiene, and natural oils and resins, etc.

Reduce the environmental footprint of our industrial sites ...

The production chain accounts for only 6% to 10% of our tires' environmental impact. To further reduce it, we are deploying a variety of assertive programs, including an ISO 14001 certified environmental management system, and an indicator, the Michelin Environmental Footprint (MEF), to track and manage compliance. The MEF measures our consumption of resources (water and energy), our air emissions (CO_2 and VOC*), the amount of waste produced and amount of waste landfilled, all per tonne of tires produced.

Our goal: shrinking the MEF by 50% between 2005 and 2020!

We are well on track to meet our goal, having reduced the MEF by 47.3%, energy use by 30.4% and CO_2 emissions by 30.7% over the 2010-2017 period.

... and of our supply chain

We are also reducing the carbon footprint of our supply chain by rationalizing distances traveled and maximizing loads, developing multimodal (rail, sea, inland waterway) solutions and reducing the need for air transport, and preferring carriers that share our commitment to energy efficiency and lower emissions.

*Volatile Organic Compound

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PRESENTATION
OF METRO RANGE

Guide tires

BRAND NAME	WEIGHT INDICA-TIVE (kg)	CAPA-CITY INTERNAL (l)	TYPE WHEEL	LOAD NOMINAL (kg)	PRESSURE NOMINAL (bars)	WIDTH CROWN (mm)	DEPTH TREAD (mm)	SECTION FREE (mm)	SECTION CRUSHED (mm)	RADIUS FREE (mm)	RADIUS CRUSHED (mm)	DIAME-TER FREE (mm)	CIRCUM-FERENCE ROLLING (mm)
150/75 R 8 XGM TL	**6**	**4**	8 - 4.00 J	**1150**	11,5	125	2,8	145	193	213	193	426	1311
6.00 R 9 XPMC TL	**11**	**20**	9 - 4.00 E	**1300**	10,0	129	6,5	165	183	268,5	247	537	1642
6.00 R 9 XTYPE P TL	**8,5**	**18**	4.00 E 9	**1200**	10,0	114	3,5	155	174	270	247	540	1662
200 R 15 X METRO TL	**16,8**	**38**	15 - 6.50	**2000**	10,0	128	5,7	194	197	365	339	730	2250

Supporting tires

BRAND NAME	WEIGHT INDICA-TIVE (kg)	CAPA-CITY INTERNAL (l)	TYPE WHEEL	LOAD NOMINAL (kg)	PRES-SURE NOMINAL (bars)	WIDTH CROWN (mm)	DEPTH TREAD (mm)	SECTION FREE (mm)	SECTION CRUSHED (mm)	RADIUS FREE (mm)	RADIUS CRUSHED (mm)	DIAME-TER FREE (mm)	CIRCUM-FERENCE ROLLING (mm)
345/85 R 16 X METRO TL	**58,5**	**150**	16 - 9.00 V	**5600**	11,5	218	8,9	322	362	503	458	1005	3094
390/75 R 16 X METRO TL	**64,4**	**183**	16 - 11.00 V	**6670**	11,5	291	8,3	380	418	502	458	1004	3090
305/75 R 20 X METRO TL	**49**	**112**	8.5 x 20	**5100**	11,5	217	6,8	300	327	485	444	968	2992
305/75 R 20 X METRO COMFORT TL	**49**	**112**	8.5 x 20	**5100**	11,5	217	6,8	300	327	485	444	968	2992
315/70 R 20 XPMD TL	**58**	**109**	8.5 x 20	**4150**	10,5	260	15,5	307	327	473	436	948	2901
305/70 R 22 XPMA TL	**45**	**113**	8.5 x 22	**5600**	11,5	220	8,9	292	322	503	460	1006	3098
10 R 22.5 X METRO TL	**49**	**91**	22.5-6.75	**3400**	8,5	183	15,0	238	281	505	466	1010	3101
305/70 R 22.5 X METRO HD TL	**51**	**107**	8.25 x 22.5	**6800**	11,5	219	9,0	287	325	500	450	1000	3127
385/65 R 22.5 X METRO HD TL	**75**	**177**	22.5-11.75	**7500**	10,0	300	11,0	382	420	531	477,5	1062	3300
445/65 R 22.5 XZA TL METRO	**98**	**251**	14.00 x 22.5	**6700**	10,0	334	15,4	451	483	577	528,5	1154	3510

GUIDE TIRES
RANGE

150/75 R 8 XGM TL

Specially designed for rolling on electric rail.
Compact size. Excellent mileage
and very good form of wear.

6.00 R 9 XPMC TL

Good wear form and excellent resistance
to agressions. Polyvalence of usage
for all types of trains.

6.00 R 9 X TYPE P TL

The reference guide tire designed
to be used on electric rails.
Excellent mileage and even wear.

200 R 15 X METRO TL

New guide tire solution
with high load capacity.

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SUPPORTING TIRES
RANGE

345/85 R 16 X METRO TL

Good load-carrying capacity. Optimal wet grip thanks to numerous sipes. Excellent wear form thanks to a summit construction with a zero-degree continuous steel wire (inificoil).

390/75 R 16 X METRO TL

High load capacity.
Optimal wet grip thanks to numerous sipes.

305/75 R 20 X METRO TL

Optimized grip thanks to numerous sipes. Monoblock wheel mounting for optimized seat diameter and enhanced safety.

305/75 R 20 X METRO COMFORT TL

Reduction of noise using non-siped ribs. Monoblock wheel mounting for optimized seat diameter and enhanced safety.

315/70 R 20 XPMD TL

Numerous grooves for high service versatility. Excellent resistance to stress.

305/70 R 22 XPMA TL

High load capacity and compact size. Optimized grip thanks to numerous sipes. Monoblock wheel mounting for optimized seat diameter and enhanced safety.

10 R 22.5 X METRO TL

Excellent wear form.
Easier to mount on monoblock wheel.
Reduced dimensional box.

305/70 R 22.5 X METRO HD TL

Exceptional load capacity.
Optimal wet grip
thanks to numerous sipes.

385/65 R 22.5 X METRO HD TL

The most important load capacity
for a Metro tire. Optimal wet grip
thanks to numerous sipes.

445/65 R 22.5 XZA TL METRO

Metro tire with a high load capacity based
on truck tire technology.
Numerous grooves for excellent grip.
High service versatility.

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