

# MIT THE KING

M A R A N G O N I I N D U S T R I A L T Y R E S



**INDUSTRIAL & MPT TYRES**  
**TECHNICAL DATA BOOK 2024**



MARANGONIINDUSTRIALTYRES.IT

# SPECIALIST STRENGTH

The quality of the compounds used is essential in the solid industrial tyre sector.



## TREAD COMPOUND

Resistant to wear and tear, guarantees excellent grip on wet or slippery surfaces (e.g. oil stains).

## CUSHION COMPOUND

Central compound, lowers operating temperature and ensures low rolling resistance.

+LIFE

+COMFORT

+SAVING

+STABILITY

## BASE 1

Ensures the tyre remains attached to the rim over time: the metal rings inside the tyre adhere perfectly to the metal. Perfect coupling to the rim: easy to fit and remove.

## BASE 2

Extremely hard material that reduces deformation and supports the load while preserving bead stiffness and preventing the tyre from coming off the rim.



### **SPECIAL - S**

This version was designed and developed especially for loaders and produced in the 20 and 24 inch sizes. It is constructed using compounds which are particularly resistant to tearing. The tyre stands out for its resistance to wear and tear, jolts, cuts and abrasions, as well as for its high rigidity that provides stability to the vehicle and, therefore, to the load. Used for vehicles which carry loads, usually in environments with extreme conditions, such as scrap yards and dumps.



### **HIGH CAPACITY - HL**

This is a tyre designed with a highly rigid structure in comparison to standard tyres. It is constructed with extremely hard compounds that are able to maintain all the other physical and mechanical characteristics to excellent levels. The distinguishing feature of Super-elastic and Cushion tyres is their ability to sustain high loads with minimal deformation. It is widely used in situations where it is of paramount importance to maintain the stability of the vehicle and, therefore, of the load. It is also utilised in other specific cases. Contact a MARANGONI INDUSTRIAL TYRES technician for advice before choosing this version.



### **NO MARKING - NM**

This is a light coloured tyre, designed not to leave dark marks on the ground surface. It is constructed with a yellow mixture, containing no dark substances. It's use is recommended in environments where cleanliness is of great importance, for example in the pharmaceutical, food and beverage, and electronic industries, or anywhere light coloured floors must stay clean.

**Available in yellow, white and gray.**



### **ANTISTATIC - AS**

This tyre was designed to release the static electricity accumulated by the vehicle onto the ground. It is constructed with special additives which perform this action while maintaining all the other physical and mechanical characteristics to excellent levels. It is typically used in paint and solvent factories, in gas tank deposits, in environments with easily flammable fine dust particles or in environments where the accumulation of static electricity can cause explosions. In all of these cases, the use of this tyre increases safety levels. The AS Super-elastic and Cushion tyres are in compliance with the ISO/DIS 2883 standards. A certificate of conformity shall be provided upon customers' request.

# NEW



### **ANTISTATIC NO MARKING - AS-NM**

This is a fully no marking & electrically conducting compound, constructed and designed using years of expertise. It is essential for changing needs in modern warehouse environments.

**Available in yellow only.**

# INNOVATIVE SOLUTIONS

## SUPER-ELASTIC **ELTOR® E3** INTEGRATED LOADER SYSTEM

The MARANGONI INDUSTRIAL TYRES integrated loader system is ideal for all stressful situations in which the machines have to work in a stationary position, travelling just short distances and carrying particularly heavy loads (scrap yards, landfills, timber yards, etc.).

### TYRE

square and compact pattern less vertical deformation

**MORE STABILITY**

### COMPOUND

resistant to cuts and tears

**+ LIFE**

### TREAD

designed to transmit

**MORE TRACTION**

### SPACER

prevents infiltration of debris and other similar objects

### REINFORCED RIM WITH FLAT BOTTOM CHANNEL

increased thickness

no aeration or inflation valve holes

**STURDIER**

perfect coupling to the tyres

**MORE SOLIDITY**



### ELTOR® E3 TYRE

High stability tyre designed to withstand very high loads. The reinforced sidewall limits vertical deformation and protects against accidental impact.

The compounds used guarantee maximum resistance to cuts and tears and consequently longer life. The tread is designed to improve traction in all working conditions.

### RING PROTECTOR

The spacer perfectly traces the profile of the MARANGONI INDUSTRIAL TYRES Etor® E3 tyre sidewall, thus preventing infiltration of debris and the like.

### RIM

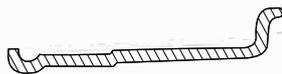
The reinforced rim with flat bottom channel, designed especially to mount MARANGONI INDUSTRIAL TYRES solid tyres, solves all skidding problems. Especially robust due to increased thickness and elimination of the aeration holes and the hole for the inflation valve.

## SUPER-ELASTIC **ELTOR FIX**<sup>®</sup>

FIX - Bead structure consist of a special border made of highly resistant rubber; guarantees a perfect fit on the rim with no need for fastening rings.

### **ELTOR FIX**<sup>®</sup>

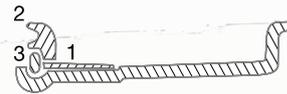
FOR QUICK AND EASY INSTALLATION



**FOR BEAD FIX VERSION**

### **ELTOR**<sup>®</sup> STANDARD (NON FIX)

FOR FITTING ON INDUSTRIAL  
MULTIPIECE RIMS



**FOR BEAD NON-FIX VERSION**  
Movable rimparts 1, 2 and 3.

### **RIMS FOR FIX SOLID TYRES**

- Fit all sizes of FIX Solid Tyres from 8" to 20".
- Available for all standard applications.
- Adaptable to most custom applications.



### **INDUSTRIAL MULTIPIECE RIMS**

- Fit all sizes of Industrial Tyres from 8" to 24".
- Available for all standard and heavy duty (20 and 24") applications.
- Multipiece design includes 2 or 3 piece components or base wheel for the FIX type applications.
- Fit tube type tyres as well as NON FIX solid tyres.
- Designed for easy tyre installation and precise fitment.



### **SPLIT RIMS (DIVIDED TYPE)**

- Designed for easy tyre installation and precise fitment without press.



### **WHEELS FOR POB CUSHION TYRES**

- Fit all sizes of press on band cushion from 6,5" to 22".
- Available for all standard applications.
- Adaptable to most custom applications.



# SPECIALISED RANGE

## SUPER-ELASTIC

**ELTOR® EVO**

**SUPERIOR**

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**ELTOR® E3**

**PREMIUM**

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**ELTOR® EL**

**PREMIUM**

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**ELTOR® ER**

**PREMIUM**

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**ELTOR® ES**

**PREMIUM**

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**FERENTINO**

**PREMIUM**

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**FORZA F1**



**FORZA FR**

**QUALITY**

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**JUMBO J2**

**BUDGET**

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**JUMBO JL**

**BUDGET**

Page 22



**PRO4SNOW**

**SUPERIOR**

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**ATHLETIK® A1**

**SUPER-BUDGET**

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## SKS

**TR APERTURE** **SM APERTURE** **TR** **SM**

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## PRESS ON BAND CUSHION MARANGONI

**BS** **BSC** **BL**

**PREMIUM**

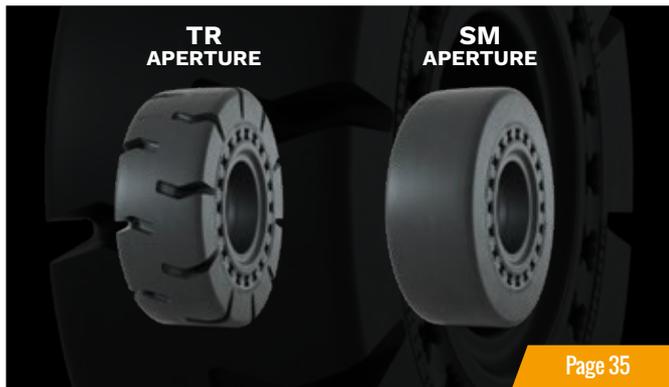
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**PRESS ON BAND  
CUSHION FORZA**



**FLEX MASTER**



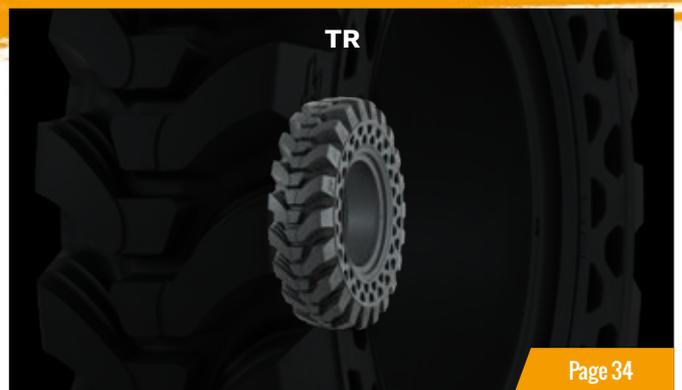
**CONVENTIONAL PNEUMATIC SKID STEER TYRES  
FOR SMALL-SIZED MACHINES**



**MULTI-PURPOSE CONVENTIONAL PNEUMATIC TYRES  
FOR MANUFACTURING MACHINES**



**TELEHANDLER**



**CONVENTIONAL PNEUMATIC INDUSTRIAL TYRES**



**CONVENTIONAL PNEUMATIC TYRES FOR  
INDUSTRIAL TRACTORS  
FOR CONSTRUCTION AND ROAD WORKS**



# ELTOR® EVO

## THE TECHNOLOGY THAT ANTICIPATES TOMORROW BY 10%



Our prime objective? To extend tyre life and save our customers time and money, without compromising on performance. Rather, improving performance even more compared to similar competing products. MARANGONI INDUSTRIAL TYRES' response has a name: **Elator® EVO**. This new range can withstand a high number of working hours (10% more compared to other premium products) by generating less heat, the result of a new structure and optimised characteristics of the compounds.

The results achieved today with **Elator® EVO** in terms of reliability, performance and safety were unconceivable just a few years ago.

Longer continuous service without stopping for maintenance means savings in terms of time and costs, as well as reducing environmental impact.

Less replacements mean less CO<sub>2</sub> emissions, beneficial for the environment.



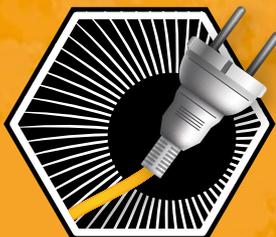
**-8%\***

**LOWER ROLLING RESISTANCE**



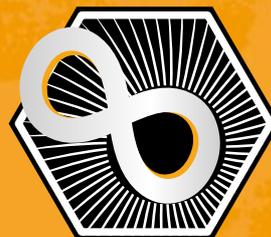
**-15%\***

**REDUCED HEAT PRODUCTION**



**-20%\***

**LOWER ENERGY CONSUMPTION**



**+10%\***

**LONGER LIFE**

\* Tests conducted in the laboratory with other premium products.



# MORE TIME, MORE EVOLUTION

**NEW TREAD STRUCTURE,  
WITH THE 60J POSITIONED  
ON A SMALLER DIAMETER**  
= longer life compared to  
other premium products

**DEEPER TREAD**

**EVOLVED AND  
UPGRADED  
COMPOUNDS**

**Eltor® EVO** is the super-elastic superior tyre by MARANGONI INDUSTRIAL TYRES offering the best performance in terms of durability, reliability and energy consumption.

The MARANGONI INDUSTRIAL TYRES R&D Division, after hundreds of hours spent on testing, has achieved the goal to optimize structures and compounds so as to obtain the best product in the market.

Low rolling resistance together with reduced heat generation allow **Eltor® EVO** to be used even in extreme operating conditions, guaranteeing long product life.

**COMPOUNDS DESIGNED FOR  
BETTER ROLLING RESISTANCE  
AND LESS FRICTION BETWEEN  
THE TREAD AND THE GROUND**  
= lower energy consumption and  
maximum battery efficiency

**GOOD  
DIRECTIONALITY**



**BETTER  
TRACTION**



**GREATER STABILITY  
SMOOTH RUNNING**



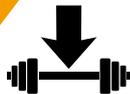
# ELTOR® EVO

# ELTOR® EVO NO MARKING

**SUPERIOR**



**S  
special**



**HL  
high capacity**



**AS  
antistatic**



**NM  
no marking**



**AS-NM  
antistatic no marking**

- Higher mileage.
- High reliability on all forklift trucks, even for heavy duty applications.
- Optimum comfort level.
- Maximum traction.



Ø	TYRE SIZE (inches)	PROFILE	RIM SIZE	TYRE		WEIGHT (kg) ± 2%	LOAD CAPACITY (KG) AT MAX SPEED (KM/H) (2)					
				DIMENSIONS (1)			CARRYING WHEEL 25 km/h	STEERING WHEEL 25 km/h	TRAILERS (3)			
				W (mm) ± 2%	D (mm) ± 2%				25 km/h	10 km/h	6 km/h	
4"	4.00-4	EVO	2.50C-4	101	303	6,6	535	412	412	485	535	
8"	4.00-8	EVO	3.00D-8	105,9	403,5	10,7	950	730	730	860	950	
	4.00-8	EVO FIX	3.00D-8	105,9	403,5	11,0	950	730	730	860	950	
	15x4½-8 (125/75-8)	EVO	3.00D-8	109	377	9,4	1.040	800	800	945	1.040	
	15x4½-8 (125/75-8)	EVO FIX	3.00D-8	109	377	9,7	1.040	800	800	945	1.040	
	15x4½-8 (125/75-8)	EVO	3.25D-8	107	377	9,6	1.040	800	800	945	1.040	
	5.00-8	EVO	3.00D-8	120	458	17,1	1.415	1.090	1.090	1.285	1.415	
	5.00-8	EVO FIX	3.00D-8	120	458	17,2	1.415	1.090	1.090	1.285	1.415	
	16x6-8 (150/75-8)	EVO	4.33R-8	151	421	17,1	1.495	1.150	1.150	1.360	1.495	
	16x6-8 (150/75-8)	EVO FIX	4.33R-8	151	421	17,4	1.495	1.150	1.150	1.360	1.495	
	18x7-8 (180/70-8)	EVO	4.33R-8	152	453	20,2	2.145	1.650	1.650	1.945	2.145	
18x7-8 (180/70-8)	EVO FIX	4.33R-8	152	453	20,5	2.145	1.650	1.650	1.945	2.145		
9"	140/55-9	EVO	4.00E-9	130	380	11,5	1.170	900	900	1.060	1.170	
	140/55-9	EVO FIX	4.00E-9	130	380	11,8	1.170	900	900	1.060	1.170	
	6.00-9	EVO	4.00E-9	139	525	26,1	1.885	1.450	1.450	1.710	1.885	
	6.00-9	EVO FIX	4.00E-9	139	525	26,4	1.885	1.450	1.450	1.710	1.885	
	21x8-9 (200/75-9)	EVO	6.00E-9	183	522	34,2	2.755	2.120	2.120	2.500	2.755	
	21x8-9 (200/75-9)	EVO FIX	6.00E-9	183	522	34,6	2.755	2.120	2.120	2.500	2.755	
10"	6.50-10	EVO	5.00F-10	160	575	36,6	2.340	1.800	1.800	2.125	2.340	
	6.50-10	EVO FIX	5.00F-10	160	575	36,8	2.340	1.800	1.800	2.125	2.340	
	180/60-10	EVO	5.00F-10	152	454	18,5	2.410	1.850	1.850	2.180	2.410	
	180/60-10	EVO FIX	5.00F-10	152	454	19,0	2.410	1.850	1.850	2.180	2.410	
	7.50-10	EVO	5.50F-10	176	636	52,3	3.070	2.360	2.360	2.785	3.070	
	7.50-10	EVO FIX	5.50F-10	176	636	52,3	3.070	2.360	2.360	2.785	3.070	
	200/50-10	EVO	6.50F-10	189	464	25,6	2.470	1.900	1.900	2.240	2.470	
	200/50-10	EVO FIX	6.50F-10	189	464	26,1	2.470	1.900	1.900	2.240	2.470	
	23x9-10 (225/75-10)	EVO	6.50F-10	195	581	46,0	3.445	2.650	2.650	3.125	3.445	
	23x9-10 (225/75-10)	EVO FIX	6.50F-10	195	581	46,3	3.445	2.650	2.650	3.125	3.445	
12"	7.00-12	EVO	5.00S-12	169	658	47,6	2.920	2.240	2.240	2.645	2.920	
	7.00-12	EVO FIX	5.00S-12	169	658	48,3	2.920	2.240	2.240	2.645	2.920	
	23x10-12 (250/60-12)	EVO	8.00G-12	227	586	49,9	3.770	2.900	2.900	3.420	3.770	
	23x10-12 (250/60-12)	EVO FIX	8.00G-12	227	586	50,6	3.770	2.900	2.900	3.420	3.770	
	27x10-12 (250/75-12)	EVO	8.00G-12	235	672	73,5	3.900	3.000	3.000	3.540	3.900	
	27x10-12 (250/75-12)	EVO FIX	8.00G-12	235	672	74,3	3.900	3.000	3.000	3.540	3.900	
	315/45-12	EVO	10.00G-12	275	588	61,0	4.485	3.450	3.450	4.070	4.485	
315/45-12	EVO FIX	10.00G-12	285	574	61,4	4.485	3.450	3.450	4.070	4.485		
15"	7.00-15	EVO	5.5-15	180	728	59,0	3.545	2.725	2.725	3.215	3.545	
	7.00-15	EVO FIX	5.5-15	180	728	59,5	3.545	2.725	2.725	3.215	3.545	
	7.00-15	<b>NEW</b> <b>NEW</b>	EVO	6.0-15	180	728	57,0	3.545	2.725	2.725	3.215	3.545
	7.00-15	<b>NEW</b> <b>NEW</b>	EVO FIX	6.0-15	178	723	57,5	3.545	2.725	2.725	3.215	3.545
	7.50-15	EVO	5.5-15	205	758	72,2	3.900	3.000	3.000	3.540	3.900	
	7.50-15	EVO FIX	5.5-15	205	758	72,7	3.900	3.000	3.000	3.540	3.900	
	7.50-15	EVO	6.0-15	205	758	72,6	3.900	3.000	3.000	3.540	3.900	
	7.50-15	EVO FIX	6.0-15	205	758	73,5	3.900	3.000	3.000	3.540	3.900	
	7.50-15	EVO	6.5-15	205	758	72,9	3.900	3.000	3.000	3.540	3.900	
	7.50-15	EVO FIX	6.5-15	205	758	74,2	3.900	3.000	3.000	3.540	3.900	
	8.25-15	EVO	6.5-15	203	822	90,9	4.750	3.650	3.650	4.300	4.750	
	8.25-15	EVO FIX	6.5-15	203	822	92,4	4.750	3.650	3.650	4.300	4.750	
	28x9-15 (225/75-15)	EVO	7.0-15	214	699	61,8	3.445	2.650	2.650	3.125	3.445	
	28x9-15 (225/75-15)	EVO FIX	7.0-15	214	699	62,2	3.445	2.650	2.650	3.125	3.445	
	250-15 (250/70-15)	EVO	7.0-15	214	721	66,5	4.745	3.650	3.650	4.310	4.745	
	250-15 (250/70-15)	EVO FIX	7.0-15	214	721	67,0	4.745	3.650	3.650	4.310	4.745	
	250-15 (250/70-15)	EVO	7.5-15	214	721	67,5	4.745	3.650	3.650	4.310	4.745	
	250-15 (250/70-15)	EVO FIX	7.5-15	214	721	68,5	4.745	3.650	3.650	4.310	4.745	
	300-15 (315/70-15)	EVO	8.0-15	256	821	114,0	5.850	4.500	4.500	5.310	5.850	
	300-15 (315/70-15)	EVO FIX	8.0-15	256	821	114,9	5.850	4.500	4.500	5.310	5.850	
28x12½-15 (355/45-15)	EVO	9.75-15	285	716	91,0	5.690	4.375	4.375	5.165	5.690		
28x12½-15 (355/45-15)	EVO FIX	9.75-15	285	716	92,0	5.690	4.375	4.375	5.165	5.690		
355/50-15	EVO	9.75-15	295	712	95,0	5.690	4.375	4.375	5.165	5.690		
355/50-15	EVO FIX	9.75-15	295	712	96,0	5.690	4.375	4.375	5.165	5.690		
355/65-15 (350-15)	EVO	9.75-15	300	821	135,2	7.800	6.000	5.450	6.430	7.085		
355/65-15 (350-15)	EVO FIX	9.75-15	300	821	136,1	7.800	6.000	5.450	6.430	7.085		
400/60-15	EVO	11.0-15	323	820	149,3	8.970	6.900	6.900	8.140	8.970		
400/60-15	EVO FIX	11.0-15	323	820	151,5	8.970	6.900	6.900	8.140	8.970		

(1) Sizes are intended for tyres not fitted on rims;  
 (2) Capacity values indicated are in reference to ELTOR tyres mounted on vehicles whose speed with no cargo is less than 25 km/h (according to E.T.R.T.O. standards);  
 (3) Only for interior courses inferior to 2.000 metres; if otherwise, contact dealer (according to E.T.R.T.O. standards).



Ø	TYRE SIZE (inches)	PROFILE	RIM SIZE	TYRE		WEIGHT (kg) ± 2%	LOAD CAPACITY (KG) AT MAX SPEED (KM/H) (2)				
				DIMENSIONS (1)			CARRYING WHEEL 25 km/h	STEERING WHEEL 25 km/h	TRAILERS (3)		
				W (mm) ± 2%	D (mm) ± 2%				25 km/h	10 km/h	6 km/h
20"	355/50-20	EVO	10.0-20	309	832	119,0	8.970	6.900	6.900	8.140	8.970
	355/50-20	EVO FIX	10.0-20	309	832	119,8	8.970	6.900	6.900	8.140	8.970
	9.00-20	EVO	6.5-20	243	991	149,0	5.400	4.500	4.500	4.905	5.400
	9.00-20	EVO	7.0-20	243	991	149,0	5.400	4.500	4.500	4.905	5.400
	10.00-20	EVO	7.0-20	258	1.011	167,0	6.000	5.000	5.000	5.450	6.000
	10.00-20	EVO	7.5-20	258	1.011	167,0	6.000	5.000	5.000	5.450	6.000
	10.00-20	EVO	8.0-20	258	1.011	167,0	6.000	5.000	5.000	5.450	6.000
	12.00-20	EVO	8.0-20	267	1.099	216,0	7.560	6.300	6.300	6.885	7.560
	12.00-20	EVO	8.5-20	267	1.099	217,0	7.560	6.300	6.300	6.885	7.560
	12.00-20	EVO	10.0-20	303	1.099	257,0	7.800	6.500	6.500	7.085	7.800
	12.00-24	EVO	8.5-24	281	1.183	236,0	8.040	6.700	6.700	7.305	8.040
	14.00-24	EVO	10.0-24	353	1.300	375,0	11.100	9.250	9.250	1.085	11.100

(1) Sizes are intended for tyres not fitted on rims;  
 (2) Capacity values indicated are in reference to ELTOR tyres mounted on vehicles whose speed with no cargo is less than 25 km/h (according to E.T.R.T.O. standards);  
 (3) Only for interior courses inferior to 2.000 metres; if otherwise, contact dealer (according to E.T.R.T.O. standards).

# SOLID TYRES - USER INSTRUCTIONS, MAINTENANCE, REPLACEMENT AND CALCULATION OF WEAR LIMITS

## 1) INTRODUCTION

Tyres are the only contact between the vehicle and the ground. It is therefore of paramount importance that they are maintained in good condition at all times, and that when the time comes to change them, correct replacements are done.

The tyres fitted to your vehicle as Original Equipment were selected by the vehicle and tyre manufacturers concerned taking into account the intended operations of the vehicle.

Changes in tyre type, size and load capacity should not be made without first checking with the tyre and/or vehicle manufacturer regarding possible effects on vehicle behaviour and safety.

## 2) FITTING AND REMOVAL OF TYRES

It is recommended that these operations be entrusted only to specialists who have the necessary equipment and expertise. Inexpert fitment may lead to personal injury and concealed damage to tyres and wheels.

No special equipment is necessary for fitting solid tyres on centrally divided conical rims, but appropriate presses and accessories are required for fitment on off-set divided conical rims, cylindrical rims and pneumatic tyre rims.

The published instructions of the tyre manufacturer must be strictly followed. Only approved proprietary tyre lubricants should be used.

To avoid damage to the base of the tyre, it must be placed on the rim concentrically and parallel to the axis. Only rims recommended by the tyre manufacturer must be used.

## 3) TYRE LOAD AND SPEED

Tyre load capacities are specified per tyre. Published Standards or manufacturers' Manuals should be consulted to obtain the actual values applicable to a particular application at the speed specified, up to a maximum of 25 km/h.

Load interpolation within the specified speed steps is not permitted and the speed rating of the tyre must be at least equal to the maximum speed capability of the unladen vehicle.

Continuous running should be avoided in order, to prevent excessive heat build-up which may lead to tyre break-up.

## 4) TYRE MAINTENANCE

Although solid tyres require relatively little maintenance, they should be inspected from time to time in order to check their suitability for further use.

## 5) TYRE REPLACEMENT

Worn or damaged tyres must be replaced in accordance with the tyre manufacturer's recommendations. Also, national legal requirements should be checked as they vary from Country to country. When replacing a tyre, special attention should be paid to the condition and suitability of the rim, as rim damage and incorrect fitment can result in tyre break-up.

## 6) TYRE AGEING

Tyres age even if they have not been used or have only been used occasionally. Rubber cracking may be evidence of ageing. Exposure to sunlight, heat and ozone will accelerate this process. Aged tyres should be examined by a tyre specialist to check their suitability for further use.

## 7) TYRE MIXING

Tyres mounted on the same axle must be of the same type and size and must have approximately the same external diameter.

## 8) TREAD WEAR

### 8.1 INTRODUCTION

The limit for the tread wear of industrial vehicles is not defined by national or international standards. Several manufacturers provide instructions solely for their products. Recommendations by tyre manufacturers should always be followed. However, in case no recommendations are provided by manufacturers, please abide by the contents published in this standard.

### 8.2 PURPOSE

This standard suggests tread wear limits for solid tyres used on industrial vehicles that operate under conditions that are not regulated by the Highway Code and are to be used in case no instructions are provided by the manufacturer of the vehicle or tyres. NOTE: Industrial vehicles that

operate on public roads must be in order and comply with traffic circulation standards.

### 8.3 HAZARDS DUE TO EXCESSIVE TYRE TREAD WEAR

The hazards due to excessive tyre wear are the following:

- Loss of load capacity that promotes the accelerated wear of the tread and leads to overheating of the tyre.
- Loss of adhesion while accelerating or braking on unstable road conditions.
- Hazards are heightened if the tyres mounted on the same axle are worn differently.
- Reduction in the vehicle's stability.
- Loss of the vehicle's directional control.
- Uneven load on twinned tyres.

### 8.4 REDUCING HAZARDS

The hazards mentioned in the foregoing section can be reduced if: The tyres mounted on the same axle are built by the same manufacturer, have the same size and are worn equally (this applies to any type of tyre).

### 8.5 TYRE TREAD WEAR LIMITS

#### 1) Pneumatic tyre rim sizes

Wear indicators or Kerbing Rib are recommended. Solid Rubber tyres for Pneumatic Rims may be used until the tread is worn to the wear indicator, if the tyre has such a marking, or to the top of the kerbing rib, see page IS.3 of EDI. Where there is no indicator, use the tyre until 3/4 of the original total thickness of the tyre remains.

To calculate the minimum diameter corresponding to this wear limit, measure the outside diameter of the worn tyre, the outside diameter of an unworn tyre of the same type, make and size, and the diameter of the wheel rim. The minimum permitted diameter of the worn tyre is given by the formula:

$$D_{\text{worn}} = 3/4 (D_{\text{new}} - D_{\text{rim}}) + D_{\text{rim}}$$

where  $D_{\text{worn}}$  = the outside diameter of the worn tyre  
 $D_{\text{new}}$  = the outside diameter of an unworn  
 $D_{\text{rim}}$  = the diameter of the wheel rim

#### 2) Press-on-band, cured-on-band and conical base tyres (rubber and non-rubber)

Press-on-band, cured-on and conical base tyres may be used until 2/3 of the original total radial thickness of the tyre remains, as given by the formula:

Cured-on tyres:  
$$D_{\text{worn}} = 2/3 (D_{\text{new}} - D_{\text{rim}}) + D_{\text{rim}}$$

Press-on-band and conical base tyres:  
$$D_{\text{worn}} = 2/3 (D_{\text{new}} - D_{\text{rim}} - 20) + (D_{\text{rim}} + 20)$$

#### Notes:

- All dimensions are measured in millimetres.
- The outside diameter of the tyre  $D_{\text{worn}}$  and  $D_{\text{new}}$  may be calculated by measuring the circumference of the tyre with a flexible tape, and calculating the diameter from the formula:

$$\text{Diameter} = \frac{\text{Circumference}}{\pi}$$

TREAD WEAR INDICATOR (TWI) MARANGONI INDUSTRIAL TYRES recommends for tyres not to be worn beyond the TWI (Tread Wear Indicator) positioned on the tread of the tyre.

The height of the TWI was defined according to a study based on safety and cost savings for the user. However, in case there is no TWI, MARANGONI INDUSTRIAL TYRES recommends to replace the tyres for safety reasons when 10% of the original tread is worn.

General conditions of sales available on  
[WWW.MARANGONIINDUSTRIALTYRES.IT](http://WWW.MARANGONIINDUSTRIALTYRES.IT)



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