
**Definitions of some terms used in the tyre
industry —**

**Part 1:
Pneumatic tyres**

*Définitions de certains termes utilisés dans l'industrie du pneumatique —
Partie 1: Pneumatiques*

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 4223 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 4223-1 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*.

This fourth edition cancels and replaces the third edition (ISO 4223-1:1989), which has been technically revised.

ISO 4223 consists of the following parts, under the general title *Definitions of some terms used in the tyre industry*:

— *Part 1: Pneumatic tyres*

— *Part 2: Solid tyres*

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Annex A forms a normative part of this part of ISO 4223.

Definitions of some terms used in the tyre industry —

Part 1: Pneumatic tyres

1 Scope

This part of ISO 4223 defines a number of significant terms related to pneumatic tyres used in the tyre industry, together with corresponding codes, symbols and values.

NOTE For other terms used in this field and their equivalents in other languages, see ISO 3877-1 to ISO 3877-4. For terms and definitions relating to wheels/rims, see ISO 3911.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 4223. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 4223 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 4251-4:1992, *Tyres (ply rating marked series) and rims for agricultural tractors and machines — Part 4: Tyre classification and nomenclature*
<http://standards.iteh.ai/catalog/standards/sist/c6335bb5-8c2c-4d04-987e-21601ed2bd4f/iso-4223-1-2002>

3 General terms and definitions

3.1 Category of use

3.1.1

normal

tyre for normal use

3.1.2

special

tyre intended for mixed use, both on or off road or for other special service

3.1.3

snow tyre

tyre whose tread pattern, tread compound and structure are primarily designed to achieve in snow conditions a performance better than that of a normal tyre with regard to its ability to initiate or maintain vehicle motion

3.1.4

temporary-use spare tyre

tyre different from the one intended to be fitted to a vehicle for normal driving conditions and intended only for temporary use under restricted driving conditions

3.1.5

T-type temporary-use spare tyre

temporary-use spare tyre designed for use at an inflation pressure higher than those established for standard and reinforced tyres

3.1.6

**reinforced
EXTRA LOAD**

description of a passenger car tyre designed for loads and an inflation pressure higher than those of the standard version

3.2 Service description

3.2.1

service description

tyre identification, additional to the **tyre size designation**, which consists of a load index (or two load indices in the case of single/dual fitments) and a speed symbol

3.2.1.1

load index

LI

numerical code associated with the maximum load a tyre can carry (except for loads at speeds above 210 km/h for passenger cars and motorcycle tyres) at the speed indicated by its speed symbol under service conditions specified by the tyre manufacturer

See Annex A, Table A.1.

3.2.1.2

speed symbol

maximum speed at which the tyre can carry a load corresponding to its load index (except for speeds above 210 km/h for passenger car and motorcycle tyres) under service conditions specified by the tyre manufacturer

See Annex A, Table A.2.

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3.3 Other general terms and definitions

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3.3.1

cold inflation pressure

internal pressure of the tyre at ambient temperature and not including any pressure build-up due to tyre usage

NOTE It is expressed in kilopascals (kPa).

3.3.2

grown tyre

tyre that has undergone expansion due to use in service

3.3.3

new tyre

tyre that has been neither used nor subjected to a retreading operation

NOTE Retreading is a generic term for used tyre reconditioning that extends the useful life of the tyre; it can cover the replacement of the tread rubber only or replacement of tread and sidewall rubbers.

3.3.4

rolling circumference

C_r

distance the centre of the tyre (axle) moves in one revolution of the tyre under specified conditions

3.3.5

rolling resistance

F_r

loss of energy (or energy consumed) per unit of distance

NOTE The SI unit conventionally used for the rolling resistance is the newton metre per metre (Nm/m). This is equivalent to the drag force in newtons (N).

3.3.6**tyre contact area** A_c

area of the flat surface contained within the virtual perimeter of the tyre footprint

NOTE It is expressed in square metres (m²).

3.3.7**tyre ground pressure** F/A_c

average unit load transmitted by the tyre through its contact area to the road surface, expressed, in kilonewtons per square metre (kN/m²), as the ratio between the vertical force, F , in static conditions on the axis of the wheel, and the tyre contact area, A_c , and measured with the tyre inflated at the cold inflation pressure recommended for the intended type of service

3.3.8**virtual perimeter**

(tyre footprint) convex polygonal curve circumscribing the smallest area containing all points of contact between the tyre and ground

4 Structure**4.1****structure**

(tyre) technical characteristics of the tyre's carcass

EXAMPLES Diagonal (bias-ply), bias-belted, radial

4.1.1**diagonal**

bias-ply
cross-ply

structure in which the ply cords extend to the bead and are laid at alternate angles of substantially less than 90° to the centreline of the tread

4.1.2**bias-belted**

structure of diagonal (bias-ply) type in which the carcass is restricted by a belt comprising two or more layers of substantially inextensible cord material

4.1.3**radial**

structure in which the ply cords extend to the beads and are laid substantially at 90° to the centreline of the tread, the carcass being stabilized by an essentially inextensible circumferential belt

5 Main components**5.1****bead**

part of the tyre shaped to fit the rim and having a core made of one or several essentially inextensible strands with the plies wrapped around the core

5.2**sidewall**

part of the tyre, excluding the tread, visible when the tyre, fitted to a rim, is viewed from the side

5.3

sidewall rubber

rubber layer on the sidewall of the tyre and over the carcass, which may include ornamental or protective ribs and fitting lines

5.4

tread

part of a pneumatic tyre that normally comes in contact with the ground

5.5

cord

textile or non-textile strands (threads) used in various components of the tyre carcass, plies, belts, breakers, etc.

5.6

ply

layer of rubber-coated parallel cords

5.7

inner liner

layer of rubber on the inside of the carcass used especially in tubeless tyres to minimize air loss

5.8

carcass

part of a tyre other than the tread and the sidewall rubber which, when inflated, bears the load

5.9

breaker (diagonal)

intermediate ply not extending to the bead

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5.10

belt

bracing ply

layer of material underneath the tread, laid substantially in the direction of the tread centreline, that restricts the carcass circumferentially

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5.11

lower sidewall

area below the line of maximum section width of the tyre, visible when the tyre, fitted to a rim, is viewed from the side

5.12

tread groove

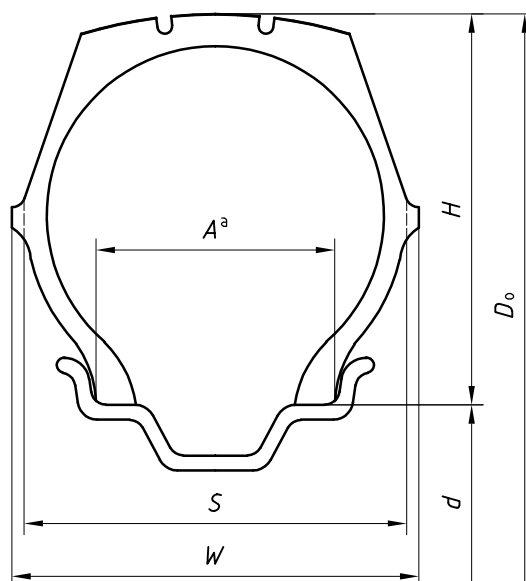
space between the adjacent ribs or blocks in the tread pattern

5.13

tread wear indicators

projections within the tread grooves designed to give a visual indication of the degree of wear of the tread

6 Dimensions (see Figure 1)



^a Specified rim width.

Figure 1 — Dimensions

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6.1 section width

S
linear distance between the outside of the sidewalls of an inflated tyre excluding elevations due to labelling (markings), decorations, or protective bands or ribs

6.2 overall width

W
linear distance between the outside of the sidewalls of an inflated tyre including elevations due to labelling (markings), decorations, or protective bands or ribs

6.3 maximum overall tyre width in service

overall width plus

- manufacturing tolerances, and
- tolerance for service growth

6.4 section height

H
half the difference between the overall diameter and the nominal rim diameter

6.5 overall diameter

D_o
diameter of an inflated tyre at the outermost surface of the tread