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**Tyres and rims for construction  
machines**

*Pneumatiques et jantes pour engins de construction*

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ISO 13442:2004

<https://standards.iteh.ai/catalog/standards/sist/79d92ad9-00aa-41f2-92f0-4dc1b6e7081b/iso-13442-2004>



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Published in Switzerland

## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13442 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*.

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# Tyres and rims for construction machines

## 1 Scope

This International Standard sets the designation, dimensions, load ratings and reference speeds for tyres and rims fitted to construction machines (backhoe loaders, small dumpers, loaders, excavators, etc.) operating on building sites under loading and transport conditions.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3877-1, *Tyres, valves, and tubes — List of equivalent terms — Part 1: Tyres*

ISO 4223-1, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres*

ISO 4250-1:1996, *Earth-mover tyres and rims — Part 1: Tyre designation and dimensions*

ISO 4250-3:1997, *Earth-mover tyres and rims — Part 3: Rims*

ISO 4251-3:1994, *Tyres (ply rating marked series) and rims for agricultural tractors and machines — Part 3: Rims*

ISO 4251-4, *Tyres (ply rating marked series) and rims for agricultural tractors and machines — Part 4: Tyre classification and nomenclature*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### haulage service

⟨transport⟩ cycle where machine self-loads or receives a load from loading equipment, transports it elsewhere and returns unloaded

NOTE Transportation occurs over unimproved surfaces at medium speeds and short distances, up to 4 km one way.

### 3.2 Slow speed service (loading)

#### 3.2.1

##### loading cycle

cycle where the machine is used to pick up material and move it a short distance away

NOTE Tyre loads fluctuate depending on the conditions involved when the equipment picks up the load. Transportation speeds are low, up to 10 km/h and distances are short, usually less than 150 m one way.

### 3.2.2

#### load and carry cycle

cycle where the machine, primarily intended for loader service, picks up a load, transports it elsewhere and returns unloaded

NOTE Transportation usually occurs over unimproved surfaces at low speeds, up to 25 km/h, and rather short distances, up to 600 m one way.

## 4 Tyre designation and marking

### 4.1 General

The designation of the tyre shall be shown on its sidewall and shall include the details in 4.2 and 4.3. It may also include those details given in 4.4 and 4.5, unless otherwise indicated in Tables 3 and 4.

### 4.2 Tyre size and construction code

#### 4.2.1 General

Construction machine tyres are designated by the nominal section width, tyre construction code and nominal rim diameter code. In addition, the low section height tyres are designated, with the nominal aspect ratio or an "L" after the nominal section width or a code prior to the nominal section width. (For designation/marketing/size examples, see 4.5.)

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#### 4.2.2 Nominal section width

The nominal section width is expressed by a code. It shall be expressed in millimetres for new sizes, ending in 5.

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#### 4.2.3 Nominal aspect ratio

The nominal aspect ratio shall be expressed as a percentage and shall be a multiple of 5.

#### 4.2.4 Tyre construction code

The tyre construction code shall be as follows:

- a dash (—) for diagonal/bias construction;
- "R" for radial construction; in addition, the word "radial" may also appear on the tyre.

#### 4.2.5 Nominal rim diameter code

The nominal rim diameter shall be expressed by a code given in Table 7 of ISO 4250-3:1997 and in Table 1 of ISO 4251-3:1994.

#### 4.2.6 Diameter code

The diameter of some low section height tyres should be expressed as a code and included in size prior to nominal section width.

EXAMPLE 23X8. 50-12

### 4.3 Index of strength

#### 4.3.1 General

The term is used to identify a given tyre with its maximum recommended load when used in a specific type of service. One of the markings specified in 4.3.2, 4.3.3 or 4.4 shall be shown.

#### 4.3.2 Diagonal tyres

The tyre strength of diagonal/bias tyres shall be expressed by a numerical code in conjunction with the letters "PR" (ply rating).

EXAMPLE 16 PR

#### 4.3.3 Radial tyres

The tyre strength of radial tyres shall be expressed by a symbol in the form of 1, 2 or 3 stars (symbol marking).

EXAMPLE \*\*

### 4.4 Service description

#### 4.4.1 General

The service condition characteristics or service description shall be indicated as follows:

Load index	Speed symbol
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For the specific type of service, construction tyres shall be marked with one or — as applicable — several service descriptions. <https://standards.iteh.ai/catalog/standards/sist/79d92ad9-00aa-41f2-92f0-4dc1b6e7081b/iso-13442-2004>

#### 4.4.2 Load index

The load index is a numerical code associated with the maximum load a tyre can carry at the speed indicated by its speed symbol under the specified operating conditions.

The correlation between load indices and tyre load carrying capacity shall be in accordance with Table 1.

Table 1 — Correlation between load index (LI) and tyre load carrying capacity (TLCC)

LI	TLCC kg	LI	TLCC kg	LI	TLCC kg
83	487	118	1 320	153	3 650
84	500	119	1 360	154	3 750
85	515	120	1 400	155	3 875
86	530	121	1 450	156	4 000
87	545	122	1 500	157	4 125
88	560	123	1 555	158	4 250
89	580	124	1 600	159	4 375
90	600	125	1 650	160	4 500
91	615	126	1 700	161	4 625
92	630	127	1 750	162	4 750
93	650	128	1 800	163	4 875
94	690	129	1 850	164	5 000
95	710	130	1 900	165	5 150
96	730	131	1 950	166	5 300
97	750	132	2 000	167	5 450
98	775	133	2 060	168	5 600
99	800	134	2 120	169	5 800
100	825	135	2 180	170	6 000
101	850	136	2 240	171	6 150
102	875	137	2 300	172	6 300
103	900	138	2 360	173	6 500
104	925	139	2 430	174	6 700
105	950	140	2 500	175	6 900
106	975	141	2 575	176	7 100
107	1 000	142	2 650	177	7 300
108	1 030	143	2 725	178	7 500
109	1 030	144	2 800	179	7 750
110	1 060	145	2 900	180	8 000
111	1 090	146	3 000	181	8 250
112	1 120	147	3 075	182	8 500
113	1 150	148	3 150	183	8 750
114	1 180	149	3 250	184	9 000
115	1 215	150	3 350	185	9 250
116	1 250	151	3 450	186	9 500
117	1 285	152	3 550		

4.4.3 Speed symbol

The speed symbol is a symbol indicating the maximum speed at which a tyre can carry a load corresponding to its load index under the specified operating condition.

The correlation between speed symbols and reference speeds/operating conditions shall be in accordance with Table 2.



Table 2 — Correlation between speed symbol, reference speed/operating condition

Speed symbol	Reference speed km/h	Operating condition
A2	10	Slow speed service (loading)
A4	20	
A6	30	
A8	40	
B	50	Haulage service (transport)
D	65	
E	70	

## 4.5 Other service characteristics

### 4.5.1 Tubeless

In the case of tubeless tyres, the marking "Tubeless" shall be shown on the tyre.

### 4.5.2 Preferred direction of rotation

The preferred direction of rotation shall be indicated by an arrow.

### 4.5.3 Code system for tyre usage

Tyres may be identified by their type of service and tread design in accordance with ISO 4250-1:1996, Tables 4 and 5; and ISO 4251-4.

## 4.6 Examples for designation/markings of construction machine tyres

See Table 3.

Table 3 — Designation/markings examples

Radial tyres		
Tyre size designation	Load index	Speed symbol
17.5R25	176	A2
525/80R25	168	B
	179	A2
14.9R24	142	B
17.5LR24	154	A2
Diagonal tyres		
Tyre size designation	Ply rating	
23 X8.50-12	6 PR	
16.9-28	8 PR	
12.5/70-16	6 PR	