

INTERNATIONAL  
STANDARD

ISO  
10571

Third edition  
2016-04-01

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## **Tyres for mobile cranes and similar specialized machines**

*Pneumatiques pour grues mobiles et engins spéciaux similaires*



Reference number  
ISO 10571:2016(E)

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

The committee responsible for this document is ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 6, *Off-the-road tyres and rims*.

This third edition cancels and replaces the second edition (ISO 10571:2011), which has been technically revised.

# Tyres for mobile cranes and similar specialized machines

## 1 Scope

This International Standard specifies the designation, dimensions, load ratings and reference speed for tyres and rims fitted to vehicles, such as all-terrain equipment, mobile cranes, crash tenders, etc., likely to operate on highway over long distances at reference speed and under constant load.

## 2 Normative references

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

ISO 4209-1:2001, *Truck and bus tyres and rims (metric series) — Part 1: Tyres*

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

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

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4223-1 apply.

NOTE Equivalent terms are given in ISO 3877-1.

## 4 Tyre designation and marking

The designation of the tyre shall be shown on its sidewall and shall include the details in [4.1](#). Additional markings as shown in [4.2](#), [4.3](#) and [4.4](#) may also be included as required by regional regulations or practices.

### 4.1 Tyre size designation and service description

Tyres for mobile cranes in accordance with this International Standard shall be indicated as follows:

| Nominal<br>section<br>width | Nominal<br>aspect<br>ratio | Tyre<br>construction<br>code | Nominal<br>rim diameter<br>code | Service<br>description |
|-----------------------------|----------------------------|------------------------------|---------------------------------|------------------------|
|-----------------------------|----------------------------|------------------------------|---------------------------------|------------------------|

#### 4.1.1 Nominal section width

The nominal section width shall be expressed in millimetres, ending in “5”. See [Annex A](#) for nominal section width steps.

#### 4.1.2 Nominal aspect ratio

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

#### **4.1.3 Tyre construction code**

The tyre construction code shall be as follows:

— (dash) for diagonal/bias construction

“R” for radial ply construction.

In addition, the word “RADIAL” may also appear on the tyre.

#### **4.1.4 Nominal rim diameter code**

The nominal rim diameter shall be expressed by a code, in accordance with ISO 4250-3.

#### **4.1.5 Service description**

The service description may be indicated as follows:

Load index                      Speed symbol

##### **4.1.5.1 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.

The correlation between load indices and tyre load-carrying capacity (TLCC) is as given in [Table 1](#).

##### **4.1.5.2 Speed symbol**

The speed symbol indicates the speed category at which the tyre can carry the load corresponding to its load index.

Tyres for mobile cranes in accordance with this International Standard have speed symbol “E” or “F”, which correspond to 70 km/h and 80 km/h, respectively.

#### **4.2 Service identification (Regional option)**

The word “ROAD” may be used to identify these tyres that can be used on roads over long distances at reference speed and under constant load.

#### **4.3 Load range (Regional option)**

Where required by regional regulations, the tyre load range shall be as shown in [Table 2](#).

#### **4.4 Other service characteristics**

**4.4.1** In the case of tubeless tyres, the marking “TUBELESS” shall be shown on the tyre.

**4.4.2** In the case of a preferred direction of rotation of the tyre, an arrow shall be used to indicate that direction.

#### **4.5 Example**

A mobile crane tyre having the following characteristics shall be marked as “605/80R25 188E ROAD Load Range L”:

- a) a size and construction of
  - nominal section width 605 mm,

- nominal aspect ratio 80,
  - radial construction, and
  - nominal rim diameter code 25;
- b) a service description of
- load-carrying capacity 10 000 kg “Load Index 188”,
  - reference speed 70 km/h “Speed Symbol E”, and
  - reference inflation pressure of 700 kPa “Load Range L”;
- c) other characteristics:
- service identification “ROAD”.

## 5 Tyre dimensions

[Table 3](#) and [Table 4](#) show the following, for 95 series and 80 series tyres, respectively:

- a) tyre designation as indicated in [Clause 4](#);
- b) measuring rim width code;
- c) design tyre dimensions, i.e. section width and overall diameter;
- d) maximum tyre dimensions in-service.

## 6 Tyre load capacities

### 6.1 Basic tyre loads

Basic tyre load ratings at 70 km/h (speed symbol E) reference speed are given in [Table 5](#) and [Table 6](#) for 95 series and 80 series tyres, respectively, and at 80 km/h (speed symbol F) reference speed, in [Table 7](#) and [Table 8](#), for the 95 series and 80 series tyres, respectively.

### 6.2 Limitations

In some countries, there can be load/speed/inflation pressure limitations because of national requirements.

### 6.3 Tyre loads at speeds other than reference speed

When a tyre is fitted on a vehicle with a maximum speed capability different from the tyre reference speed, load capacities shall be modified as shown in [Table 9](#) and [Table 10](#).

### 6.4 Tyre selection

Speed symbol E tyres are used primarily for cranes with low speed capability (rough terrain applications). Cranes with higher speed capability (all-terrain applications) can require a speed symbol F tyre. Speed symbol E and speed symbol F tyres are not interchangeable on a given application because of the difference in their load carrying capability at the same speed (refer to [Table 5](#), [Table 6](#), [Table 7](#) and [Table 8](#)).

## 7 Approved rim contours

Approved rim contours are given in [Table 11](#) and [Table 12](#) for 95 series and 80 series tyres, respectively. For rim dimensions, see ISO 4250-3.

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

| Load index | TLCC<br>kg | Load index | TLCC<br>kg | Load index | TLCC<br>kg | Load index | TLCC<br>kg |
|------------|------------|------------|------------|------------|------------|------------|------------|
| 130        | 1 900      | 150        | 3 350      | 170        | 6 000      | 190        | 10 600     |
| 131        | 1 950      | 151        | 3 450      | 171        | 6 150      | 191        | 10 900     |
| 132        | 2 000      | 152        | 3 550      | 172        | 6 300      | 192        | 11 200     |
| 133        | 2 060      | 153        | 3 650      | 173        | 6 500      | 193        | 11 500     |
| 134        | 2 120      | 154        | 3 750      | 174        | 6 700      | 194        | 11 800     |
| 135        | 2 180      | 155        | 3 875      | 175        | 6 900      | 195        | 12 150     |
| 136        | 2 240      | 156        | 4 000      | 176        | 7 100      | 196        | 12 500     |
| 137        | 2 300      | 157        | 4 125      | 177        | 7 300      | 197        | 12 850     |
| 138        | 2 360      | 158        | 4 250      | 178        | 7 500      | 198        | 13 200     |
| 139        | 2 430      | 159        | 4 375      | 179        | 7 750      | 199        | 13 600     |
| 140        | 2 500      | 160        | 4 500      | 180        | 8 000      | 200        | 14 000     |
| 141        | 2 575      | 161        | 4 625      | 181        | 8 250      |            |            |
| 142        | 2 650      | 162        | 4 750      | 182        | 8 500      |            |            |
| 143        | 2 725      | 163        | 4 875      | 183        | 8 750      |            |            |
| 144        | 2 800      | 164        | 5 000      | 184        | 9 000      |            |            |
| 145        | 2 900      | 165        | 5 150      | 185        | 9 250      |            |            |
| 146        | 3 000      | 166        | 5 300      | 186        | 9 500      |            |            |
| 147        | 3 075      | 167        | 5 450      | 187        | 9 750      |            |            |
| 148        | 3 150      | 168        | 5 600      | 188        | 10 000     |            |            |
| 149        | 3 250      | 169        | 5 800      | 189        | 10 300     |            |            |

**Table 2 — Correlation between load range and reference inflation pressure**

| Reference inflation pressure<br>kPa | Tyre load range |
|-------------------------------------|-----------------|
| 700                                 | L               |
| 800                                 | M               |
| 900                                 | N               |
| 1 000                               | P               |



Table 3 — 95 series tyre dimensions

Dimensions in millimetres

| Tyre size designation | Measuring rim width code | Design tyre   |                  | In-service tyre       |                          |
|-----------------------|--------------------------|---------------|------------------|-----------------------|--------------------------|
|                       |                          | Section width | Overall diameter | Maximum overall width | Maximum overall diameter |
| 385/95 R 24           | 10.00                    | 379           | 1 369            | 409                   | 1 415                    |
| 385/95 R 25           | 10.00                    | 379           | 1 369            | 409                   | 1 415                    |
| 445/95 R 25           | 11.25                    | 435           | 1 481            | 483                   | 1 549                    |
| 505/95 R 25           | 13.00                    | 496           | 1 595            | 551                   | 1 672                    |
| 575/95 R 25           | 15.00                    | 566           | 1 727            | 628                   | 1 814                    |

Table 4 — 80 series tyre dimensions

Dimensions in millimetres

| Tyre size designation | Measuring rim width code | Design tyre   |                  | In-service tyre       |                          |
|-----------------------|--------------------------|---------------|------------------|-----------------------|--------------------------|
|                       |                          | Section width | Overall diameter | Maximum overall width | Maximum overall diameter |
| 395/80 R 25           | 12.00                    | 391           | 1 267            | 434                   | 1 317                    |
| 445/80 R 25           | 14.00                    | 445           | 1 347            | 494                   | 1 404                    |
| 525/80 R 25           | 17.00                    | 530           | 1 475            | 588                   | 1 542                    |
| 605/80 R 25           | 19.50                    | 610           | 1 603            | 677                   | 1 680                    |
| 685/80 R 25           | 22.00                    | 689           | 1 731            | 765                   | 1 819                    |

Table 5 — Basic tyre load ratings for 95 series speed symbol E tyres

| Tyre size designation | Load index | Basic tyre load | Reference inflation pressure | Optional load range |
|-----------------------|------------|-----------------|------------------------------|---------------------|
|                       |            | kg              | kPa                          |                     |
| 385/95 R 24           | 170        | 6 000           | 900                          | N                   |
| 385/95 R 25           | 170        | 6 000           | 900                          | N                   |
| 445/95 R 25           | 177        | 7 300           | 900                          | N                   |
| 505/95 R 25           | 186        | 9 500           | 900                          | N                   |
| 575/95 R 25           | 193        | 11 500          | 900                          | N                   |

Table 6 — Basic tyre load ratings for 80 series speed symbol E tyres

| Tyre size designation | Load index | Basic tyre load | Reference inflation pressure | Optional load range |
|-----------------------|------------|-----------------|------------------------------|---------------------|
|                       |            | kg              | kPa                          |                     |
| 395/80 R 25           | 165        | 5 150           | 700                          | L                   |
| 445/80 R 25           | 170        | 6 000           | 700                          | L                   |
| 525/80 R 25           | 179        | 7 750           | 700                          | L                   |
| 605/80 R 25           | 188        | 10 000          | 700                          | L                   |
| 685/80 R 25           | 195        | 12 150          | 700                          | L                   |

**Table 7 — Basic tyre load ratings for 95 series speed symbol F tyres**

| Tyre size designation | Load index | Basic tyre load | Reference inflation pressure | Optional load range |
|-----------------------|------------|-----------------|------------------------------|---------------------|
|                       |            | kg              | kPa                          |                     |
| 385/95 R 24           | 170        | 6 000           | 900                          | N                   |
| 385/95 R 25           | 170        | 6 000           | 900                          | N                   |
| 445/95 R 25           | 174        | 6 700           | 900                          | N                   |

**Table 8 — Basic tyre load ratings for 80 series speed symbol F tyres**

| Tyre size designation | Load index | Basic tyre load | Reference inflation pressure | Optional load range |
|-----------------------|------------|-----------------|------------------------------|---------------------|
|                       |            | kg              | kPa                          |                     |
| 445/80 R 25           | 170        | 6 000           | 700                          | L                   |
| 525/80 R 25           | 176        | 7 100           | 700                          | L                   |

**Table 9 — Variation in load carrying capacity with speed for speed symbol E tyres**

| Operating speed<br>km/h | Tyre load capacity<br>expressed as a percentage of load<br>capacity at reference speed |
|-------------------------|--|
| 30                      | 130  |
| 40                      | 124  |
| 50                      | 118  |
| 60                      | 112  |
| 70 (reference speed)    | 100  |
| 80                      | 82   |
| 90                      | 70   |
| 100                     | 60   |

**Table 10 — Variation in load carrying capacity with speed for speed symbol F tyres**

| Operating speed<br>km/h | Tyre load capacity<br>expressed as a percentage of load<br>capacity at reference speed |
|-------------------------|--|
| 30                      | 125  |
| 40                      | 115  |
| 50                      | 112  |
| 60                      | 110  |
| 70                      | 105  |
| 80 (reference speed)    | 100  |
| 90                      | 94   |
| 100                     | 85   |

**Table 11 — Approved rim contours for 95 series tyres**

| <b>Tyre size designation<sup>a</sup></b>   | <b>Approved rims</b>                       |
|--|--|
| 385/95 R 24  | 10.00W                                     |
| 385/95 R 25  | 10.00/1.5 and 9.50/1.7CR and 9.50/1.7CRL   |
| 445/95 R 25  | 11.25/2.0 and 11.00/1.7CR and 11.00/1.7CRL |
| 505/95 R 25  | 13.00/2.5                                  |
| 575/95 R 25  | 15.00/3.5                                  |
| <sup>a</sup> The tyre and rim wheel manufacturer should be consulted for confirmation of the suitability of the tyre/wheel assembly for the intended service or for use of alternative rims. |  |

**Table 12 — Approved rim contours for 80 series tyres**

| <b>Tyre size designation<sup>a</sup></b>   | <b>Approved rims</b>                       |
|--|--|
| 395/80 R 25  | 12.00/1.3                                  |
| 445/80 R 25  | 14.00/1.5 and 14.00/1.7CR and 14.00/1.7CRL |
| 525/80 R 25  | 17.00/2.0 and 17.00/1.7CR and 17.00/1.7CRL |
| 605/80 R 25  | 19.50/2.5                                  |
| 685/80 R 25  | 22.00/3.0                                  |
| <sup>a</sup> The tyre and rim wheel manufacturer should be consulted for confirmation of the suitability of the tyre/wheel assembly for the intended service or for use of alternative rims. |  |

## Annex A (normative)

### Nominal section width steps

| Tyre             | Nominal section width    | Increments<br>mm                                 |
|------------------|--------------------------|--|
| <b>95 series</b> | $\leq 385$               | (in accordance with ISO 4209-1:2001,<br>Annex B) |
|                  | $>385$ and $\leq 505$    | 60   |
|                  | $>505$ and $\leq 925$    | 70   |
|                  | $>925$                   | 100  |
| <b>80 series</b> | $\leq 445$               | 50   |
|                  | $>445$ and $\leq 685$    | 80   |
|                  | $>685$ and $\leq 1\ 185$ | 100  |
|                  | $>1\ 185$                | 120  |

## Bibliography

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

