INTERNATIONAL STANDARD

ISO 4250-1

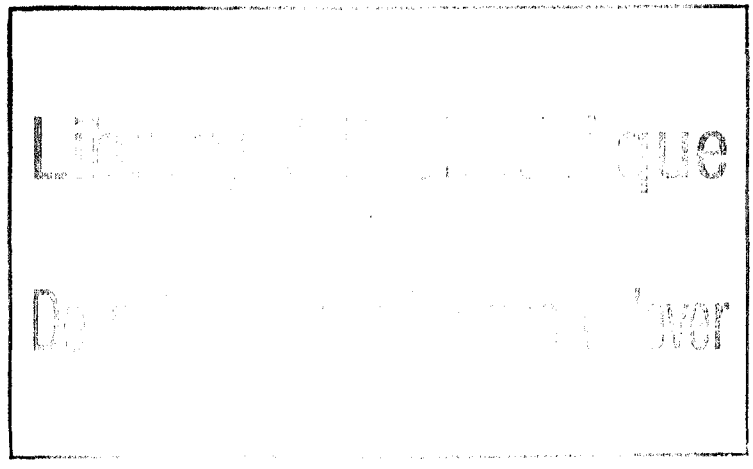
Second edition
1994-08-01

Earth-mover tyres and rims —

Part 1:
Tyre designation and dimensions

Pneumatiques et jantes pour engins de terrassement —

Partie 1: Désignation et cotes des pneumatiques



Reference number
ISO 4250-1:1994(E)

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.

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.

International Standard ISO 4250-1 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 6, *Off-the-road tyres and rims*.

This second edition cancels and replaces the first edition (ISO 4250-1:1988), of which it constitutes a technical revision.

ISO 4250 consists of the following parts, under the general title *Earth-mover tyres and rims*:

— *Part 1: Tyre designation and dimensions*

— *Part 2: Loads and inflation pressures*

— *Part 3: Rims*

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Earth-mover tyres and rims —

Part 1:
Tyre designation and dimensions

1 Scope

ISO 4250 consists of three parts (see the Foreword) laying down the technical elements relating to designation and dimensions of tyres and rims for earth-movers; it also gives load tables for these tyres.

This part of ISO 4250 specifies designations and dimensions for narrow and wide base off-road tyres and gives the recommended rims primarily intended for earth-moving machinery as defined in ISO 6165.

NOTE 1 Terms used are in accordance with ISO 3877-1:1978, *Tyres, valves and tubes — List of equivalent terms — Part 1: Tyres.*

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 4250. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 4250 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4223-1:1989, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres.*

ISO 4250-3:—[1], *Earth-mover tyres and rims — Part 3: Rims.*

ISO 6165:1987, *Earth-moving machinery — Basic types — Vocabulary.*

3 Definitions

For the purposes of this part of ISO 4250, the definitions given in ISO 4223-1 apply.

4 Tyre designation

The designation of tyres shall include the details in 4.1 and 4.2; it may include those in 4.3.

1) To be published. (Revision of ISO 4250-3:1987)

4.1 Tyre size and construction code

Tyres shall be designated by a two-part size marking, except as noted in the tables, as follows:

Nominal section width code – Nominal rim diameter code

Diagonal ply construction shall not be specially marked. Radial ply construction shall be identified by the letter "R" instead of the dash, before the nominal rim diameter code in the size designation. In addition, the word "RADIAL" may also appear on the tyre.

4.2 Index of tyre strength

The term is used to identify a given tyre with its maximum recommended load when used in a specific type of service.

4.3 Other markings

4.3.1 Preferred direction of rotation

The marking to indicate the preferred direction of rotation shall be an arrow.

4.3.2 Tubeless tyres

Tyres shall be marked "TUBELESS", if applicable.

4.3.3 Code for tyre usage

Tyres may be identified by their type of service and tread design as indicated in tables 1 and 2 respectively.

The use of these identification codes is at the discretion of the individual tyre manufacturer.

Table 1 — Type of service

Code	Type of service
C	Compactor
E	Earth-mover (dumper and tractor-scraper)
G	Grader
L	Loader

Table 2 — Tread design

Code	Tread type
C-1	Smooth
C-2	Grooved
E-1	Rib
E-2	Traction
E-3	Rock
E-4	Rock (deep tread)
E-7	Flotation
G-1	Rib
G-2	Traction
G-3	Rock
L-2	Traction
L-3	Rock
L-4	Rock (deep tread)
L-5	Rock (extra-deep tread)

NOTES

1 Where smooth treads are used in the "L" series, this should be denoted by the suffix "S" (for example, L-5S).

2 Code types 1, 2 and 3 are designated as normal tread depth.

4.3.4 Semi-drop-centre rims

"TG" shall be used to identify tyres mounted on semi-drop-centre (SDC) rims (see ISO 4250-3).

5 Tyre dimensions

The designation of dimension, measuring rim, design tyre dimension and maximum overall width in-service are given in

a) table 3 for narrow-base tyres;

b) table 4 for narrow-base tyres on SDC rims;

c) table 5 for wide-base tyres;

d) table 6 for narrow-base tyres on 15° rim contours;

e) table 7 for 65 series tyres.

6 Dual spacing

Recommended minimum dual spacing should be design section width × 1,2.

7 Recommended rims

Recommended rims are given in

a) table 8 for narrow-base tyres;

b) table 9 for diagonal and radial tyres for road graders;

c) table 10 for wide-base tyres;

d) table 11 for narrow-base tyres on 15° contour rims;

e) table 12 for diagonal and radial 65 series tyres.

NOTE 2 The tyre and rim/wheel manufacturers should however be consulted for confirmation of the suitability of the tyre/wheel assembly for the intended service.

8 Method of measurement of tyre dimensions

Before measuring, the tyre shall be mounted on a measuring rim, inflated to the recommended pressure, and allowed to stand for a minimum of 24 h at normal room temperature, after which the inflation pressure shall be readjusted to the original value.

Table 3 — Tyre dimensions for narrow-base tyres

Dimensions in millimetres

Tyre size designation	Measuring rim width code	Design new tyre[1]		In-service[2]	
		Section width S	Overall diameter[3] D_o	Maximum overall width W_{max}	Maximum overall diameter[3] $D_{o,max}$
12.00 — 20	8.50	315	1 146	340	1 184
12.00 — 21	8.50	315	1 146	340	1 184
12.00 — 24	8.50	315	1 247	340	1 285
12.00 — 25	8.50	315	1 247	340	1 285
13.00 — 24	10.00	351	1 301	379	1 342
13.00 — 25	10.00	351	1 301	379	1 342
14.00 — 20	10.00	375	1 266	405	1 311
14.00 — 21	10.00	375	1 266	405	1 311
14.00 — 24	10.00	375	1 368	405	1 414
14.00 — 25	10.00	375	1 368	405	1 414
16.00 — 20	11.25	432	1 391	480	1 460
16.00 — 21	11.25	432	1 391	480	1 460
16.00 — 24	11.25	432	1 493	480	1 561
16.00 — 25	11.25	432	1 493	480	1 561
18.00 — 24	13.00	498	1 615	553	1 693
18.00 — 25	13.00	498	1 615	553	1 693
18.00 — 33	13.00	498	1 818	553	1 896
18.00 — 49	13.00	498	2 227	553	2 306

Tyre size designation	Measuring rim width code	Design new tyre[1]		In-service[2]	
		Section width S	Overall diameter[3] D_o	Maximum overall width W_{max}	Maximum overall diameter[3] $D_{o,max}$
21.00 — 24	15.00	571	1 750	634	1 839
21.00 — 25	15.00	571	1 750	634	1 839
21.00 — 35	15.00	571	2 004	634	2 093
21.00 — 49	15.00	571	2 360	634	2 449
24.00 — 25	17.00	653	1 875	725	1 974
24.00 — 29	17.00	653	1 975	725	2 074
24.00 — 35	17.00	653	2 127	725	2 226
24.00 — 43	17.00	653	2 331	725	2 430
24.00 — 49	17.00	653	2 483	725	2 582
27.00 — 33	22.00	762	2 242	846	2 354
27.00 — 49	19.50	737	2 649	818	2 761
30.00 — 33	22.00	823	2 389	914	2 513
30.00 — 51	22.00	823	2 846	914	2 970
33.00 — 51	24.00	894	2 997	992	3 133
36.00 — 51	26.00	988	3 165	1 097	3 315
37.00 — 57	27.00	1 016	3 370	1 118	3 524
40.00 — 57	29.00	1 097	3 526	1 218	3 692

1) Design new tyre dimensions quoted are used for tyre design purposes only.

2) In-service dimensions are the maximum dimensions for grown tyres in-service for use by machine manufacturers in designing for tyre clearances.

The maximum overall width in-service is given by the equation

$$W_{max} = S(1 + d)$$

where

S is the design new tyre section width;

d is the tolerance: $d = 0{,}08$ for $S < 380$ mm

$d = 0{,}11$ for $S \geqslant 380$ mm

The maximum overall diameter in-service is given by the equation

$$D_{o,max} = (D_o - D_s)(1 + d) + D_s$$

where

D_s is the rim diameter specified in ISO 4250-3;

d is the tolerance: $d = 0{,}06$ for $S < 380$ mm

$d = 0{,}08$ for $S \geqslant 380$ mm

3) Figures are based on tyres with normal tread depth. The machine manufacturer should recognize that tyres with deep tread and corresponding increased overall diameter may be used.

Table 4 — Tyre dimensions for narrow-base tyres on SDC rims

Dimensions in millimetres

Tyre size designation[1) 2)]	Measuring rim width code	Design new tyre[3)]		In-service[4)]	
		Section width S	Overall diameter[5)] D_o	Maximum overall width W_{max}	Maximum overall diameter[5)] $D_{o,max}$
10.00 — 24 TG	8.00	283	1 151	306	1 184
12.00 — 24 TG	8.00	312	1 226	337	1 263
13.00 — 24 TG	8.00	333	1 278	360	1 318
14.00 — 24 TG	8.00	362	1 348	391	1 392
16.00 — 24 TG	10.00	427	1 459	474	1 527

1) For radial tyres, replace the dash (—) in the size designation with "R".

2) "TG" is a designation to be used to identify tyres mounted on SDC rims.

3) Design new tyre dimensions quoted are used for tyre design purposes only.

4) In-service dimensions are the maximum dimensions for grown tyres in-service for use by machine manufacturers in designing for tyre clearances.

The maximum overall width in-service is given by the equation

$$W_{max} = S(1 + d)$$

where

S is the design new tyre section width;

d is the tolerance: $d = 0{,}08$ for $S < 380$ mm

$d = 0{,}11$ for $S \geqslant 380$ mm

The maximum overall diameter in-service is given by the equation

$$D_{o,max} = (D_o - D_s)(1 + d) + D_s$$

where

D_s is the rim diameter specified in ISO 4250-3;

d is the tolerance: $d = 0{,}06$ for $S < 380$ mm

$d = 0{,}08$ for $S \geqslant 380$ mm

5) Figures are based on tyres with normal tread depth. The machine manufacturer should recognize that tyres with deep tread and corresponding increased overall diameter may be used.

Table 5 — Tyre dimensions for wide-base tyres

Dimensions in millimetres

Tyre size designation	Measuring rim width code	Design new tyre[1]		Design new tyre[2]	
		Section width S	Overall diameter[3] D_o	Maximum overall width W_{max}	Maximum overall diameter[3] $D_{o,max}$
15.5 — 25	12.00	394	1 277	437	1 328
17.5 — 25	14.00	445	1 348	494	1 405
20.5 — 25	17.00	520	1 492	577	1 561
23.5 — 25	19.50	597	1 617	663	1 696
26.5 — 25	22.00	673	1 750	747	1 839
26.5 — 29	22.00	673	1 851	747	1 940
29.5 — 25	25.00	750	1 873	833	1 972
29.5 — 29	25.00	750	1 975	833	2 074
29.5 — 35	25.00	750	2 127	833	2 226
33.25 — 29	27.00	845	2 090	938	2 198
33.25 — 35	27.00	845	2 242	938	2 350
33.5 — 33	28.00	850	2 242	944	2 354
33.5 — 39	28.00	850	2 395	944	2 507
37.25 — 35	31.00	946	2 389	1 050	2 509
37.5 — 33	32.00	952	2 389	1 057	2 513
37.5 — 39	32.00	952	2 541	1 057	2 665
37.5 — 51	32.00	952	2 846	1 057	2 970
40.5/75 — 39 [4]	32.00	1 029	2 581	1 142	2 708

1) Design new tyre dimensions quoted are used for tyre design purposes only.

2) In-service dimensions are the maximum dimensions for grown tyres in-service for use by machine manufacturers in designing for tyre clearances.

The maximum overall width in-service is given by the equation

$$W_{max} = S(1 + d)$$

where

S is the design new tyre section width;

d is the tolerance: $d = 0{,}08$ for $S < 380$ mm

$d = 0{,}11$ for $S \geqslant 380$ mm

The maximum overall diameter in-service is given by the equation

$$D_{o,max} = (D_o - D_s)(1 + d) + D_s$$

where

D_s is the rim diameter specified in ISO 4250-3;

d is the tolerance: $d = 0{,}06$ for $S < 380$ mm

$d = 0{,}08$ for $S \geqslant 380$ mm

3) Figures are based on tyres with normal tread depth. The machine manufacturer should recognize that tyres with deep tread and corresponding increased overall diameter may be used.

4) Special size designation.

Table 6 — Dimensions for narrow-base tyres mounted on 15° rim contours

Dimensions in millimetres

Tyre size designation	Measuring rim width code	Design new tyre[1]		In-service[2]	
		Section width S	Overall diameter[3] D_o	Maximum overall width W_{max}	Maximum overall diameter[3] $D_{o,max}$
27 — 56.5	20.00	653	2 483	725	2 582
30 — 56.5	22.00	737	2 649	818	2 761
33 — 59.5	23.50	808	2 846	897	2 970
36 — 59.5	27.00	899	2 997	998	3 133
39 — 59.5	27.00	973	3 165	1 080	3 315

1) Design new tyre dimensions quoted are used for tyre design purposes only.

2) In-service dimensions are the maximum dimensions for grown tyres in-service for use by machine manufacturers in designing for tyre clearances.

The maximum overall width in-service is given by the equation

$$W_{max} = S(1 + d)$$

where

S is the design new tyre section width;

d is the tolerance: $d = 0{,}08$ for $S < 380$ mm

$d = 0{,}11$ for $S \geqslant 380$ mm

The maximum overall diameter in-service is given by the equation

$$D_{o,max} = (D_o - D_s)(1 + d) + D_s$$

where

D_s is the rim diameter specified in ISO 4250-3;

d is the tolerance: $d = 0{,}06$ for $S < 380$ mm

$d = 0{,}08$ for $S \geqslant 380$ mm

3) Figures are based on tyres with normal tread depth. The machine manufacturer should recognize that tyres with deep tread and corresponding increased overall diameter may be used.