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Industrial tyres and rims — Rubber solid tyres (metric series) for pneumatic tyre rims —

Part 1: Designation, dimensions and marking

Pneumatiques et jantes industriels pour matériel de manutention — Bandages pleins en caoutchouc (série millimétrique) pour jantes de pneumatiques —

Partie 1: Désignation, cotes et marquage

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Foreword

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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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 7, *Industrial tyres and rims*.

This second edition cancels and replaces the first edition (ISO 10499-1:1991) which has been technically revised. It also incorporates the Technical Corrigendum ISO 10499-1:1991/Cor. 1:1997. The main changes compared to the previous edition are as follows:

— addition of a new subclause on overall diameter in Clause 6.

A list of all parts in the ISO 10499 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Industrial tyres and rims — Rubber solid tyres (metric series) for pneumatic tyre rims —

Part 1: Designation, dimensions and marking

1 Scope

This document specifies the main requirements, including designations, dimensions and markings, of the metric series of rubber solid tyres for pneumatic tyre rims primarily intended for industrial machines for use on prepared surfaces.

Rim contours fitting these tyres are specified in ISO 3739-1 and ISO 3739-3.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3739-1, *Industrial tyres and rims — Part 1: Pneumatic tyres (metric series) on 5 degrees tapered or flat base rims — Designation, dimensions and marking*

ISO 3877-4, *Tyres, valves and tubes — List of equivalent terms — Part 4: Solid tyres*

ISO 4223-2, *Definitions of some terms used in the tyre industry — Part 2: Solid tyres*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4223-2 and ISO 3877-4 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Tyre designations

4.1 General

The dimensional and constructional characteristics shall be indicated as shown in Figure 1:

Figure 1 — — Indication of dimensional and constructional characteristics

4.2 Nominal section width

The nominal section width of the tyre shall be indicated in millimetres, ending either in 0 or 5.

4.3 Nominal aspect ratio

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

4.4 Nominal rim diameter code

For tyres mounted on existing rims, the code shall be as given in Table 1.

Table 1 — Nominal rim diameter code

Nominal rim diameter code	Nominal rim diameter D_r mm
4	102
6	152
8	203
9	229
10	254
12	305
15	381
20	508

4.5 Nominal rim width code

For tyres mounted on existing rims, the code shall be as given in Table 2.

Table 2 — Nominal rim width code

Nominal rim width code
2.5
3.0
3.25
4.0
4.33
5.0
5.5
6.0
6.5
7.0
8.0
9.75
10.0
11.0
16.0

5 Marking

The marking shall consist of the four-part designation specified in Clause 4.

The location of the marking of the rim width code may be distinct but shall be in close proximity to the marking of the other dimensional characteristics.

For example:

225/75 – 15/6.5

225: nominal section width equal to 225 mm;

75: nominal aspect ratio equal to 75;

15: nominal rim diameter code corresponding to 381 mm;

6.5: nominal rim width code.

6 Tyre dimensions

6.1 General

The specified dimensional data for solid tyres for pneumatic tyre rims are maximum dimensions and shall satisfy the requirements in 6.2, 6.3 and 6.4.

6.2 Tyre section width

The tyre section width shall not exceed the values of design section width for pneumatic tyres of the same size designation as specified in ISO 3739-1.

6.3 Tyre section height

The tyre section height shall not exceed the values of design section height for pneumatic tyres of the same size designation as specified in ISO 3739-1.

The tyre overall diameter is equal to the nominal rim diameter, D_r, plus twice the tyre section height.

6.4 Overall diameter

To achieve similar static radius to the corresponding pneumatic tyre, the effective maximum outer diameter of the solid tyre is 2 % smaller compared to the corresponding pneumatic tyre.

For new solid tyre sizes which have no corresponding pneumatic tyre, it is recommended to define a "virtual" pneumatic tyre and define section width, section height and outer diameter according to 6.2 and 6.3.

7 Tyre size range

The relevant size range for the recommended metric series of solid tyres for pneumatic tyre rims and their specified maximum dimensions are shown in Table 3.

Table 3 — Recommended size range and dimensions for solid tyres for pneumatic tyre rims

Nominal tyre section width mm	Nominal rim diameter code	Rim width code	Maximum tyre section width mm	Maximum overall diameter mm				
				Nominal aspect ratio				
				85 %	80 %	75 %	70 %	65 %
100	4	2.5	98	266	256	247	237	227
110	4	3.25	112	283	272	261	250	240
125	4	3.25	123	308	296	283	271	259
140	4	4.0	141	333	319	305	292	278
160	4	4.0	156	366	350	335	319	303
180	4	5.0	180	399	382	364	347	329
200	4	5.0	195	433	413	394	374	354
100	6	2.5	98	316	306	296	287	277
110	6	3.25	112	333	322	311	300	289
125	6	3.25	123	358	345	333	321	309
140	6	4.0	141	383	369	355	341	328
160	6	4.0	156	416	400	385	369	353
180	6	5.0	180	449	432	414	396	379
200	6	5.0	195	483	463	443	424	404
100	8	2.5	98	366	356	346	336	327
110	8	3.25	112	382	372	361	350	339
125	8	3.0	123	407	395	383	371	358
125	8	3.25	123	407	395	383	371	358
140	8	4.0	141	432	419	405	391	377
150	8	4.33	152	449	434	420	405	390
160	8	4.0	156	466	450	434	419	403
180	8	4.33	174	499	481	464	446	428
180	8	5.0	180	499	481	464	446	428
200	8	5.0	195	532	513	493	474	454
225	8	6.5	228	574	552	530	508	486
125	9	3.25	123	432	420	408	396	383
140	9	4.0	141	457	444	430	416	402
160	9	4.0	156	491	475	459	444	428
180	9	5.0	180	524	506	489	471	453
200	9	5.0	195	557	538	518	498	479
200	9	6.0	205	557	538	518	498	479
225	9	6.5	228	599	577	555	533	511
160	10	4.0	156	515	500	484	468	453
180	10	5.0	180	549	531	514	496	478
200	10	5.0	195	582	563	543	523	504
225	10	6.5	228	624	602	580	558	536
250	10	6.5	246	665	641	616	592	567
280	10	8.0	283	715	688	661	633	606
160	12	4.0	156	565	550	534	518	503
180	12	5.0	180	599	581	563	546	528
200	12	5.0	195	632	612	593	573	554

Table 3 *(continued)*

Nominal tyre section width mm	Nominal rim diameter code	Rim width code	Maximum tyre section width mm	Maximum overall diameter mm				
				Nominal aspect ratio				
				85 %	80 %	75 %	70 %	65 %
225	12	6.5	228	674	652	629	607	585
250	12	6.5	246	715	691	666	642	617
250	12	8.0	261	715	691	666	642	617
280	12	8.0	283	765	738	710	683	655
315	12	8.0	308	823	793	762	731	700
160	15	4.0	156	640	624	609	593	577
180	15	5.0	180	673	656	638	620	603
200	15	5.0	195	707	687	667	648	628
205	15	5.5	203	715	695	675	655	635
225	15	6.5	228	748	726	704	682	660
225	15	7.0	233	748	726	704	682	660
250	15	6.5	246	790	765	741	716	692
250	15	7.0	251	790	765	741	716	692
280	15	8.0	283	840	812	785	758	730
315	15	8.0	308	898	867	836	806	775
355	15	9.75	355	965	930	895	860	826
355	15	10.0	357	965	930	895	860	826
400	15	11.0	400	1040	1001	961	922	883
355	20	10.0	343	1089	1054	1020	985	950
465	20	16.0	479	1273	1227	1181	1136	1090