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ISO 3739-1

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Industrial tyres and rims —

Part 1:
Pneumatic tyres (metric series) on 5° tapered or flat base rims — Designation, dimensions and marking

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Pneumatiques et jantes pour matériel de manutention —

Partie 1: Pneumatiques (série millimétrique) montés sur jantes coniques à 5° ou à base plate — Désignation, cotes et marquage

ISO 3739-1:1992
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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.

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 3739-1 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Sub-Committee SC 7, *Industrial tyres and rims*.

ISO 3739 consists of the following parts, under the general title *Industrial tyres and rims*:

— *Part 1: Pneumatic tyres (metric series) on 5 degrees tapered or flat base rims — Designation, dimensions and marking*

— *Part 2: Pneumatic tyres (metric series) on 5 degrees tapered or flat base rims — Load ratings*

— *Part 3: Rims*

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Industrial tyres and rims —

Part 1:
Pneumatic tyres (metric series) on 5° tapered or flat base rims — Designation, dimensions and marking

1 Scope

This part of ISO 3739 specifies the main requirements, including designations, dimensions and markings of the metric series of pneumatic tyres primarily intended for industrial vehicles for use on prepared surfaces. The tyres are based on the following parameters:

a) speeds not exceeding 50 km/h;

b) use on 5° tapered or flat base rims;

c) rim diameters not exceeding rim diameter code of 15.

NOTE 1 The extension of the range of this nominal rim diameter code may be considered.

ISO 3739-2 deals with load ratings; ISO 3739-3 deals with rim contours for these tyres.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3739. 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 3739 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 31-0:1981, *General principles concerning quantities, units and symbols.*

ISO 3877-1:1978, *Tyres, valves and tubes — List of equivalent terms — Part 1: Tyres.*

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

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3 Definitions

For definitions of terms relating to tyres, see ISO 4223-1; equivalent terms are given in ISO 3877-1.

4 Tyre designations

4.1 Dimensional and constructional characteristics

The characteristics shall be indicated as follows:

Nominal section width	/	Nominal aspect ratio	Tyre construction code	Nominal rim diameter code

4.1.1 Nominal section width

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

4.1.2 Nominal aspect ratio

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

4.1.3 Tyre construction code

The tyre construction code shall be as follows:

D or "—" (a dash) for diagonal construction;

R for radial ply construction.

4.1.4 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

4.2 Service condition characteristics

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

Load index Speed symbol

4.2.1 Load index

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

The correlation between load indices and tyre load-carrying capacities shall be as given in table 2.

4.2.2 Speed symbol

The speed symbol shall be as given in table 3. The speed symbol or speed category indicates the reference speed defined as the speed at which the tyre can carry the load corresponding to its load index under the specified service conditions.

The reference speed for tyre load identification of industrial tyres shall be 25 km/h, i.e. speed symbol A5.

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Table 2 — Correlation between load index (LI) and tyre load-carrying capacity (TLCC)

LI	TLCC kg	LI	TLCC kg	LI	TLCC kg	LI	TLCC kg	LI	TLCC kg
40	140	80	450	120	1 400	160	4 500	200	14 000
41	145	81	462	121	1 450	161	4 625	201	14 500
42	150	82	475	122	1 500	162	4 750	202	15 000
43	155	83	487	123	1 550	163	4 875	203	15 500
44	160	84	500	124	1 600	164	5 000	204	16 000
45	165	85	515	125	1 650	165	5 150	205	16 500
46	170	86	530	126	1 700	166	5 300	206	17 000
47	175	87	545	127	1 750	167	5 450	207	17 500
48	180	88	560	128	1 800	168	5 600	208	18 000
49	185	89	580	129	1 850	169	5 800	209	18 500
50	190	90	600	130	1 900	170	6 000	210	19 000
51	195	91	615	131	1 950	171	6 150	211	19 500
52	200	92	630	132	2 000	172	6 300	212	20 000
53	206	93	650	133	2 060	173	6 500	213	20 600
54	212	94	670	134	2 120	174	6 700	214	21 200
55	218	95	690	135	2 180	175	6 900	215	21 800
56	224	96	710	136	2 240	176	7 100	216	22 400
57	230	97	730	137	2 300	177	7 300	217	23 000
58	236	98	750	138	2 360	178	7 500	218	23 600
59	243	99	775	139	2 430	179	7 750	219	24 300
60	250	100	800	140	2 500	180	8 000	220	25 000
61	257	101	825	141	2 575	181	8 250	221	25 750
62	265	102	850	142	2 650	182	8 500	222	26 500
63	272	103	875	143	2 725	183	8 750	223	27 250
64	280	104	900	144	2 800	184	9 000	224	28 000
65	290	105	925	145	2 900	185	9 250	225	29 000
66	300	106	950	146	3 000	186	9 500	226	30 000
67	307	107	975	147	3 075	187	9 750	227	30 750
68	315	108	1 000	148	3 150	188	10 000	228	31 500
69	325	109	1 030	149	3 250	189	10 300	229	32 500
70	335	110	1 060	150	3 350	190	10 600	230	33 500
71	345	111	1 090	151	3 450	191	10 900	231	34 500
72	355	112	1 120	152	3 550	192	11 200	232	35 500
73	365	113	1 150	153	3 650	193	11 500	233	36 500
74	375	114	1 180	154	3 750	194	11 800	234	37 500
75	387	115	1 215	155	3 875	195	12 150	235	38 750
76	400	116	1 250	156	4 000	196	12 500	236	40 000
77	412	117	1 285	157	4 125	197	12 850	237	41 250
78	425	118	1 320	158	4 250	198	13 200	238	42 500
79	437	119	1 360	159	4 375	199	13 600	239	43 750

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Table 3 — Correlation between speed symbol and speed category

Speed symbol	Speed category km/h
A2	10
A3	15
A4	20
A5[1]	25[1]
A6	30
A7	35
A8	40
B	50

1) See 4.2.2.

4.3 Other service characteristics

4.3.1 The word "TUBELESS" shall be used to characterize tyres that can be used without a tube.

4.3.2 Specific indications, if required, may be added to show for example the preferred direction of rotation, indicated by an arrow.

5 Marking

5.1 General marking

The marking shall consist of

a) the designation of the dimensional and constructional characteristics;

b) the designation of the service condition characteristics (load index and speed symbol);

c) the designation of other service characteristics.

The location of the marking of the service condition characteristics (load index and speed symbol) shall be distinct but in the vicinity of the marking of the dimensional and constructional characteristics.

No location is specified for the markings related to other service characteristics (see 4.3.1 and 4.3.2).

EXAMPLE

180/65R9	marking of dimensional and constructional characteristics
116 A5	marking of load index and speed symbol (distinct location but in the vicinity of the preceding marking)
TUBELESS	location left to the discretion of the tyre manufacturer

The characteristics of a tyre with the above markings are as follows:

180:	nominal section width equal to 180 mm;
65:	nominal aspect ratio equal to 65;
R:	radial ply construction;
9:	nominal rim diameter code, corresponding to 229 mm;
116:	load index (LI) corresponding to a tyre load of 1 250 kg;
A5:	speed symbol corresponding to a speed category of 25 km/h;
TUBELESS:	tyre to be used without a tube.

5.2 Maximum speed marking

If the maximum speed of a tyre is less than 50 km/h, its actual maximum speed shall be marked on the tyre, for example "40 km/h max." or "max. 40 km/h".

6 Tyre dimensions

The formulae-derived values for design tyre dimensions shall be rounded to the nearest millimetre. For rounding of values, see ISO 31-0, annex B.

6.1 Calculation of "design tyre" dimensions

6.1.1 Theoretical rim width, R_{th}

The theoretical rim width, R_{th}, is equal to the product of the nominal section width, S_N, and the rim/section ratio, K_1:

$$R_{th} = K_1 S_N$$

For industrial tyres mounted on 5° tapered and flat base rims, $K_1 = 0{,}7$ applies for tyres having nominal aspect ratios (H/S) from 65 to 85 inclusive.

NOTE 2 Other K_1 values may be defined later for other tyre and rim types.

6.1.2 Design tyre section width, S

The design tyre section width, S, is the nominal section width, S_N, transferred from the theoretical rim, R_{th}, to the measuring rim, R_m:

$$S = S_N + 0{,}4(R_m - R_{th})$$

where R_m and R_{th} are expressed in millimetres.

6.1.3 Design tyre section height, H

The design tyre section height, H, is equal to the product of the nominal section width, S_N, and the nominal aspect ratio, H/S (H/S expressed as a percentage):

$$H = S_N \frac{H/S}{100}$$

6.1.4 Design tyre overall diameter, D_o

The design tyre overall diameter, D_o, is the sum of the nominal rim diameter, D_r, plus twice the design tyre section height, H:

$$D_o = D_r + 2H$$

For the values of D_r to be used, see table 1.

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