

Revised

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 65

STEEL TUBES
SUITABLE FOR SCREWING
IN ACCORDANCE WITH ISO RECOMMENDATION R 7

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 65, *Steel Tubes, Suitable for Screwing in accordance with ISO Recommendation R 7*, was drawn up by Technical Committee ISO/TC 5, *Pipes and Fittings*, the Secretariat of which is held by the Association Suisse de Normalisation (SNV).

At its first meeting, held in Zurich, in May 1951, the Technical Committee assigned the standardization of steel tubes, suitable for screwing in accordance with ISO Recommendation R 7, to its Sub-Committee ISO/TC 5/SC 1, *Gas List Tubes and other Steel Pipes*. The study was made on parallel lines with ISO Recommendation R 64, *Steel Tubes - Outside Diameters*, and on the basis of ISO Recommendation R 7, *Pipe Threads for Gas List Tubes and Screwed Fittings, where Pressure-Tight Joints are made on the Threads (1/8 inch to 6 inches)*.

At its meetings in Zurich, in May 1952 and November 1953, Sub-Committee 1 considered outside diameters, from 1/8 inch to 6 inches nominal bore, in conjunction with their tolerances. At Dusseldorf, in June 1954, the wall thicknesses, and especially the minimum wall thicknesses, remaining under the thread, were discussed. As a result of the Sub-Committee's meeting in Paris, in November 1954, and that of its working group in London, in February 1955, a first draft proposal was put forward.

After several other meetings, a new document was drafted, which took into account, to a large extent, the wall thicknesses and the light series II tubes, with smaller tolerances, in use in the United Kingdom. This document was adopted by the Sub-Committee, at its meeting in Rigi-Kaltbad, in July 1956, and by the Technical Committee, as a Draft ISO Recommendation.

On 10 April 1957, the Draft was sent out to all ISO Member Bodies and was approved by the following 23 Member Bodies (out of a total of 38):

*Australia	Germany	Norway
Austria	*Greece	*Portugal
Belgium	Hungary	Spain
*Canada	India	Sweden
Czechoslovakia	*Ireland	Switzerland
Denmark	Italy	Union
Finland	Netherlands	of South Africa
France	New Zealand	United Kingdom

No Member Body opposed the approval of the Draft.

In April 1958, the ISO Council decided, by correspondence, to accept the Draft ISO Recommendation as an ISO RECOMMENDATION.

* These Member Bodies stated that they had no objection to the Draft being approved.

STEEL TUBES
SUITABLE FOR SCREWING
IN ACCORDANCE WITH ISO RECOMMENDATION R 7

The present ISO Recommendation establishes the dimensions and the characteristics of seamless and welded steel tubes for four separate series, namely:

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The dimensions in millimetres and in inches, given in the tables, are considered to be "Corresponding values", although some of them are not exact equivalents. In all cases, however, the dimensions ensure practicable interchangeability.

The conventional masses have been determined by taking the arithmetical mean between the theoretical masses calculated with the formulae:

$$m = (D-t) t \times 0.0246615 \text{ kg/m} \quad \text{for the metric system}$$

$$m = (D-t) t \times 10.68142 \text{ lb/ft} \quad \text{for the inch system}$$

where

m = mass by unit of length,
 D = mean outside diameter,
 t = mean wall thickness,

and the conversion factor

$$1 \text{ lb/ft} = 1.48816 \text{ kg/m.}$$

1. HEAVY SERIES

Seamless and Welded Steel Tubes

1.1 DIMENSIONS

Nominal bore		Outside diameter				Thickness		Conventional mass			
		Corresponding values						Corresponding values		of plain-end tubes	
in	mm	Max.	Min.	Max.	Min.	mm	in			kg/m	lb/ft
1/8	6	10.6	9.8	0.417	0.386	2.65	0.104	0.493	0.331	0.496	0.333
1/4	8	14.0	13.2	0.551	0.520	2.9	0.116	0.769	0.517	0.773	0.520
3/8	10	17.5	16.7	0.689	0.657	2.9	0.116	1.02	0.686	1.03	0.690
1/2	15	21.8	21.0	0.858	0.827	3.25	0.128	1.45	0.977	1.46	0.983
3/4	20	27.3	26.5	1.075	1.043	3.25	0.128	1.90	1.27	1.91	1.28
1	25	34.2	33.3	1.346	1.311	4.05	0.160	2.97	2.00	2.99	2.01
1 1/4	32	42.9	42.0	1.689	1.654	4.05	0.160	3.84	2.58	3.87	2.60
1 1/2	40	48.8	47.9	1.921	1.886	4.05	0.160	4.43	2.98	4.47	3.01
2	50	60.8	59.7	2.394	2.350	4.5	0.176	6.17	4.14	6.24	4.19
2 1/2	65	76.6	75.3	3.016	2.965	4.5	0.176	7.90	5.31	8.02	5.39
3	80	89.5	88.0	3.524	3.465	4.85	0.192	10.1	6.76	10.3	6.87
3 1/2	90	102.1	100.4	4.020	3.953	4.85	0.192	11.6	7.76	11.8	7.88
4	100	115.0	113.1	4.528	4.453	5.4	0.212	14.4	9.71	14.7	9.91
5	125	140.8	138.5	5.543	5.453	5.4	0.212	17.8	12.0	18.3	12.3
6	150	166.5	163.9	6.555	6.453	5.4	0.212	21.2	14.3	21.8	14.7

1.2 THREAD

According to ISO Recommendation R 7.*

1.3 SOCKET

Minimum socket length according to ISO Recommendation R 50.**

1.4 TOLERANCES ON THICKNESS

+ Not limited

— 12.5 per cent

— 15 per cent on isolated areas, on a length not exceeding twice the outside diameter, provided this reduction in thickness affects only the external surface.

1.5 TOLERANCES ON MASS

± 10 per cent for each tube

± 7.5 per cent per load of 10 t minimum.

1.6 LENGTHS

Unless otherwise specified, 13 ft to 23 ft (corresponding values 4 m to 7 m).

1.7 STEEL

To be defined in conjunction with Technical Committee ISO/TC 17, *Steel*.

1.8 HYDRAULIC TEST PRESSURE

700 lbf/in² (corresponding value 50 kgf/cm²).

1.9 APPLICATION

The national Committees lay down the limits of application for these tubes in accordance with the regulations in force in their country.

* ISO Recommendation R 7, *Pi. Threads for Gas List Tubes and Screwed Fittings, where Pressure-Tight Joints are made on the Threads (1/8 inch to 6 inches)*.

** ISO Recommendation R 50, *Steel Sockets, Screwed in accordance with ISO Recommendation R 7 - Minimum Lengths*.

2. MEDIUM SERIES

Seamless and Welded Steel Tubes

2.1 DIMENSIONS

Nominal bore		Outside diameter				Thickness		Conventional mass			
		Corresponding values				Corresponding values		of plain-end tubes		of screwed and socketed tubes	
		Max.	Min.	Max.	Min.						
in	mm	mm	mm	in	in	mm	in	kg/m	lb/ft	kg/m	lb/ft
1/8	6	10.6	9.8	0.417	0.386	2.0	0.080	0.407	0.273	0.410	0.275
1/4	8	14.0	13.2	0.551	0.520	2.35	0.092	0.650	0.437	0.654	0.440
3/8	10	17.5	16.7	0.689	0.657	2.35	0.092	0.852	0.573	0.858	0.577
1/2	15	21.8	21.0	0.858	0.827	2.65	0.104	1.22	0.822	1.23	0.828
3/4	20	27.3	26.5	1.075	1.043	2.65	0.104	1.58	1.06	1.59	1.07
1	25	34.2	33.3	1.346	1.311	3.25	0.128	2.44	1.64	2.46	1.65
1 1/4	32	42.9	42.0	1.689	1.654	3.25	0.128	3.14	2.11	3.17	2.13
1 1/2	40	48.8	47.9	1.921	1.886	3.25	0.128	3.61	2.43	3.65	2.46
2	50	60.8	59.7	2.394	2.350	3.65	0.144	5.10	3.42	5.17	3.47
2 1/2	65	76.6	75.3	3.016	2.965	3.65	0.144	6.51	4.38	6.63	4.46
3	80	89.5	88.0	3.524	3.465	4.05	0.160	8.47	5.69	8.64	5.80
3 1/2	90	102.1	100.4	4.020	3.953	4.05	0.160	9.72	6.53	9.90	6.65
4	100	115.0	113.1	4.528	4.453	4.5	0.176	12.1	8.14	12.4	8.34
5	125	140.8	138.5	5.543	5.453	4.85	0.192	16.2	10.9	16.7	11.2
6	150	166.5	163.9	6.555	6.453	4.85	0.192	19.2	12.9	19.8	13.3

2.2 THREAD

According to ISO Recommendation R 7.

2.3 SOCKET

Minimum socket length according to ISO Recommendation R 50.

2.4 TOLERANCES ON THICKNESS

+ Not limited

- 12.5 per cent

- 15 per cent on isolated areas, on a length not exceeding twice the outside diameter, provided this reduction in thickness affects only the external surface.

2.5 TOLERANCES ON MASS

\pm 10 per cent for each tube

\pm 7.5 per cent per load of 10 t minimum.

2.6 LENGTHS

Unless otherwise specified, 13 ft to 23 ft (corresponding values 4 m to 7 m).

2.7 STEEL

To be defined in conjunction with Technical Committee ISO/TC 17, *Steel*.

2.8 HYDRAULIC TEST PRESSURE

700 lbf/in² (corresponding value 50 kgf/cm²).

2.9 APPLICATION

The national Committees lay down the limits of application for these tubes in accordance with the regulations in force in their country.

3. LIGHT SERIES I

Seamless and Welded Steel Tubes

3.1 DIMENSIONS

Nominal bore		Outside diameter				Thickness		Conventional mass			
		Corresponding values				Corresponding values		of plain-end tubes		of screwed and socketed tubes	
in	mm	Max.	Min.	Max.	Min.	mm	in	kg/m	lb/ft	kg/m	lb/ft
1/8	6	10.4	9.7	0.409	0.383	1.8	0.072	0.369	0.248	0.372	0.250
1/4	8	13.9	13.2	0.547	0.518	2.0	0.080	0.573	0.385	0.577	0.388
3/8	10	17.4	16.7	0.685	0.656	2.0	0.080	0.747	0.502	0.753	0.506
1/2	15	21.7	21.0	0.854	0.825	2.35	0.092	1.10	0.737	1.11	0.743
3/4	20	27.1	26.4	1.067	1.041	2.35	0.092	1.41	0.948	1.42	0.958
1	25	34.0	33.2	1.339	1.309	2.9	0.116	2.21	1.49	2.23	1.50
1 1/4	32	42.7	41.9	1.681	1.650	2.9	0.116	2.84	1.91	2.87	1.93
1 1/2	40	48.6	47.8	1.913	1.882	2.9	0.116	3.26	2.19	3.30	2.22
2	50	60.7	59.6	2.390	2.347	3.25	0.128	4.56	3.06	4.63	3.11
2 1/2	65	76.3	75.2	3.004	2.960	3.25	0.128	5.81	3.90	5.93	3.98
3	80	89.4	87.9	3.520	3.460	3.65	0.144	7.65	5.14	7.82	5.25
3 1/2	90	101.8	100.3	4.008	3.950	3.65	0.144	8.77	5.89	8.95	6.01
4	100	114.9	113.0	4.524	4.450	4.05	0.160	11.0	7.39	11.3	7.59

3.2 THREAD

According to ISO Recommendation R 7.

3.3 SOCKET

Minimum socket length according to ISO Recommendation R 50.

3.4 TOLERANCES ON THICKNESS

+ Not limited

— 12.5 per cent

— 15 per cent on isolated areas, on a length not exceeding twice the outside diameter, provided this reduction in thickness affects only the external surface.

3.5 TOLERANCES ON MASS

± 10 per cent for each tube

± 7.5 per cent per load of 10 t minimum.

3.6 LENGTHS

Unless otherwise specified, 13 ft to 23 ft (corresponding values 4 m to 7 m).

3.7 STEEL

To be defined in conjunction with Technical Committee ISO/TC 17, *Steel*.

3.8 HYDRAULIC TEST PRESSURE

700 lbf/in² (corresponding value 50 kgf/cm²).

3.9 APPLICATION

The national Committees lay down the limits of application for these tubes in accordance with the regulations in force in their country.

4. LIGHT SERIES II

Welded Steel Tubes

4.1 DIMENSIONS

Nominal bore		Outside diameter				Thickness		Conventional mass			
		Corresponding values				Corresponding values		of plain-end tubes		of screwed and socketed tubes	
in	mm	Max.	Min.	Max.	Min.	mm	in	kg/m	lb/ft	kg/m	lb/ft
1/8	6	10.1	9.7	0.396	0.383	1.8	0.072	0.361	0.243	0.364	0.245
1/4	8	13.6	13.2	0.532	0.518	1.8	0.072	0.517	0.347	0.521	0.350
3/8	10	17.1	16.7	0.671	0.656	1.8	0.072	0.674	0.453	0.680	0.457
1/2	15	21.4	21.0	0.841	0.825	2.0	0.080	0.952	0.640	0.961	0.646
3/4	20	26.9	26.4	1.059	1.041	2.35	0.092	1.41	0.944	1.42	0.954
1	25	33.8	33.2	1.328	1.309	2.65	0.104	2.01	1.35	2.03	1.36
1 1/4	32	42.5	41.9	1.670	1.650	2.65	0.104	2.58	1.73	2.61	1.75
1 1/2	40	48.4	47.8	1.903	1.882	2.9	0.116	3.25	2.19	3.29	2.22
2	50	60.2	59.6	2.370	2.347	2.9	0.116	4.11	2.76	4.18	2.81
2 1/2	65	76.0	75.2	2.991	2.960	3.25	0.128	5.80	3.90	5.92	3.98
3	80	88.7	87.9	3.491	3.460	3.25	0.128	6.81	4.58	6.98	4.69
3 1/2	90	101.2	100.3	3.981	3.950	3.65	0.144	8.74	5.88	8.92	6.00
4	100	113.9	113.0	4.481	4.450	3.65	0.144	9.89	6.64	10.2	6.84

4.2 THREAD

According to ISO Recommendation R 7, except that the minimum length of thread may be reduced to 80 per cent of that shown in column 15 of ISO/R 7.

4.3 SOCKET

Minimum socket length according to ISO Recommendation R 50.

4.4 TOLERANCES ON THICKNESS

+ Not limited
- 8 per cent.

4.5 TOLERANCES ON MASS

+ 10 per cent
- 8 per cent } for each tube
± 5 per cent per load of 10 t minimum.

4.6 LENGTHS

Unless otherwise specified, 13 ft to 23 ft (corresponding values 4 m to 7 m).

4.7 STEEL

To be defined in conjunction with Technical Committee ISO/TC 17, *Steel*.

4.8 HYDRAULIC TEST PRESSURE

700 lbf/in² (corresponding value 50 kgf/cm²).

4.9 APPLICATION

The national Committees lay down the limits of application for these tubes in accordance with the regulations in force in their country.