

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1129

BOILER TUBES

DIMENSIONS, TOLERANCES AND CONVENTIONAL MASSES
PER UNIT LENGTH

1st EDITION

October 1969

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Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

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BRIEF HISTORY

The ISO Recommendation R 1129, *Boiler tubes – Dimensions, tolerances and conventional masses per unit length*, 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).

Work on this question led to the adoption of a Draft ISO Recommendation.

In January 1968, this Draft ISO Recommendation (No. 1495) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	India	South Africa, Rep. of
Belgium	Israel	Spain
Brazil	Italy	Sweden
Canada	Korea, Rep. of	Switzerland
Chile	Netherlands	Thailand
Colombia	New Zealand	Turkey
Czechoslovakia	Norway	U.A.R.
Denmark	Poland	United Kingdom
France	Portugal	

Three Member Bodies opposed the approval of the Draft :

Germany
Hungary
U.S.S.R.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in October 1969, to accept it as an ISO RECOMMENDATION.

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BOILER TUBES

DIMENSIONS, TOLERANCES AND CONVENTIONAL MASSES PER UNIT LENGTH

INTRODUCTION

The outside diameters, the thicknesses and conventional masses per unit length* have been taken from ISO Recommendation R 336, *Plain end tubes, welded or seamless – General table of dimensions and masses per unit length*.

1. SCOPE

This ISO Recommendation specifies the diameters, thicknesses, tolerances and conventional masses per unit length of fired tubes (including superheater tubes).

2. TOLERANCES

The tolerances permitted on the outside diameter and thickness of the tubes result from the method of manufacture, the steel type and the heat treatment. These tolerances should be selected from the following :

2.1 Tolerances on outside diameter

$D_2 : \pm 1 \% \quad \text{with a minimum of } \pm 0.5 \text{ mm (0.02 in)}$

$D_3 : \pm 0.75 \% \quad \text{with a minimum of } \pm 0.3 \text{ mm (0.012 in)}$

$D_4 : \pm 0.50 \% \quad \text{with a minimum of } \pm 0.1 \text{ mm (0.004 in)}$

2.2 Tolerances on thickness

$T_2 : \pm 12.5 \%$

$T_3 : \pm 10 \%$

$T_4 : \pm 7.5 \%$

* The conventional masses per unit length are applicable for carbon steel.

For boiler tubes of alloy steel, the conventional masses per unit length have to be modified according to the following coefficients for the respective kinds of steel :

austenitic steel :	1.015
ferritic and martensitic steel :	0.985

TABLE - Tube list

Outside Diameter		Thicknesses																					
mm	in	mm	2.0	2.3	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.4	5.6	5.9	6.3	7.1	8.0	8.8	10.0	11.0			
		in	0.080	0.092	0.104	0.116	0.128	0.144	0.160	0.176	0.192	—	—	0.212	0.219	0.232	0.250	0.281	0.312	0.344	0.375	—	0.438
Conventional masses per unit length																							
19	0.750	kg/m lb/ft	0.845 0.568	0.955 0.642	1.06 0.712	1.16 0.779	1.26 0.847	1.38 0.927	1.49 1.00	1.61 1.08	1.73 1.14												
21.3	0.840	kg/m lb/ft	0.962 0.646	1.09 0.732	1.21 0.813	1.33 0.894	1.44 0.968	1.59 1.07	1.72 1.16	1.87 1.26	2.01 1.34												
25	—	kg/m lb/ft	1.13	1.29	1.44	1.58	1.72	1.90	2.07	2.28		2.47	2.61	2.68	2.78	2.91							
25.4	1.000	kg/m lb/ft	1.16 0.779	1.32 0.887	1.47 0.988	1.62 1.09	1.76 1.18	1.95 1.31	2.12 1.42	2.31 1.55		2.52 1.66	2.66 1.79	2.73 1.83	2.83 1.90	2.97 2.00							
30	1.181	kg/m lb/ft	1.39 0.934	1.59 1.07	1.77 1.19	1.96 1.32	2.14 1.44	2.37 1.59	2.59 1.74	2.83 1.90		3.08 2.04	3.28 2.20	3.37 2.26	3.52 2.37	3.70 2.49							
31.8	1.250	kg/m lb/ft	1.48 0.994	1.68 1.13	1.88 1.26	2.08 1.40	2.27 1.53	2.52 1.69	2.76 1.85	3.02 2.03		3.30 2.17	3.51 2.36	3.60 2.42	3.76 2.53	3.97 2.67	4.33 2.91	4.68 3.14					
33.7	1.327	kg/m lb/ft	1.57 1.05	1.79 1.20	2.01 1.35	2.22 1.49	2.42 1.63	2.69 1.81	2.95 1.98	3.23 2.17		3.54 2.33	3.76 2.53	3.87 2.60	4.04 2.71	4.27 2.87	4.67 3.14	5.05 3.39	5.39 3.62				
38	1.500	kg/m lb/ft	1.79 1.20	2.04 1.37	2.29 1.54	2.53 1.70	2.77 1.86	3.08 2.07	3.38 2.27	3.71 2.49		4.07 2.68	4.34 2.92	4.47 3.00	4.67 3.14	4.95 3.33	5.43 3.65	5.91 3.97	6.33 4.25				
44.5	1.750	kg/m lb/ft	2.11 1.42	2.41 1.62	2.70 1.81	2.99 2.01	3.28 2.20	3.65 2.45	4.02 2.70	4.42 2.97		4.87 3.20	5.20 3.49	5.35 3.59	5.61 3.77	5.95 4.00	6.56 4.41	7.17 4.82	7.72 5.19	8.51 5.51			
51	2.000	kg/m lb/ft	2.43 1.63	2.78 1.87	3.12 2.10	3.46 2.32	3.79 2.55	4.23 2.84	4.66 3.13	5.13 3.45		5.67 3.71	6.05 4.07	6.24 4.19	6.54 4.39	6.95 4.67	7.69 5.17	8.43 5.66	9.10 6.11	10.1 6.51			
54	2.125	kg/m lb/ft	2.58 1.73	2.95 1.98	3.32 2.23	3.68 2.47	4.04 2.71	4.50 3.02	4.97 3.34	5.47 3.68		6.04 3.96	6.46 4.34	6.66 4.48	6.99 4.70	7.43 4.99	8.23 5.53	9.04 6.07	9.77 6.56	10.9 7.01			
57	2.250	kg/m lb/ft	2.74 1.84	3.13 2.10	3.52 2.37	3.90 2.62	4.28 2.88	4.78 3.21	5.27 3.54	5.81 3.90		6.41 4.22	6.87 4.62	7.08 4.76	7.44 5.00	7.91 5.32	8.77 5.89	9.65 6.48	10.4 6.99	11.6 7.51			
60.3	2.375	kg/m lb/ft	2.90 1.95	3.31 2.22	3.73 2.51	4.14 2.78	4.54 3.05	5.07 3.41	5.59 3.76	6.17 4.15		6.82 4.48	7.30 4.91	7.53 5.06	7.91 5.32	8.42 5.66	9.34 6.28	10.3 6.92	11.1 7.46	12.4 8.01			
63.5	2.500	kg/m lb/ft	3.06 2.06	3.50 2.35	3.93 2.64	4.36 2.93	4.79 3.22	5.36 3.60	5.91 3.97	6.52 4.38		7.21 4.73	7.72 5.19	7.97 5.36	8.37 5.62	8.91 5.99	9.90 6.65	10.9 7.32	11.8 7.93	13.2 8.51			
70	2.750	kg/m lb/ft	3.37 2.26	3.86 2.59	4.35 2.92	4.83 3.25	5.30 3.56	5.93 3.98	6.55 4.40	7.24 4.86		8.01 5.25	8.58 5.77	8.85 5.95	9.31 6.26	9.92 6.67	11.0 7.39	12.2 8.20	13.2 8.87	14.8 9.51			

NOTE. — The inclusion of a size in this table does not necessarily mean that it is available, though at some future date it may be.