

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION

### R 1129

BOILER TUBES

DIMENSIONS, TOLERANCES

AND CONVENTIONAL MASSES PER UNIT LENGTH

2nd EDITION

August 1971

This second edition supersedes the first edition

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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.

## BRIEF HISTORY RELATING TO THE SECOND EDITION

A draft revision of this Recommendation was then studied by Technical Committee ISO/TC 5 and, in 1971, the P-Members of the Committee instructed the Secretariat to submit the Draft to the ISO Council under the abbreviated procedure provided for in clause F.7.1 of the Directives for the technical work of ISO.

This draft revision was then submitted by correspondence to the ISO Council which decided to accept it as the second edition of ISO Recommendation R 1129.

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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 wall 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 values :

## 2.1 Tolerances on outside diameter

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

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

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

## 2.2 Tolerances on wall 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                    |       | Wall thicknesses |                |                |               |               |               |               |              |              |              |       |       |       |       |       |       |       |       |       |
|-------------------------------------|-------|------------------|----------------|----------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| mm                                  | in    | 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  |       |
|                                     |       | 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<br>lb/ft    | 0.845<br>0.568 | 0.955<br>0.642 | 1.06<br>0.712 | 1.16<br>0.779 | 1.26<br>0.847 | 1.38<br>0.927 | 1.49<br>1.00 | 1.61<br>1.08 | 1.73<br>1.14 | 1.73  | 1.73  | 1.73  | 1.73  | 1.73  | 1.73  | 1.73  | 1.73  | 1.73  |
| 21.3                                | 0.840 | kg/m<br>lb/ft    | 0.962<br>0.646 | 1.09<br>0.732  | 1.21<br>0.813 | 1.33<br>0.894 | 1.44<br>0.968 | 1.59<br>1.07  | 1.72<br>1.16 | 1.87<br>1.26 | 2.01<br>1.34 | 2.01  | 2.01  | 2.01  | 2.01  | 2.01  | 2.01  | 2.01  | 2.01  | 2.01  |
| 25                                  | —     | kg/m<br>lb/ft    | 1.13           | 1.29           | 1.44          | 1.58          | 1.72          | 1.90          | 2.07         | 2.28         | 2.47         | 2.47  | 2.47  | 2.47  | 2.47  | 2.47  | 2.47  | 2.47  | 2.47  | 2.47  |
| 25.4                                | 1.000 | kg/m<br>lb/ft    | 1.16<br>0.779  | 1.32<br>0.887  | 1.47<br>0.988 | 1.62<br>1.09  | 1.76<br>1.18  | 1.95<br>1.31  | 2.12<br>1.42 | 2.31<br>1.55 | 2.52<br>1.66 | 2.52  | 2.52  | 2.52  | 2.52  | 2.52  | 2.52  | 2.52  | 2.52  | 2.52  |
| 26.9                                | 1.059 | kg/m<br>lb/ft    | 1.24<br>0.833  | 1.41<br>0.947  | 1.57<br>1.05  | 1.73<br>1.16  | 1.89<br>1.27  | 2.09<br>1.40  | 2.28<br>1.53 | 2.48<br>1.67 | 2.70<br>1.79 | 2.70  | 2.70  | 2.70  | 2.70  | 2.70  | 2.70  | 2.70  | 2.70  | 2.70  |
| 30                                  | 1.181 | kg/m<br>lb/ft    | 1.39<br>0.934  | 1.59<br>1.07   | 1.77<br>1.19  | 1.96<br>1.32  | 2.14<br>1.44  | 2.37<br>1.59  | 2.59<br>1.74 | 2.83<br>1.90 | 3.08<br>2.04 | 3.08  | 3.08  | 3.08  | 3.08  | 3.08  | 3.08  | 3.08  | 3.08  | 3.08  |
| 31.8                                | 1.250 | kg/m<br>lb/ft    | 1.48<br>0.994  | 1.68<br>1.13   | 1.88<br>1.26  | 2.08<br>1.40  | 2.27<br>1.53  | 2.52<br>1.69  | 2.76<br>1.85 | 3.02<br>2.03 | 3.30<br>2.17 | 3.30  | 3.30  | 3.30  | 3.30  | 3.30  | 3.30  | 3.30  | 3.30  | 3.30  |
| 33.7                                | 1.327 | kg/m<br>lb/ft    | 1.57<br>1.05   | 1.79<br>1.20   | 2.01<br>1.35  | 2.22<br>1.49  | 2.42<br>1.63  | 2.69<br>1.81  | 2.95<br>1.98 | 3.23<br>2.17 | 3.54<br>2.33 | 3.54  | 3.54  | 3.54  | 3.54  | 3.54  | 3.54  | 3.54  | 3.54  | 3.54  |
| 38                                  | 1.500 | kg/m<br>lb/ft    | 1.79<br>1.20   | 2.04<br>1.37   | 2.29<br>1.54  | 2.53<br>1.70  | 2.77<br>1.86  | 3.08<br>2.07  | 3.38<br>2.27 | 3.71<br>2.49 | 4.07<br>2.68 | 4.07  | 4.07  | 4.07  | 4.07  | 4.07  | 4.07  | 4.07  | 4.07  | 4.07  |
| 42.4                                | 1.669 | kg/m<br>lb/ft    | 2.01<br>1.35   | 2.29<br>1.54   | 2.57<br>1.73  | 2.84<br>1.91  | 3.11<br>2.09  | 3.47<br>2.33  | 3.81<br>2.56 | 4.19<br>2.82 | 4.61<br>3.03 | 4.61  | 4.61  | 4.61  | 4.61  | 4.61  | 4.61  | 4.61  | 4.61  | 4.61  |
| 44.5                                | 1.750 | kg/m<br>lb/ft    | 2.11<br>1.42   | 2.41<br>1.62   | 2.70<br>1.81  | 2.99<br>2.01  | 3.28<br>2.20  | 3.65<br>2.45  | 4.02<br>2.70 | 4.42<br>2.97 | 4.88<br>3.20 | 4.88  | 4.88  | 4.88  | 4.88  | 4.88  | 4.88  | 4.88  | 4.88  | 4.88  |
| 51                                  | 2.000 | kg/m<br>lb/ft    | 2.43<br>1.63   | 2.78<br>1.87   | 3.12<br>2.10  | 3.46<br>2.32  | 3.79<br>2.55  | 4.23<br>2.84  | 4.66<br>3.13 | 5.13<br>3.45 | 5.61<br>3.71 | 5.61  | 5.61  | 5.61  | 5.61  | 5.61  | 5.61  | 5.61  | 5.61  | 5.61  |
| 54                                  | 2.125 | kg/m<br>lb/ft    | 2.58<br>1.73   | 2.95<br>1.98   | 3.32<br>2.23  | 3.68<br>2.47  | 4.04<br>2.71  | 4.50<br>3.02  | 4.97<br>3.34 | 5.47<br>3.68 | 6.04<br>3.96 | 6.04  | 6.04  | 6.04  | 6.04  | 6.04  | 6.04  | 6.04  | 6.04  | 6.04  |
| 57                                  | 2.250 | kg/m<br>lb/ft    | 2.74<br>1.84   | 3.13<br>2.10   | 3.52<br>2.37  | 3.90<br>2.62  | 4.28<br>2.88  | 4.78<br>3.21  | 5.27<br>3.54 | 5.81<br>3.90 | 6.41<br>4.22 | 6.41  | 6.41  | 6.41  | 6.41  | 6.41  | 6.41  | 6.41  | 6.41  | 6.41  |
| 60.3                                | 2.375 | kg/m<br>lb/ft    | 2.90<br>1.95   | 3.31<br>2.22   | 3.73<br>2.51  | 4.14<br>2.78  | 4.54<br>3.05  | 5.07<br>3.41  | 5.59<br>3.76 | 6.17<br>4.15 | 6.82<br>4.48 | 6.82  | 6.82  | 6.82  | 6.82  | 6.82  | 6.82  | 6.82  | 6.82  | 6.82  |
| 63.5                                | 2.500 | kg/m<br>lb/ft    | 3.06<br>2.06   | 3.50<br>2.35   | 3.93<br>2.64  | 4.36<br>2.93  | 4.79<br>3.22  | 5.36<br>3.60  | 5.91<br>3.97 | 6.52<br>4.38 | 7.21<br>4.73 | 7.21  | 7.21  | 7.21  | 7.21  | 7.21  | 7.21  | 7.21  | 7.21  | 7.21  |
| 70                                  | 2.750 | kg/m<br>lb/ft    | 3.37<br>2.26   | 3.86<br>2.59   | 4.35<br>2.92  | 4.83<br>3.25  | 5.30<br>3.56  | 5.93<br>3.98  | 6.55<br>4.40 | 7.24<br>4.86 | 8.01<br>5.25 | 8.01  | 8.01  | 8.01  | 8.01  | 8.01  | 8.01  | 8.01  | 8.01  | 8.01  |

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.