

## Seamless Steel Pipes and Tubes

### Dimensions, Conventional Masses per Unit Length

# DIN

## 2448

Nahtlose Stahlrohre; Masse, längenbezogene Massen

*As it is current practice in standards published by the International Organization for Standardization (ISO), the comma has been used throughout as a decimal marker.*

### 1 Scope

This Standard applies to the dimensions and the conventional masses per unit length of seamless steel pipes according to the technical conditions of delivery as stipulated in DIN 1629 Part 1 to Part 4, DIN 17 172 and DIN 17 175.

It also applies to other technical conditions of delivery in which reference to this Standard is made.

It defines that sector, selected from DIN ISO 4200, within which seamless steel pipes are standardized.

It does not apply to precision steel tubes according to DIN 2391.

### 2 Other relevant standards

|                 |                                                                                                                                                              |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DIN ISO 4200    | Seamless and welded steel tubes; general table of dimensions and conventional masses per unit length                                                         |
| DIN 1629 Part 1 | Seamless tubes in unalloyed steels for supply purposes, process plant and tanks; survey, technical conditions of delivery, general data                      |
| DIN 1629 Part 2 | Seamless tubes in unalloyed steel for supply purposes, process plant and tanks; tubes of commercial quality; technical conditions of delivery                |
| DIN 1629 Part 3 | Seamless tubes in unalloyed steels for supply purposes, process plant and tanks; tubes with quality specifications, technical conditions of delivery         |
| DIN 1629 Part 4 | Seamless tubes in unalloyed steels for supply purposes, process plant and tanks; tubes with special quality specifications, technical conditions of delivery |
| DIN 17 172      | Steel pipes for long-distance pipelines for combustible liquids and gases; technical conditions of delivery                                                  |
| DIN 17 175      | Seamless tubes of heat-resistant steels; technical conditions of delivery                                                                                    |

### 3 Designation, order code

Designation of a seamless steel pipe made of St 35, having an outside diameter of pipe of 273 mm and a wall thickness of 6,3 mm:

Pipe DIN 2448 – St 35 – 273 x 6,3

When ordering pipes according to this Standard, the corresponding elements of an order code must be extracted from the particular technical condition of delivery, e.g.:

- quantity ordered,
- standard designation,
- technical condition of delivery,
- material test certificate,
- internal and/or external protection, etc.

The order code for 1000 m of seamless steel pipes according to this Standard made of St 35, having an outside diameter of pipe of 273 mm and a wall thickness of 6,3 mm and according to the technical condition of delivery as specified in DIN 1629 Part 3, to be supplied with acceptance test certificate 3.1 B according to DIN 50 049, is:

**1000 m of pipe DIN 2448 – St 35 – 273 x 6,3 –  
DIN 1629 Part 3 – 3.1 B**

### 4 Dimensions

In the table of dimensions and conventional masses (weights) per unit length, the outside diameters of pipes are arranged in three series in accordance with DIN ISO 4200, these being defined as follows:

Series 1: Pipes with outside diameters in respect of which all the accessories required for the construction of a pipeline e.g., mouldings for welding, flanges, flange mouldings, are standardized or shall be standardized.

Series 2: Pipes with outside diameters in respect of which a major proportion of the accessories are standardized, but not all.

Series 3: Pipes with outside diameters for special fields of application, in respect of which there are generally no standardized accessories; in the course of time, one or another of these diameters may be proposed for deletion.

The conventional masses (weights) per unit length which are printed in bold type, indicate pipes having outside diameters in series 1, with preferred wall thicknesses according to DIN ISO 4200.

### 5 Conventional masses (weights) per unit length

The values of the conventional masses (weights) per unit length have been taken from DIN ISO 4200.

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### Explanations

There was a whole series of reasons for revising Standards DIN 2448 and DIN 2458 which date back to 1966. The final stimulus for revision was, without doubt, the publication of draft Standard ISO/DIS 4200. With the publication of this draft, ISO has put forward its ideas about the future development of standardization work in the field of steel pipes. In the voting procedure, the draft was accepted by a large majority. In the German version it appears as Standard DIN ISO 4200. The ISO Standard serves two purposes:

- a) It provides guidelines for the selection of pipe dimensions for all activities in the field of standardization of steel pipes, both national and international;
- b) It enables dimensional data to be looked up and avoids the possibility that different countries will establish different numerical values for the conventional masses per unit length of pipes that are of one and the same size.

In order to comply with the first purpose of the ISO Standard, therefore, first of all not only has the range of pipes which can be manufactured been set out in a table, but the outside diameters have been classified in three series, the series and their meanings being clearly defined. For pipes with outside diameters in series one, furthermore, preferred wall thicknesses have been stipulated. The purpose of these measures is to stimulate those selecting pipe dimensions, to examine whether or not a pipe having an outside diameter in series 1, with one of the preferred wall thicknesses, can in fact be employed. In this context, the authors of the Standard expect in the long term to achieve a rationalization of pipe dimensions.

The criterion governing the allocation of an outside diameter of pipe to one or another of the three series, is the availability of standardized accessories. The preferred wall thicknesses were selected under the aspect that stepped ranges of internal pressures should be covered economically. These considerations were also extended to the standard wall thicknesses according to the existing Standards DIN 2448 and DIN 2458. The problem of preferred wall thicknesses was examined by the French delegation in great detail; reference should be made to the work of E. Bertin<sup>1)</sup>. In Tables 1 and 2 in ISO 4200 it is evident that where preferred wall thicknesses are concerned, no numerical value exceeding 12,5 mm is included. The reason for this is that in ISO it was generally felt that pipes having larger wall thicknesses are used for pressure ranges, where, as a rule, a precise calculation of wall thickness will be made.

The question arose as to whether, in the presence of a DIN ISO Standard, Standards DIN 2448 and DIN 2458 are now in any way justified. In this context, the technical committee put forward a series of reasons:

First of all, it appears desirable that the reader of the table listing possible pipe dimensions, should be informed on what areas of the pipe stocks available world-wide are covered by industry and commerce in Germany. Another essential reason for maintaining the two DIN Standards was deemed to be that in the ISO Standard no limit on the range of seamless and welded steel pipes which can be manufactured, is indicated. This kind of limit cannot be set internationally. Also, in the general table of pipe dimensions contained in ISO 4200, pipe dimensions for pipes made from stainless steels are listed, in respect of which we have our own standard dimensions both in the national (e.g. DIN 2462 Part 1 and DIN 2463 Part 1) and in the international fields (e.g. ISO 1127 and ISO 1129).

In this context, there is no doubt that the German reader will find it useful to have the range of available pipes clearly set out for him.

A further difference between the DIN Standards and the ISO Standard lies in the fact that the two DIN Standards lay down the designation of the pipe. In the ISO Standard, this is not done. However, the "DIN designation" element points at a real problem: it is true, that using the DIN designation according to DIN 2448 or DIN 2458, it is possible to determine the dimensions and material of a pipe in a parts list; however, the pipe cannot be ordered using these data alone. This has already been clearly established. In the draft Standards DIN 2448 and DIN 2458 already published, for this reason no example of a designation was included. It was established there that the pipes had to be designated in accordance with the corresponding technical conditions of delivery. However, these are at present not available in a form permitting an immediate conversion to a new designation. Very strong objections were also raised to the elimination of the DIN designation so far used. In discussing the objections, however, it was confirmed that the DIN designation is inadequate for ordering and delivery. In view of the state of development of the dimensional standards on the one hand and of the technical conditions of delivery on the other, it was decided to retain the DIN designation hitherto used, but to include in the two DIN Standards an additional section for the order code. In this section, the necessary data for unambiguous ordering are explained making reference to an example. The problem of how, in communications between the purchaser and the manufacturer, a pipe should generally be designated, requires still more detailed consideration in association with the modification of the technical conditions of delivery.

<sup>1)</sup> ISO Standardization in the field of steel pipes and fittings for welding, for the transport of liquids and for general applications, DIN-Mitteilungen (DIN News) 57, 1978, No. 8.

