



SLOVENSKI STANDARD
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Plastomerne cevi - Preglednica univerzalne debeline stene

Thermoplastics pipes -- Universal wall thickness table

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Tubes en matières thermoplastiques -- Tableau universel des épaisseurs de paroi

Ta slovenski standard je istoveten z: ~~SIST ISO 4065:2018~~ ISO 4065:2018

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ICS:

23.040.20 Cevi iz polimernih materialov Plastics pipes

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en

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Third edition
2018-01

**Thermoplastics pipes — Universal
wall thickness table**

*Tubes en matières thermoplastiques — Tableau universel des
épaisseurs de paroi*

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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ISO 4065:2018(E)

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html. (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*.
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This third edition cancels and replaces the second edition (ISO 4065:1996), which has been technically revised.

The significant changes are:

- S-values and design stresses for 6,0 bar are deleted;
- Wall thickness values for pipes with diameters up to 3000 mm are included;
- The upper limit for tabled wall thicknesses increased to 150 mm;
- Additional pipe series S 10,5, S 13,3 and S 16,7 are left for use in non-pressure purposes only;
- Definitions are updated to follow modern plastics piping terminology.

Thermoplastics pipes — Universal wall thickness table

1 Scope

This document specifies the relationship between the nominal wall thickness e_n and the nominal outside diameter d_n of thermoplastics pipes.

It is applicable to solid-wall thermoplastics pipes of constant circular cross-section along the whole length of the pipe, whatever their method of manufacture, their composition or their intended application.

NOTE Pipes with constant circular cross-section along the whole length of the pipe are commonly known as pipes with smooth external and internal surfaces.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3, *Preferred numbers — Series of preferred numbers*

ISO 497:1973, *Guide to the choice of series of preferred numbers and of series containing more rounded values of preferred numbers*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

nominal outside diameter

d_n

specified outside diameter, assigned to a nominal size DN

Note 1 to entry: Nominal outside diameter is expressed in millimetres.

Note 2 to entry: For metric pipes conforming to this document, the nominal outside diameter, expressed in millimetres, is the minimum mean outside diameter $dem.min$ specified in the applicable pipe standard.

3.2

mean outside diameter

d_{em}

value of the measurement of the outer circumference of the pipe in any cross-section divided by π , rounded up to the nearest 0,1 mm

Note 1 to entry: The value of π is taken to be 3,142.

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3.3 wall thickness at any point

e

measured wall thickness at any point around the circumference of the pipe, rounded to the next higher 0,1 mm

3.4 nominal wall thickness

e_n

wall thickness tabulated in this document, and identical to the minimum permissible wall thickness at any point, e_{\min}

3.5 standard dimension ratio

SDR

numerical designation of a pipe series, which is a convenient round number, approximately equal to the ratio of the nominal outside diameter d_n of a pipe to its nominal wall thickness e_n

Note 1 to entry: This value may also be derived from the formula given in [3.6](#).

3.6 pipe series

S

dimensionless number related to the nominal outside diameter d_n and nominal wall thickness e_n given by the following formula:

$$S = \frac{\text{SDR} - 1}{2}$$

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4 Calculation of values

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4.1 Calculation of S values

For pressure pipes the relationship is expressed as follows:

$$S = \frac{\sigma}{p} \quad (1)$$

where

$$\sigma = \frac{p(d_e - e)}{2e}$$

where

p is the internal pressure;

σ is the induced stress;

p and σ being expressed in the same units.

For the selection of p and σ , refer to ISO 161-1[1].

S-values are selected from the R 10 series of preferred numbers given in ISO 3, except for S 11,2 and S 14 which are selected from the R 20 series (see [Tables 2](#) and [3](#)).

4.2 Calculation of wall thicknesses

According to ISO 161-1, wall thicknesses for pressure pipes are calculated from either of the following formulae:

$$e_n = \frac{1}{2\frac{\sigma}{p} + 1} \times d_n \quad (2)$$

and

$$e_n = \frac{1}{2S + 1} \times d_n \quad (3)$$

where

e_n is the nominal wall thickness;

d_n is the nominal outside diameter;

e_n and d_n being expressed in the same units;

σ is the induced stress;

p is the internal pressure;

σ and p being expressed in the same units,

S is the series number.

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The general formulae are also applicable to the relationship between the nominal pressure PN and the design stress σ_s , as follows:

$$e_n = \frac{1}{2\frac{\sigma_s}{PN} + 1} \times d_n \quad (4)$$

where σ_s is the design stress.

Values for PN are selected from the R 10 series of preferred numbers given in ISO 3.

Values for σ_s equal to or less than 10 MPa are selected from the R 10 series of preferred numbers given in ISO 3, while those greater than 10 MPa are selected from the R 20 series.

S may therefore be defined as the quotient of the design stress and the maximum allowable operating pressure as follows:

$$S = \frac{\sigma_s}{PN} \quad (5)$$

For nominal pressures between 2,5 bar and 25 bar and design stresses between 2,5 MPa and 36 MPa, the corresponding S values are given in [Table 1](#).