
INTERNATIONAL STANDARD



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Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part I : Metric series

Tube en matières thermoplastiques pour le transport des fluides — Diamètres extérieurs nominaux et pressions nominales — Partie I : Série métrique

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 161/1 was developed by Technical Committee ISO/TC 138, *Plastics pipes and fittings for the transport of fluids*. This second edition, containing five additional nominal outside diameters in table 1, was submitted directly to the ISO Council in accordance with clause 6.12.1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 161/1-1976), which had been approved by the member bodies of the following countries :

Austria	Israel	Spain
Belgium	Italy	Sweden
Chile	Japan	Switzerland
Czechoslovakia	Mexico	Thailand
Denmark	Norway	Turkey
Finland	Poland	United Kingdom
Germany	Portugal	U.S.A.
India	Romania	U.S.S.R.
Ireland	South Africa, Rep. of	Yugoslavia

The member bodies of the following countries had expressed disapproval of the document on technical grounds :

France
Netherlands

Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures —

Part I : Metric series

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the nominal outside diameters and nominal pressures of circular section thermoplastics pipes for the transport of fluids, whatever their method of manufacture, their composition and their use.

It is intended to serve as a guide to manufacturers and users, and as a basis for specific standards for thermoplastics pipes made from a given plastics material and/or for a definite application.

Attention is also drawn to ISO 161/II.

2 REFERENCES

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

ISO 161/II, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part II : Inch series*.

3 NOMINAL OUTSIDE DIAMETERS

The pipes shall have one of the nominal outside diameters given in table 1.

4 TOLERANCES ON OUTSIDE DIAMETERS

The permissible deviations on the outside diameters of thermoplastics pipes shall be positive, in the form $^{+x}_0$.

5 NOMINAL PRESSURES AND WORKING PRESSURES

5.1 The nominal pressure of a pipe is the working pressure of the pipe conveying water at a temperature of 20 °C.

5.2 The working pressure of a pipe is the maximum pressure which the pipe can sustain in continuous use.

5.3 The nominal pressures of thermoplastics pipes are given in table 2.

TABLE 1 — Nominal outside diameters

Values in millimetres

2,5	180
3	200
4	225
5	250
6	280
8	315
10	355
12	400
16	450
20	500
25	560
32	630
40	710
50	800
63	900
75	1 000
90	1 200
110	1 400
125	1 600
140	1 800
160	2 000

TABLE 2 — Nominal pressures

bar	MPa
1	0,1
2,5	0,25
4	0,4
6 (6,3)	0,6 (0,63)
10	1
16	1,6

Values in parentheses: for calculation only.

If higher or intermediate nominal pressures are required, they should be selected from the R 10 series of preferred numbers given in ISO 3.

6 CONVENTIONAL FORMULA RELATING THE INDUCED STRESS IN THE WALL OF A PIPE TO THE PRESSURE OF THE FLUID CONTAINED BY THE PIPE

It is taken conventionally that the stress induced in the wall of a pipe, the pressure of the fluid, the outside diameter and the wall thickness of the pipe are related by the following formula :

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

where

σ is the induced stress;

p is the pressure of the fluid;

d_e is the outside diameter of the pipe;

e is the wall thickness of the pipe.

NOTE — The induced stress should be indicated in the same units as the fluid pressure, and the wall thickness in the same units as the outside diameter of the pipe.

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