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# International Standard 7370

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

## Glass fibre reinforced thermosetting plastics (GRP) pipes and fittings — Nominal diameters, specified diameters and standard lengths

*Tubes et raccords en matière plastique thermodurcissable renforcée de fibres de verre (PRV) — Diamètres nominaux, diamètres spécifiés et longueurs normales*

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## Foreword

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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 7370 was developed by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, and was circulated to the member bodies in May 1981.

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## 0 Introduction

In standardizing the diameters of glass fibre reinforced thermosetting plastics (GRP) pipes, difficulties are encountered because of the different methods of manufacture. For pipes made on a mandrel or on a thermoplastic liner, the fixed value is that of the inside diameter, whereas for pipes made by centrifugal casting, the outside diameter is fixed.

However, it has been decided that in order to avoid confusion, all reinforced plastics pipes should be designated by a nominal diameter. For most nominal diameters, to cater for the different methods of manufacture, two series are specified, one, series A, in which the inside diameters are specified as equal to the nominal diameters and the other, series B, specifying outside diameters which are larger than the corresponding nominal diameters. The general approach has been for the values of the outside diameters to be chosen in order to make the dimensions of pipes of glass fibre reinforced thermosetting plastics very similar irrespective of their method of manufacture.

For the series for which the outside diameter is specified, it has been found necessary to permit three different sub-series.

The first general series, B1, is based on the rational approach in which the outside diameter ($d_e$) is related to the nominal diameter (DN) by the following equation :

$$d_e = 1{,}02\ DN + 4\ mm$$

The second series, B2, is based on a commercial need for pipes the outside diameters of which are equal to those of pipes made from other materials, for example cast iron and steel, so as to enable joints to be made to existing pipelines of these materials without the use of special jointing adaptors.

A small third series, B3, of only three sizes is also included. These sizes correspond to fittings already available on the market for use with thermoplastics pipes complying with ISO 161/1.

For pipes made on a prefabricated thermoplastic liner, special provision for a smaller inside diameter is made in order to allow the liner to be a generally available pipe complying with the dimensional requirements of ISO 161/1.

The manufacturer of pipes without a prefabricated thermoplastic liner is free to choose whether to supply pipe with diameters with specified inside diameters (series A) or with specified outside diameters (series B). Whichever series is chosen, manufacturing tolerances are permitted.

NOTE — Manufacturing tolerances on the inside or outside diameter, as appropriate, are the subject of further discussion.

Attention is drawn to ISO 3126.

## 1 Scope and field of application

This International Standard specifies the nominal diameters, inside or outside diameters for pipes and fittings, and standard lengths for pipes, of glass fibre reinforced thermosetting plastics (GRP) materials.

It applies to circular pipes manufactured from a thermosetting resin with fibrous reinforcement with or without aggregate. It applies to pipes both with and without a thermoplastic liner.

This International Standard does not include any requirements for wall thickness and it is not intended to include such requirements at a later date. This is to allow the maximum possible freedom in the choice of materials and design.

NOTE — Other dimensional requirements are under study.

## 2 References

ISO 161/1, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part 1 : Metric series.*

ISO 3126, *Plastics pipes — Measurement of dimensions.*

## 3 Definitions

For the purposes of this International Standard, the following definitions apply.

**3.1 nominal diameter :** Numerical designation of a diameter which is common to all components of the same system.

**3.2 standard length :** Total length of a pipe minus, where applicable, the insertion depth of the spigot in the socket recommended by the manufacturer.

**3.3 total length :** Distance between two planes normal to the pipe axis and passing through the extreme end points of the pipe.

## 4 Nominal diameters

The nominal diameter shall be chosen from those given in table 1.

**Table 1 — Nominal diameters (DN)**

| | | | | |
|---|---|---|---|---|
| 10 | 80 | 400 | 1 200 | (2 600) |
| 15 | 100 | 500 | 1 400 | 2 800 |
| 20 | 125 | 600 | 1 600 | (3 000) |
| 25 | 150 | 700 | 1 800 | 3 200 |
| 32 | 200 | 800 | 2 000 | (3 400) |
| 40 | 250 | 900 | (2 200) | 3 600 |
| 50 | 300 | 1 000 | 2 400 | (3 800) |
| 65 | | | | 4 000 |

NOTE — Values in brackets are non-preferred values for glass fibre reinforced thermosetting resin pipes.

## 5 Specified diameters

Pipes may be supplied complying with the requirements of either 5.1 (series A) or 5.2 (series B).

### 5.1 Series A (inside diameter specified)

The inside diameter, in millimetres, shall be equal to the nominal diameter (see table 1).*

### 5.2 Series B (outside diameter specified)

The outside diameter, in millimetres, shall comply with the appropriate value for the nominal diameter given in table 2.*

The dimensions of series B3 shall be used where thermoplastics fittings are already available with these outside diameters.

## 6 Minimum inside diameters for pipes with a prefabricated thermoplastic liner

If available, prefabricated thermoplastic liners with outside diameters according to ISO 161/1 shall be chosen. In no case shall the inside diameter of the thermoplastic liner be less than 96,5 % of the nominal diameter of the fibre reinforced pipe.

## 7 Standard lengths

The preferred standard lengths shall be chosen from the following values :

3, 5, 6, 10, 12 m.

Other lengths may be supplied as agreed between the purchaser and the supplier.

**Table 2 — Specified diameters**

| Nominal diameter[1] DN | Inside diameter $d_i$ mm | Outside diameter $d_e$ mm | | |
|---|---|---|---|---|
| | Series A[1), 2)] | Series B1[1)] | Series B2 | Series B3 |
| **10** | 10 | 14 | — | — |
| **15** | 15 | 19 | — | — |
| **20** | 20 | 24 | — | — |
| **25** | 25 | 30 | — | — |
| **32** | 32 | 37 | — | — |
| **40** | 40 | 45 | 48,3 | — |
| **50** | 50 | 55 | 60,3 | — |
| **65** | 65 | 70 | 73,0 | — |
| **80** | 80 | 86 | 88,9 | — |
| **100** | 100 | 106 | 114,3 | — |
| **125** | 125 | 132 | 139,7 | — |
| **150** | 150 | 157 | 168,3 | — |
| **200** | 200 | 208 | 219,1 | — |
| **250** | 250 | 259 | 273 | — |
| **300** | 300 | 310 | 323,9 or 326[3)] | 315 |
| **400** | 400 | 412 | 429 | 400 |
| **500** | 500 | 514 | 532 | 500 |
| **600** | 600 | 616 | 635 | — |
| **700** | 700 | 718 | 738 | — |
| **800** | 800 | 820 | 842 | — |
| **900** | 900 | 922 | 945 | — |
| **1 000** | 1 000 | 1 024 | 1 048 | — |
| **1 200** | 1 200 | 1 228 | 1 255 | — |
| **1 400** | 1 400 | 1 432 | 1 462 | — |
| **1 600** | 1 600 | 1 636 | 1 668 | — |
| **1 800** | 1 800 | 1 840 | 1 875 | — |
| **2 000** | 2 000 | 2 044 | — | — |
| **(2 200)** | (2 200) | (2 248) | — | — |
| **2 400** | 2 400 | 2 452 | — | — |
| **(2 600)** | (2 600) | (2 656) | — | — |
| **2 800** | 2 800 | 2 860 | — | — |
| **(3 000)** | (3 000) | (3 064) | — | — |
| **3 200** | 3 200 | 3 268 | — | — |
| **(3 400)** | (3 400) | (3 472) | — | — |
| **3 600** | 3 600 | 3 676 | — | — |
| **(3 800)** | (3 800) | (3 880) | — | — |
| **4 000** | 4 000 | 4 084 | — | — |

1) Values in brackets are non-preferred values.

2) For pipes with a prefabricated thermoplastic liner the inside diameter shall be not less than 96,5 % of the nominal diameter.

3) For DN 300, depending on the related pipe system, either 323,9 (steel pipes) or 326 (iron pipes) shall be specified.

* Manufacturing tolerances are the subject of further discussion.