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Plastics pipes and fittings — Dimensions of sockets and spigots for discharge systems inside buildings —

Part 4: Acrylonitrile/butadiene/styrene (ABS)

*Tubes et raccords en matières plastiques — Dimensions des emboîtures
et des bouts mâles pour raccordement de tubes et raccords dans les
systèmes d'évacuation à l'intérieur des bâtiments —*

Partie 4: Acrylonitrile/butadiène/styrène (ABS)



Reference number
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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8283-4 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Sub-Committee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

ISO 8283 consists of the following parts, under the general title *Plastics pipes and fittings — Dimensions of sockets and spigots for discharge systems inside buildings*:

- *Part 1: Unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C)*
- *Part 2: Polyethylene (PE)*
- *Part 3: Polypropylene (PP)*
- *Part 4: Acrylonitrile/butadiene/styrene (ABS)*

Annexes A and B form an integral part of this part of ISO 8283.

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Introduction

The socket design appropriate for a particular application should be chosen according to the type of system and jointing techniques to be used. Various socket designs are specified in this part of ISO 8283. They may be selected for use in accordance with the requirements of relevant national standards and codes of practice, which give information on the choice of the type of system and jointing techniques to be used.

Plastics pipes and fittings — Dimensions of sockets and spigots for discharge systems inside buildings —

Part 4: Acrylonitrile/butadiene/styrene (ABS)

1 Scope

This part of ISO 8283 establishes a classification and designation system for sockets and specifies the design formulae and the derived dimensions, together with tolerances, of these sockets and of spigots for joints of acrylonitrile/butadiene/styrene (ABS) fittings and for integral sockets of ABS pipes intended for use in discharge systems inside buildings where such joints are intended to accommodate expansion and contraction in the discharge system.

2 Classification and designation of sockets

2.1 General

The sockets shall be classified according to whether they are ring-seal sockets or solvent cement sockets into the following types:

2.2 Ring-seal sockets

2.2.1 Type S (short) for use as an expansion joint system where the length of pipe does not exceed 2 m. These sockets, when they form part of a fixed-joint system (i.e. systems which do not in themselves allow for expansion and contraction), are intended for use only in conjunction with a type L (long) socket as specified in this part of ISO 8283.

2.2.2 Type M (medium) for use as an expansion joint system. These sockets, when they form part of a fixed-joint system (i.e. systems which do not in themselves allow for expansion and contraction), are intended for use only in conjunction with a

type L (long) socket as specified in this part of ISO 8283. The values given for the length of engagement in table 2 relate to a pipe length of 3 m inside buildings above ground.

Type S (short) and type M (medium) sockets are further classified as normal configuration (N), for use only as a ring-seal socket, or as dual-purpose configuration (DP), for use either as a ring-seal socket or as a solvent cement socket.

2.2.3 Type L (long) for use as an expansion joint in fixed-joint systems, i.e. systems which do not allow for expansion and contraction whether jointed by ring seal or solvent cement, or for use with type S and type M sockets where the length of pipe exceeds the given maximum for those types.

2.3 Solvent cement sockets

2.3.1 Type CS (short) for use where jointing is carried out under controlled conditions.

3 Ring-seal sockets and spigots (normal and dual-purpose)

3.1 General

These sockets can accommodate expansion and contraction in any of the joint systems given in clause 2 with the exception of the case where dual-purpose joints are used with solvent cement.

3.2 Ring-seal grooves

A selection of typical ring-seal groove designs is shown in figures 1 and 2, and the positions of measurement of specified dimensions are indicated.

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The design of the groove is not restricted to those illustrated.

3.3 Seal-ring retaining components

Seal-ring retaining components may be manufactured from plastics materials other than ABS.

3.4 Dimensions

When measured in accordance with figure 1 or 2, as applicable, the dimensions of ring-seal sockets and related spigots shall comply with the applicable limits given in table 1, 2 or 3, as appropriate.

There shall be no requirement on dimension *B* where the seal-ring is firmly retained in the groove (see figure 2).

4 Solvent cement sockets and spigots

When measured in accordance with figure 3, the dimensions of solvent cement sockets and spigots shall comply with the applicable limits given in table 4.

Within the tolerances necessary for manufacturing, solvent cement sockets should be approximately cylindrical.

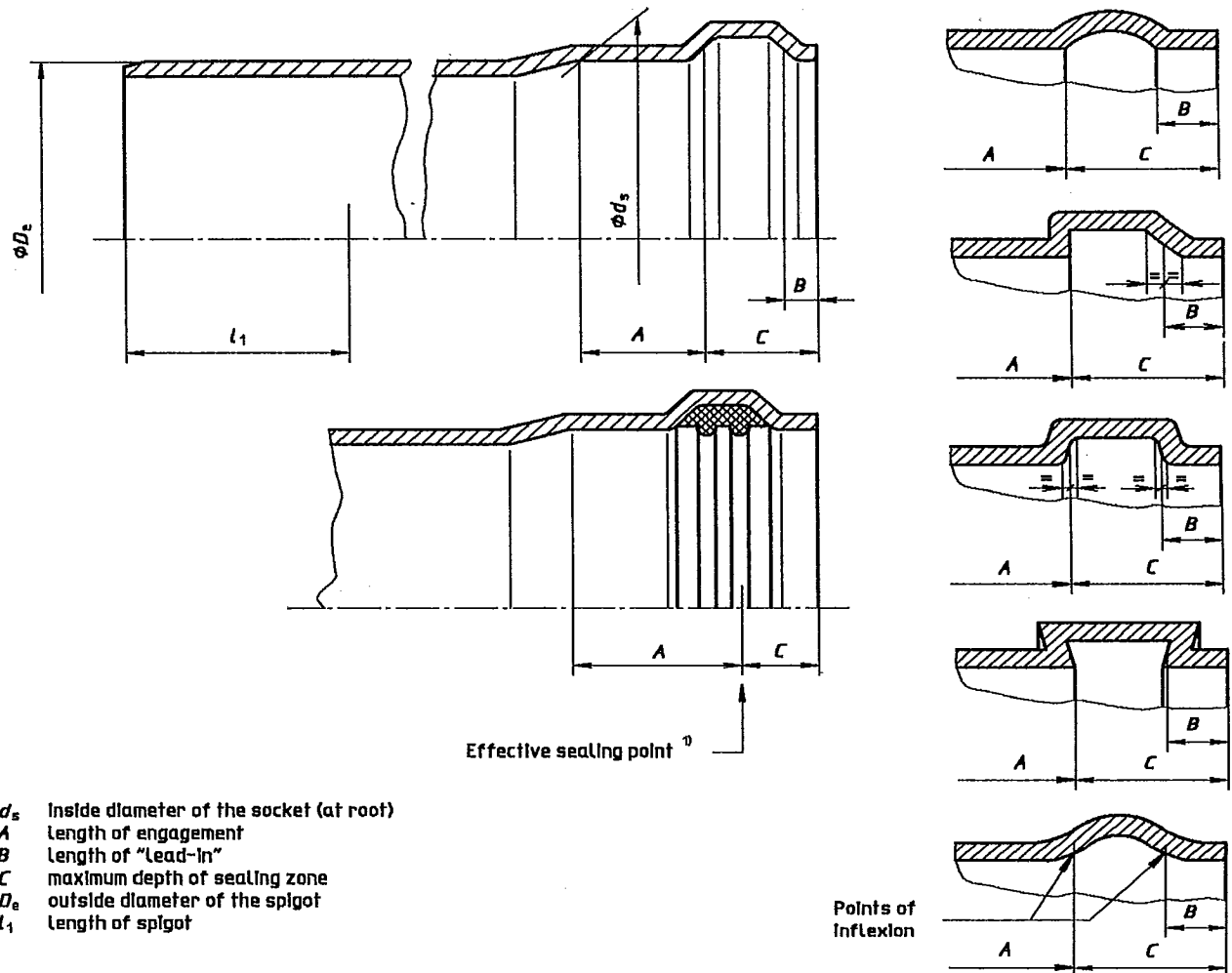
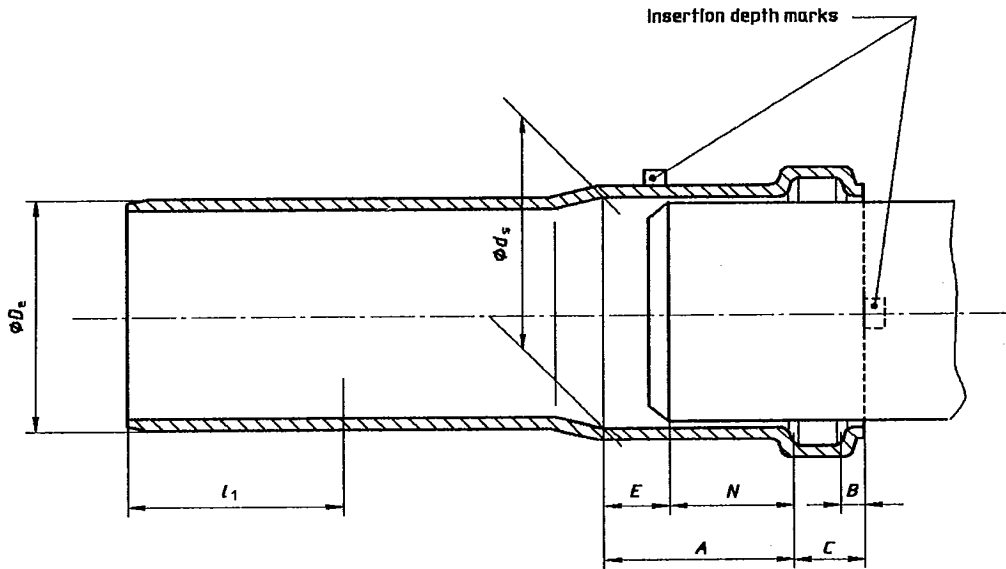
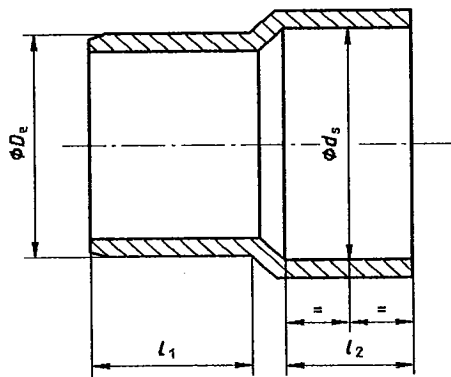


Figure 1 — Location of points of measurement for type S and type M sockets and spigots, normal and dual-purpose



- d_s Inside diameter of the socket (at root)
- A Length of engagement
- B Length of "lead-in"
- C maximum depth of sealing zone
- E expansion gap
- N effective insertion depth
- l_1 length of spigot
- D_e outside diameter of the spigot

Figure 2 — Location of points of measurement for type L sockets and spigots



- d_s Inside diameter of the socket
- l_2 Length of socket
- D_e outside diameter of the spigot
- l_1 Length of spigot ($> l_2$)

Figure 3 — Location of points of measurement for solvent cement sockets and spigots

Table 1 — Dimensions of ring-seal sockets and related spigots, type S, normal and dual-purpose

Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D_e</i>		<i>d_s</i>		<i>A</i>	<i>B</i>	<i>C</i>	<i>l₁</i>
	min.	max.	min.	max. ¹⁾				
32	32,0	32,3	32,3	32,7	16	5	12	28
40	40,0	40,3	40,3	40,7	18	5	13	31
50	50,0	50,3	50,3	50,7	20	5	14	34

NOTE — This table specifies the permitted limits, calculated using the relationships given in the appropriate table in annex A, on the main dimensions indicated in figure 1 for type S sockets and spigots, together with non-calculated limits on the other dimensions. The calculated values have been rounded up to the nearest 0,1 mm for diameters and to the nearest 1 mm for other dimensions.

The nominal outside diameters have been selected from ISO 161-1:1978, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series*.

1) Required for dual-purpose sockets only.

Table 2 — Dimensions of ring-seal sockets and related spigots, type M, normal and dual-purpose

Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D_e</i>		<i>d_s</i>		<i>A</i>	<i>B</i>	Systems ¹⁾			
							I		II	
	min.	max.	min.	max. ²⁾	min.	min.	<i>C</i> max.	<i>l₁</i> min.	<i>C</i> max.	<i>l₁</i> min.
32	32,0	32,3	32,3	32,7	24	5	12	36	18	42
40	40,0	40,3	40,3	40,7	26	5	13	39	18	44
50	50,0	50,3	50,3	50,7	28	5	14	42	18	46
75	75,0	75,3	75,3	75,7	33	5	15	48	18	51
90	90,0	90,3	90,3	90,7	36	5	16	52	20	56
110	110,0	110,4	110,4	110,8	36	6	16	52	22	58
125	125,0	125,4	125,4	125,9	38	7	16	54	26	64
160	160,0	160,5	160,5	161,0	41	9	17	58	32	73

NOTE — This table specifies the permitted limits, calculated using the relationships given in the appropriate table in annex A, on the main dimensions indicated in figure 1 for type M sockets and spigots, together with non-calculated limits on the other dimensions. The calculated values have been rounded up to the nearest 0,1 mm for diameters and to the nearest 1 mm for other dimensions.

The nominal outside diameters have been selected from ISO 161-1:1978, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series*.

1) Pipes and fittings with sockets in accordance with system I and II are not interchangeable.

2) Required for dual-purpose sockets only.

Table 3 — Dimensions of ring-seal sockets and related spigots, type L
Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D</i> _o		<i>d</i> _e	<i>A</i>	<i>B</i>	<i>C</i>	<i>E</i>	<i>N</i>	<i>l</i> ₁
	min.	max.	min.	min.	min.	max.	min.	min.	min.
32	32,0	32,3	32,4	65	5	18	20	45	35
40	40,0	40,3	40,4		5	18			36
50	50,0	50,3	50,4		5	18			38
75	75,0	75,3	75,4		5	20			43
90	90,0	90,3	90,4		5	23			46
110	110,0	110,4	110,5		6	26			54
125	125,0	125,4	125,5		7	28			60
160	160,0	160,5	160,6		9	32			74

NOTE — This table specifies the permitted limits, calculated using the relationships given in the appropriate table in annex A, on the main dimensions indicated in figure 2 for type L sockets and spigots, together with non-calculated limits on the other dimensions. The calculated values have been rounded up to the nearest 0,1 mm for diameters and to the nearest 1 mm for other dimensions.

The nominal outside diameters have been selected from ISO 161-1:1978, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series*.

Table 4 — Dimensions of solvent cement sockets and spigots, type CS
Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D</i> _o		<i>d</i> _e ¹⁾		<i>l</i> ₁	<i>l</i> ₂
	min.	max.	min.	max.	min.	
32	32,0	32,3	32,1	32,4	17	
40	40,0	40,3	40,1	40,4	18	
50	50,0	50,3	50,1	50,4	20	
75	75,0	75,3	75,1	75,4	25	
90	90,0	90,3	90,1	90,4	28	
110	110,0	110,4	110,2	110,5	32	
125	125,0	125,4	125,2	125,5	35	
160	160,0	160,5	160,2	160,6	42	

NOTE — This table specifies the permitted limits, calculated using the relationships given in annex B, on the dimensions indicated in figure 3. The calculated values have been rounded up to the nearest 0,1 mm for diameters and to the nearest 1 mm for other dimensions.

The nominal outside diameters have been selected from ISO 161-1:1978, *Thermoplastics pipes for the transport of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series*.

1) The absolute limits for the value of any inside diameter (also called the tolerance on ovality) shall be determined in accordance with the condition

$$d_{e,max} - d_{e,min} \leq 0,011D_o$$

For sockets for which the ratio e_2/D_o (where e_2 is the wall thickness, in millimetres, of the sockets) is less than 0,035, there is no requirement to be met in respect of this tolerance.

Annex A
(normative)

Ring-seal design calculations

Table A.1 — Relationships for the calculation of the dimensions of ring-seal sockets, type S, normal and dual-purpose

Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D_e</i>		<i>d_s</i>		<i>A</i>
	min.	max.	min.	max.	min.
32 40 50	32,0 40,0 50,0	$D_{e,min} + 0,3$	$D_{e,max}$	$d_{s,min} + 0,4$	$0,2D_{e,min} + 10$

Table A.2 — Relationships for the calculation of the dimensions of ring-seal sockets, type M, normal and dual-purpose

Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D_e</i>		<i>d_s</i>		<i>A</i>	<i>l₁</i> ¹⁾	
	min.	max.	min.	max. ²⁾	min.	min.	
32 40 50 75 90 110 125 160	32,0 40,0 50,0 75,0 90,0 110,0 125,0 160,0	$D_{e,min} + 0,3$ $D_{e,min} + 0,4$ $D_{e,min} + 0,5$	$D_{e,max}$	$d_{s,min} + 0,4$ $d_{s,min} + 0,5$	$0,2D_{e,min} + 18$ $0,1D_{e,min} + 25$	$A_{min} + C_{max}$	
1) Also applies to <i>l₂</i> . 2) Required for dual-purpose sockets only.							

Table A.3 — Relationships for the calculation of the dimensions of ring-seal sockets, type L

Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D_e</i>		<i>d_s</i>
	min.	max.	min.
32 40 50 63 75 90 110 125 160	32,0 40,0 50,0 63,0 75,0 90,0 110,0 125,0 160,0	$D_{e,min} + 0,3$ $D_{e,min} + 0,4$ $D_{e,min} + 0,5$	$D_{e,max} + 0,1$

Annex B
(normative)

Solvent cement design calculations

Table B.1 — Relationships for the calculation of the dimensions of solvent cement sockets and spigots, type CS (for use where jointing is carried out under controlled conditions)

Dimensions in millimetres

Nominal outside diameter <i>D</i>	<i>D_e</i>		<i>d_g</i>		<i>l₂</i>	<i>l₁</i>
	min.	max.	min.	max.	min.	min.
32	32,0	$D_{e,min} + 0,3$	$D_{e,min} + 0,1$	$D_{e,max} + 0,1$	$0,2D_{e,min} + 10$	$\geq l_2$
40	40,0					
50	50,0					
75	75,0	$D_{e,min} + 0,2$				
90	90,0					
110	110,0					
125	125,0	$D_{e,min} + 0,5$				
160	160,0					

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