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## EAST AFRICAN STANDARD

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Plastics pipes and fittings — Dimensions of sockets and spigots for discharge systems inside buildings — Part 4: Acrylonitrile/butadiene/styrene (ABS)

EAST AFRICAN COMMUNITY

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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East African Community

P O Box 1096

**Arusha**

Tanzania

Tel: 255 27 2504253/8

Fax: 255-27-2504481/2504255

E-Mail: [eac@eachq.org](mailto:eac@eachq.org)

Web: [www.each.int](http://www.each.int)

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## Introduction

In the preparation of this East African Standard, the following source was consulted extensively:

ISO 8283-4:1992, *Plastics pipes and fittings — Dimensions of sockets and spigots for discharge systems inside buildings — Part 4: Acrylonitrile/butadiene/styrene (ABS)*

Assistance derived from this source and others inadvertently not mentioned is hereby acknowledged.

Draft for comments only — Not to be cited as East African Standard

# INTERNATIONAL STANDARD

**ISO**  
**8283-4**

First edition  
1992-12-01

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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  
ISO 8283-4:1992(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.

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.

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# 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.

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.

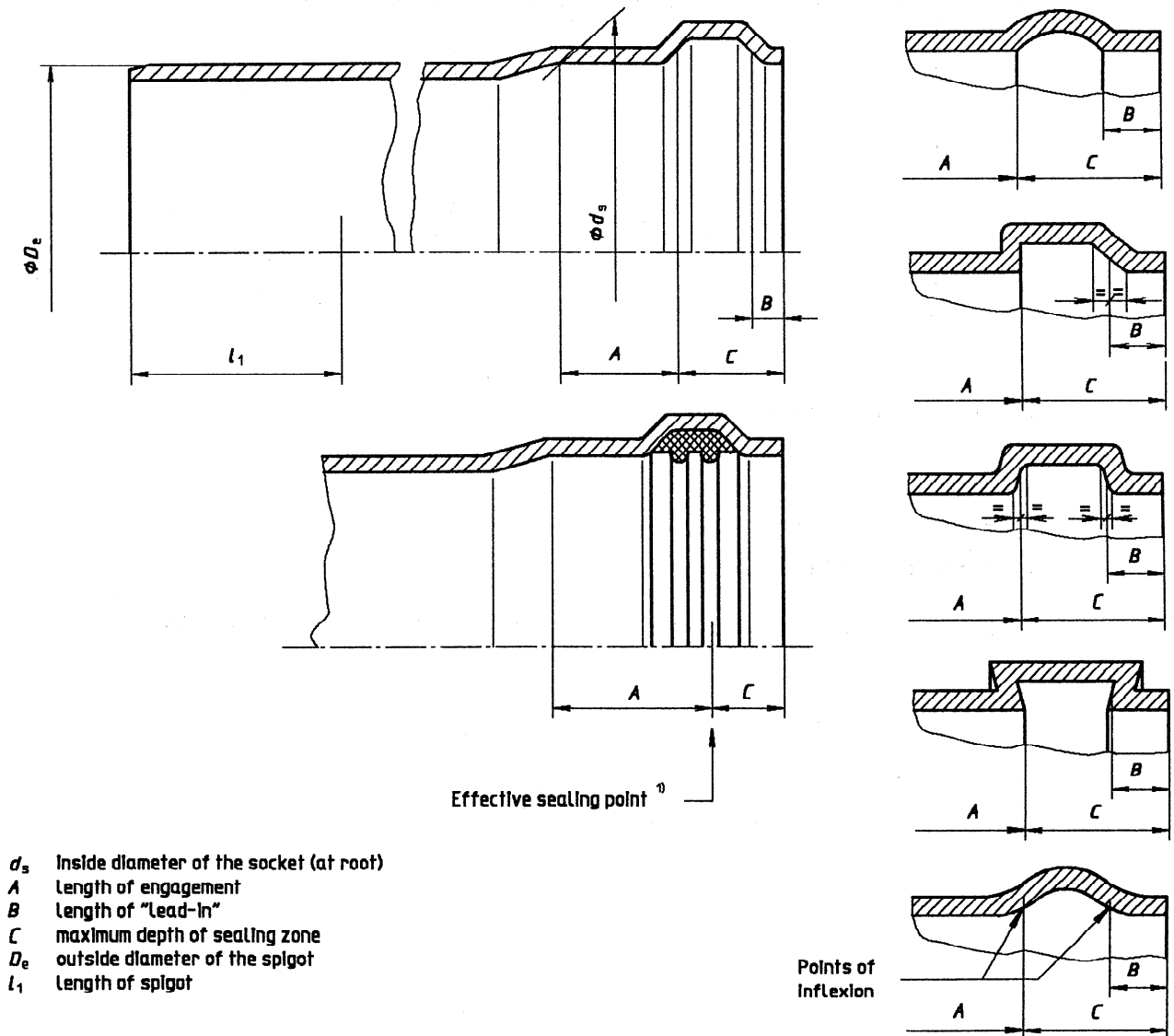
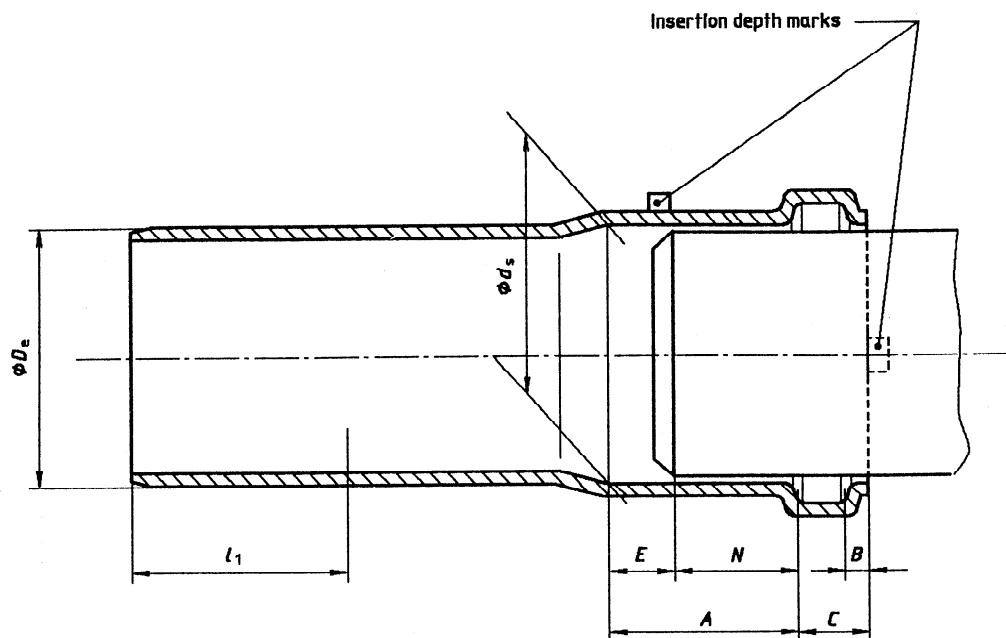
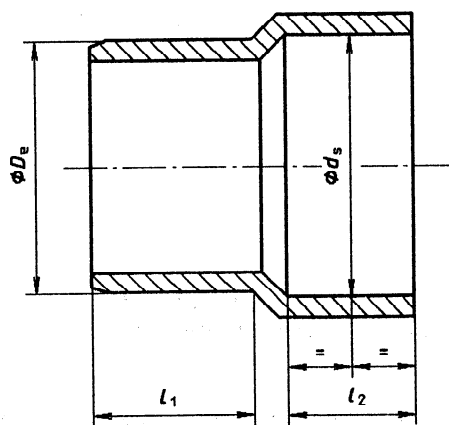


Figure 1 — Location of points of measurement for type S and type M sockets and spigots, normal and dual-purpose



- $d_s$  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 ( $\geq l_2$ )

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<sub>e</sub></i>		<i>d<sub>s</sub></i>		<i>A</i>	<i>B</i>	<i>C</i>	<i>l<sub>1</sub></i>
	min.	max.	min.	max. <sup>1)</sup>	min.	min.	max.	min.
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<sub>e</sub></i>		<i>d<sub>s</sub></i>		<i>A</i>	<i>B</i>	Systems <sup>1)</sup>			
	min.	max.	min.	max. <sup>2)</sup>			I		II	
							<i>C</i> max.	<i>l<sub>1</sub></i> min.	<i>C</i> max.	<i>l<sub>1</sub></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<sub>e</sub></i>		<i>d<sub>s</sub></i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>E</i>	<i>N</i>	<i>l<sub>1</sub></i>
	min.	max.	min.	min.	min.	max.	min.	min.	min.
32	32,0	32,3	32,4		5	18			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	65	5	20	20	45	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<sub>e</sub></i>		<i>d<sub>s</sub><sup>1)</sup></i>		<i>l<sub>1</sub></i>	<i>l<sub>2</sub></i>
	min.	max.	min.	max.	min.	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

$$d_{s,max} - d_{s,min} \leq 0,011D_e$$

For sockets for which the ratio  $e_2/D_e$  (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<sub>e</sub></i>		<i>d<sub>s</sub></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<sub>e</sub></i>		<i>d<sub>s</sub></i>		<i>A</i>	<i>l<sub>1</sub></i> <sup>1)</sup>
	min.	max.	min.	max. <sup>2)</sup>	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 *l<sub>2</sub>*.  
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<sub>e</sub></i>		<i>d<sub>s</sub></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<sub>e</sub></i>		<i>d<sub>s</sub></i>		<i>l<sub>2</sub></i>	<i>l<sub>1</sub></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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**Descriptors:** buildings, drainage, plastics products, ABS plastics, plastic tubes, pipe fittings, spigot-and-socket joints, pipe sockets, dimensions.

Price based on 8 pages

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