

# INTERNATIONAL STANDARD

**ISO**  
**9896**

First edition  
1996-04-15

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## Plastics traps for discharge pipework systems inside buildings

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

*Siphons en matières plastiques pour les systèmes d'évacuation à  
l'intérieur des bâtiments*

ISO 9896:1996

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ISO 9896:1996(E)

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## 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 9896 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

Annexes A to K form an integral part of this International Standard.

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## Introduction

The plastics traps covered by this International Standard are sufficiently different from the other fittings of a pipework discharge system specified in the product specifications for pipework discharge systems being prepared by TC 138/SC 1 to require a separate International Standard.

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# Plastics traps for discharge pipework systems inside buildings

## Section 1: General

### 1.1 Scope

This International Standard specifies requirements for traps for discharge pipework systems for domestic use within buildings, i.e. pipework systems for the discharge of domestic waste waters<sup>1)</sup>.

### 1.2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 228-1:1994, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation.*

ISO 3633:1991, *Unplasticized poly(vinyl chloride) (PVC-U) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 7671:1991, *Polypropylene (PP) pipes and fittings (jointed by means of elastomeric sealing rings) for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 7675:1991, *Chlorinated poly(vinyl chloride) (PVC-C) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 7682:1991, *Acrylonitrile/butadiene/styrene (ABS) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

ISO 8770:1991, *High-density polyethylene (PE-HD) pipes and fittings for soil and waste discharge (low and high temperature) systems inside buildings — Specifications.*

1) For the definition of "domestic waste waters", see annex A or refer to national codes of practice.

## Section 2: Sanitary appliance traps

### 2.1 Scope

This section specifies requirements for sanitary appliance traps for discharge installations inside buildings for the evacuation of domestic waste waters.

### 2.2 Definitions

For the purposes of this section, the following definitions apply.

**2.2.1 trap:** A fitting designed to permit the evacuation of domestic waste water into a discharge system and, by means of a water seal, to prevent the passage of foul gases in the opposite direction.

**2.2.2 sanitary appliance trap:** A trap designed for connection to a plumbing appliance.

**2.2.3 demountable trap:** A trap which can be repeatedly removed from and reassembled on the associated appliance and waste pipe, and which has

means of access for cleaning, satisfying the requirements of 2.5.1.

**2.2.4 tubular trap:** A trap having uniform cross-sectional area throughout (see figure 1<sup>2)</sup>).

**2.2.5 bottle trap:** A trap in which the division between the inlet and the outlet is formed either by an internal tube (see figure 2<sup>2)</sup>), or a partition (see figure 3<sup>2)</sup>) within the body of the trap.

**2.2.6 urinal trap:** A trap designed for use only with a bowl-urinal having a horizontal spigot outlet. The seal depth of such traps is measured in combination with the urinal. As an example, see figure 4<sup>2)</sup>.

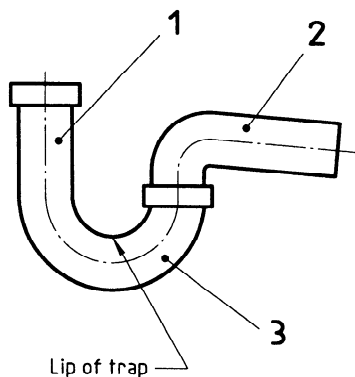
**2.2.7 lip of trap:** The lowest portion, inside a trap, of the barrier which enables a water seal to be provided (see figures 1, 5 and 6).

**2.2.8 depth of water seal:** The depth of water  $h$  which would have to be removed from a fully charged trap before gases and odours at atmospheric pressure could pass through the trap (see figure 5).

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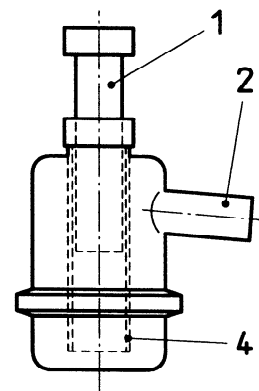
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Key

- 1 Inlet connection, which is optionally adjustable
- 2 Outlet pipe
- 3 "U" bend

**Figure 1 — Tubular trap**



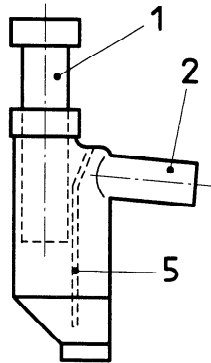
Key

- 1 Inlet connection, which is optionally adjustable
- 2 Outlet pipe
- 4 Dip tube

**Figure 2 — Bottle trap with dip tube**

<sup>2)</sup> Diagrammatic representation only.





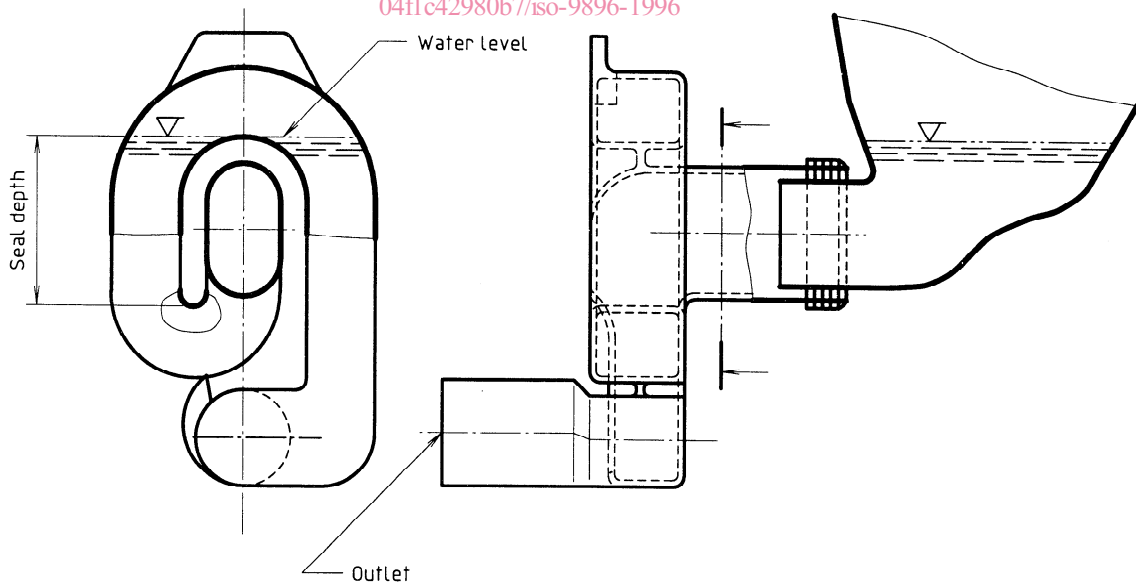
Key

- 1 Inlet connection, which is optionally adjustable
- 2 Outlet pipe
- 5 Internal partition

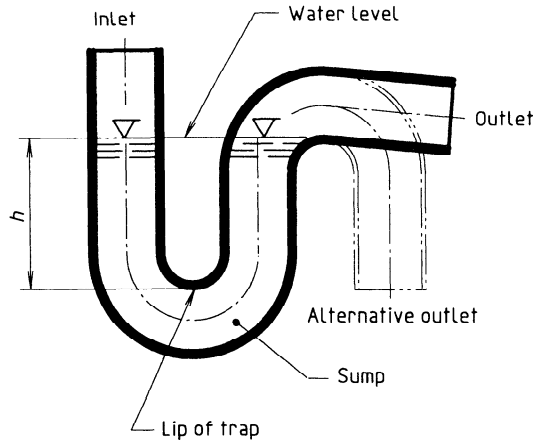
**Figure 3 — Bottle trap with internal partition**  
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**Figure 4 — Urinal trap**



NOTE — The minimum seal depth is made up of the following elements:

- a) self-siphonage allowance;
- b) external siphonage allowance;
- c) evaporation;
- d) absolute minimum.

Figure 5 — Depth of water seal

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blockages to an extent that would prevent conformity to this International Standard.

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**2.5 Geometrical characteristics**

**2.5.1 Nominal trap sizes**

Traps are designated by the sizes of both the inlet and outlet connections (e.g. 1 1/4 in x 32 is a trap with a G 1 1/4 in threaded inlet conforming to ISO 228-1 and a 32 mm outlet to fit ISO 161-1 components).

**2.5.2 Access for cleaning**

**2.5.2.1** Traps shall either be demountable (see 2.5.2.2 ) or capable of meeting the self-cleansing test specified in 2.8.4.

**2.5.2.2** A demountable trap, if a bottle trap, shall have a removable bottle, or, if not a bottle trap, shall have either a union situated between the lip and the invert of the outlet of the trap or a cleaning eye not less than 19 mm in diameter. Except in the case of traps intended only for use in restricted clearance under baths or shower trays, such a cleaning eye shall be positioned on the underside of the sump of the trap.

NOTE 1 Minimum diameters greater than 19 mm may be required by local regulations.

**2.3 Materials**

**2.3.1 General**

The material used to manufacture the body of the trap shall conform to the performance requirements specified for discharge pipes and fittings of the relevant materials in ISO 3633 (PVC-U), ISO 7675 (PVC-C), ISO 7682 (ABS), ISO 7671 (PP) or ISO 8770 (PE-HD). These are referred to throughout this International Standard as the "head documents". It should be noted that not all of these materials are necessarily suitable for manufacturing all components. Where other materials are used for seals, backnuts, etc., the assembly shall be capable of meeting the performance requirements of this International Standard.

**2.3.2 Elastomeric seals**

Elastomeric seals in traps shall conform to the requirements given in the head documents for elastomeric seals in fittings made of the same material as the trap.

**2.4 Appearance**

The internal surfaces of traps shall be free from grooving or blistering and without flash or other protrusions likely to ensnare debris and cause

### 2.5.3 Additional inlets

Additional inlets, when not in use, shall be watertight.

### 2.5.4 Positions of inlets

Traps shall have all inlets positioned before the water seal except that, where provided, an overflow connection shall be at such a level that the highest part of its bore is:

- anywhere on the inlet side of the trap;
- if elsewhere, not higher than the lip of the trap (see figure 6).

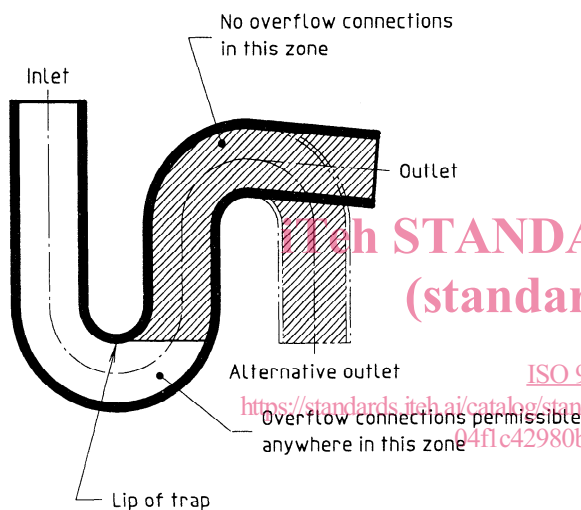


Figure 6 — Positions of inlets and outlets

### 2.5.5 Inlet connections

If a trap does not have a connection or adaptor supplied by the manufacturer, then it shall be suitable for connection to one of the following, of a size given in table 2:

- a thread conforming to ISO 228-1;
- a pipe meeting the requirements of ISO 161-1.

### 2.5.6 Outlet connections

If a trap does not have a connection or adaptor supplied by the manufacturer, its outlet shall be capable of connection to an ISO pipe or fitting of a size which is associated in tables 2 and 3 with the inlet size of that trap.

### 2.5.7 Seal depth

The seal depth of a trap shall be a minimum of 50 mm except in traps manufactured for use where building codes call for a greater minimum depth.

It shall not be possible to reduce the depth of seal below the designed depth, and the design of the inlet and outlet connections shall not affect the seal depth.

### 2.5.8 Wall thickness

Wall thickness shall be defined by the manufacturer.

## 2.6 Physical and mechanical characteristics

### 2.6.1 Torque test for coupling threads

When tested in accordance with annex B, all inlet nut connections shall resist a torque of 15 N·m without the connection splitting or the threads jumping. All other threaded connections shall resist a torque of 15 N·m without splitting or the thread jumping.

### 2.6.2 Elevated-temperature cycling test

Traps shall conform to the requirements of the 1 500-cycle or 5-cycle elevated-temperature cycling test given in the head documents.

### 2.6.3 Oven test (stress-relief test)

Moulded components of traps shall conform to the requirements of the stress-relief test in an air-circulating oven given in the head document for moulded fittings of the same material as the component. Traps comprising more than one component shall not be tested in the assembled state. Test pieces should preferably be components which have not been assembled, but components taken from assembled traps may be tested when they can be dismantled without strain or damage.

## 2.7 Chemical characteristics

### 2.7.1 Stress cracking

When tested in accordance with annex C, traps shall neither crack nor show any severe surface delamination, as detected with normal unaided vision.

## 2.8 Functional characteristics

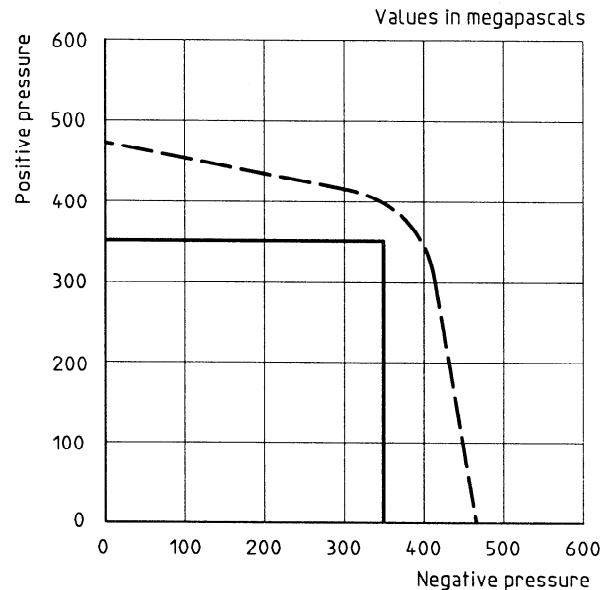
### 2.8.1 Discharge rate

When tested in accordance with annex D, traps of sizes up to 50 mm or 2 in shall conform to the discharge rates given in table 1<sup>3)</sup>.

**Table 1**

Inlet size	Flow rate <sup>1)</sup> l/s
25 mm or 1 in	0,5
32 mm or 1 1/4 in	0,65
40 mm or 1 1/2 in	0,8
50 mm or 2 in	1,2

1) These figures may be revised following publication of accepted CEN documents.



**Figure 7 — Seal retention test diagram**

### 2.8.2 Seal retention test

**2.8.2.1** This test is only required to be carried out on traps having a greater volume on the inlet side than on the outlet side and having a seal depth of less than 60 mm.

**2.8.2.2** When tested in accordance with annex E, the trap shall retain its seal to such an extent that the curve plotted from experimental results does not enter the square enclosed by the axes of the diagram and lines drawn parallel to each axis passing through the value 350 MPa on the other axis (see figure 7).

### 2.8.3 Antiblockage

Traps shall be capable of accommodating the passage of a 10-mm-diameter ball.

The ball shall pass through the trap from inlet to outlet merely by tilting the trap in the appropriate directions, no other force being applied to the ball.

### 2.8.4 Self-cleansing test for traps that are not demountable

When tested with glass balls in accordance with the method described in annex F, at least 70 % of the balls shall pass through the trap.

### 2.8.5 Watertightness

The trap, including its inlet and outlet connections, shall conform to the pressure and watertightness requirements given in the relevant head document for a discharge pipe and fitting of the same material and size as the trap.

## 2.9 Marking

The minimum marking required on a trap shall comprise the following:

- the manufacturer's name or trade mark;
- the nominal size in accordance with tables 2 and 3, unless this is marked on the packaging;
- the material (symbol or code) from which the main body is made.

3) This test is a measure of the effective cross-sectional area and hydraulic resistance of the trap.