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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Building construction — Jointing products — Determination of extrudability of sealants using standardized apparatus

*Construction immobilière — Produits pour joints — Détermination de l'extrudabilité des
mastics au moyen d'un appareil normalisé*

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Reference number
ISO 9048 : 1987 (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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 9048 was prepared by Technical Committee ISO/TC 59, *Building construction*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Building construction — Jointing products — Determination of extrudability of sealants using standardized apparatus

1 Scope and field of application

This International Standard specifies a method for the determination of extrudability of one-component or multi-component sealants regardless of the kind of packages in which they are supplied or from which they are applied to the joint in buildings.

NOTE — A method for the determination of the extrudability of one-component sealants from the packages in which they are supplied is given in ISO 8394.

2 References

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

ISO 2009, *Slotted countersunk head screws (common head style) — Product grade A*.

ISO 2338, *Parallel pins, unhardened*.

ISO 6927, *Building construction — Jointing products — Sealants — Vocabulary*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 6927 apply.

4 Principle

Extrusion of a defined volume of sealant from a standardized device under defined conditions by means of compressed air. Reporting of the extrudability as extruded volume per time unit, in the case of multi-component sealants by plotting a diagram.

5 Apparatus

5.1 Extrusion device, for pneumatic operation according to figures 1 and 2 for a test volume of approximately 250 or 400 ml and with an orifice diameter of 2, 4, 6 or 10 mm as stipulated in relevant requirement standards or as agreed.

5.2 Air compressor, with valve and pressure gauge to maintain the supply of compressed air at $200 \pm 2,5$ kPa and with an appropriate connection to the extrusion device.

5.3 Graduated glass cylinder, of 1 000 ml capacity.

5.4 Stop watch, calibrated in seconds.

6 Conditioning

The sealant to be tested and the apparatus shall be conditioned at 5 ± 2 °C and/or 23 ± 2 °C and at (50 ± 5) % relative humidity for at least 8 h.

7 Procedure

7.1 General

The test procedure shall be carried out at 23 ± 2 °C and at (50 ± 5) % relative humidity.

Fit the piston and ring of the extrusion device (5.1) together and insert in the cylinder with the ring towards the orifice. Fill the cylinder with the sealant without producing any bubbles. In the case of multi-component sealant the filling shall be done immediately after the components have been mixed according to the requirements of the manufacturer.

Flush the surface of the sealant before the orifice cap, slide bar and orifice plate are put on the cylinder.

Choose the cylinder volume and orifice diameter according to the stipulations of the relevant requirement standards or as agreed upon between the parties involved.

Where a sealant which has been conditioned at more than one of the temperatures stated in clause 6 is tested, the same cylinder volume and orifice diameter shall be used.

Set the filled extrusion device (5.1) under an air pressure of $200 \pm 2,5$ kPa (5.2) with the slide bar closed and keep it constantly under this pressure during the whole test.

Before starting measurement extrusion, extrude 2 or 3 cm of sealant to fill the orifice of the extrusion device.

7.2 Testing of one-component sealants

Extrude all of the sealant in the extrusion device (5.1) in one movement and measure the time required. Calculate the extrusion rate from the chosen test volume and the extrusion time in millilitres per minute.

7.3 Testing of multi-component sealants

Place 500 ml of deionized or distilled water in the graduated glass cylinder (5.3) and read the level of water. Then extrude approximately 50 ml of the sealant from the extrusion device (5.1) into the water and record the time required. Read and record the level of water for its exact volume. The first extrusion shall be performed 15 min after beginning of the mixing of the components.

Repeat the procedure at least three times, that is, extruding approximately 50 ml each time and recording the time required and the exact volume.

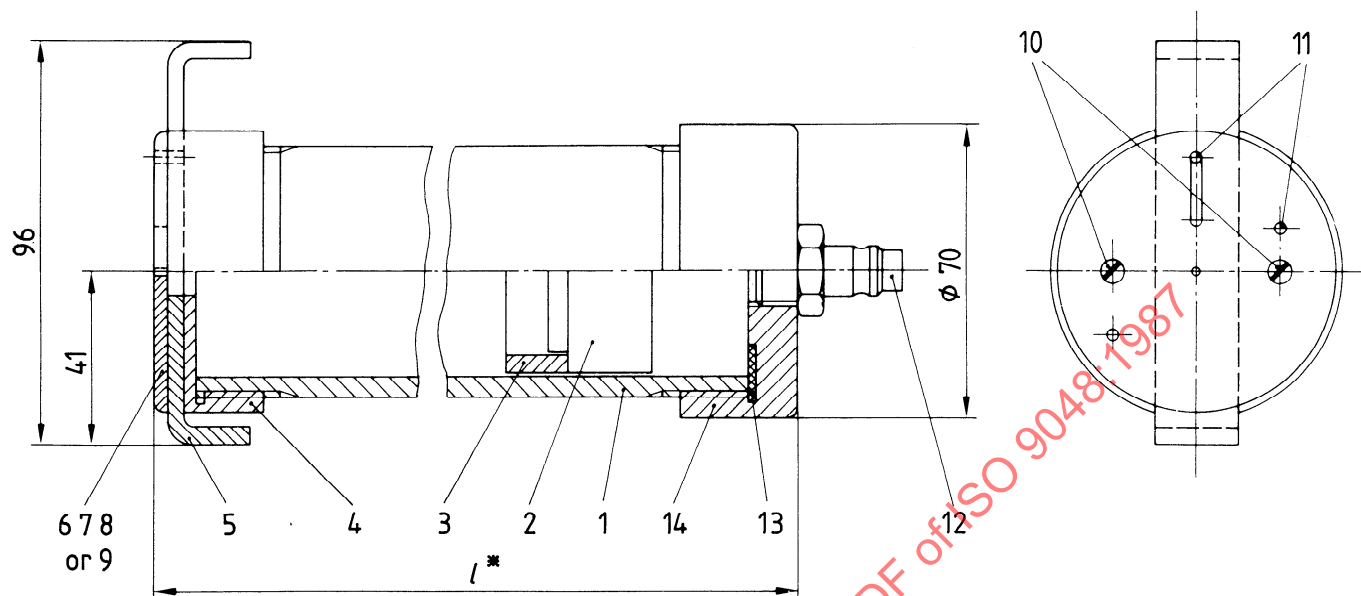
Using the time required for each volume of sealant at suitable intervals of time, develop a volume/time graph so that a curve can be plotted which shows the extruded volume per minute at any time within the application life of the sealant as specified by the manufacturer.

8 Test report

The test report shall include the following information :

- a) reference to this International Standard;
- b) name and type of sealant;
- c) batch of sealant and age, if possible;
- d) conditions of mixing and mixing device in the case of multi-component sealants;
- e) volume of sealant tested (cylinder volume) and orifice diameter used;
- f) extrusion rate in millilitres per minute, in the case of one-component sealants for each conditioning temperature applied;
- g) diagram of volume/time curve and average extrusion rate in millilitres per minute, in the case of multi-component sealants for each conditioning temperature applied;
- h) any deviation from the specified test conditions.

Dimensions in millimetres



* $l = 182$ mm for 250 ml test volume

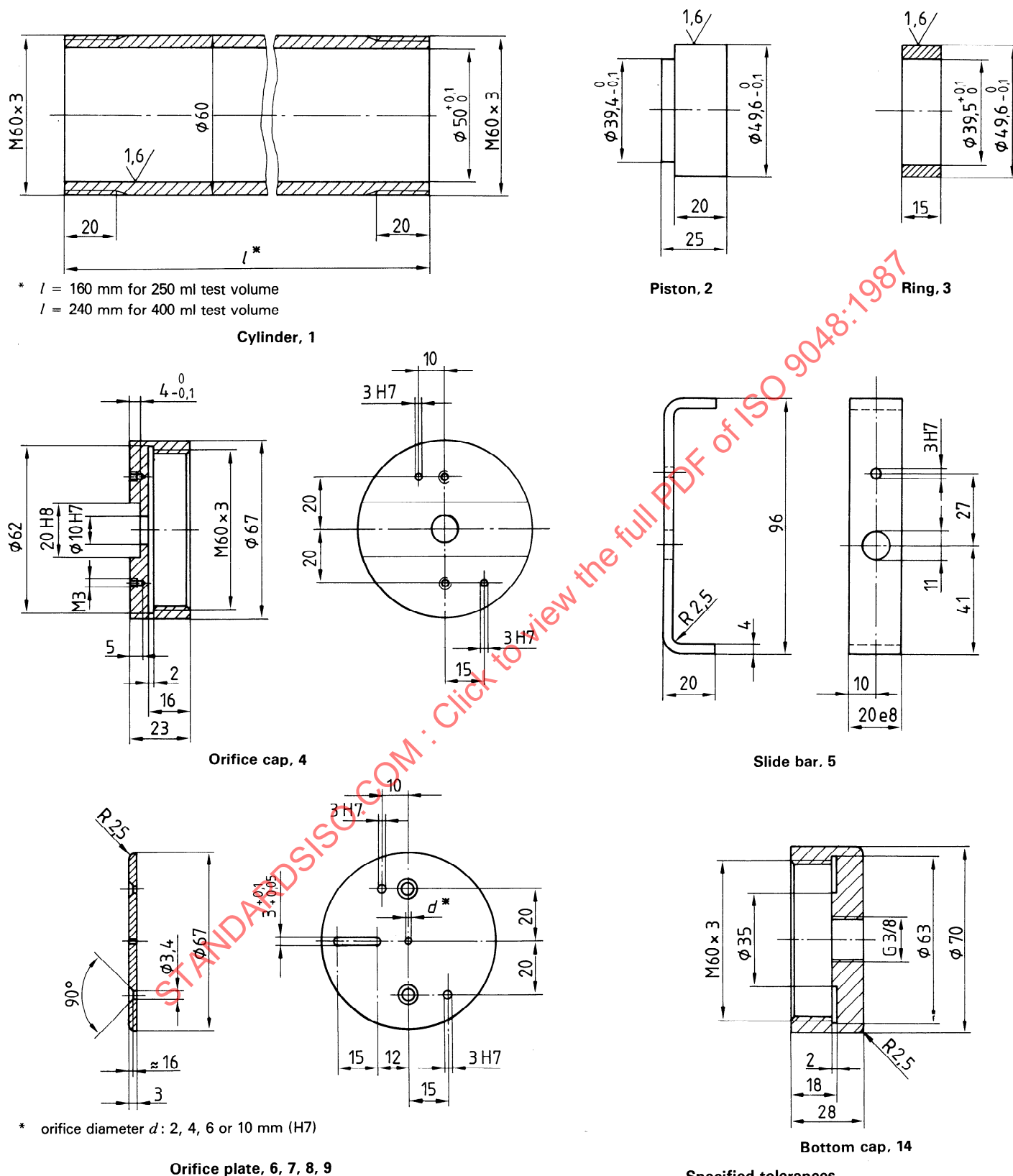
$l = 262$ mm for 400 ml test volume

Reference No.	Quantity	Item ¹⁾	Material
1	1	cylinder	copper-zinc alloy
2	1	piston	copper-zinc alloy
3	1	ring	copper-zinc alloy
4	1	orifice cap	copper-zinc alloy
5	1	slide bar	stainless steel
6	1	orifice plate, $d = 2$ mm	stainless steel
7	1	orifice plate, $d = 4$ mm	stainless steel
8	1	orifice plate, $d = 6$ mm	stainless steel
9	1	orifice plate, $d = 10$ mm	stainless steel
10	2	countersunk head screw : ISO 2009 - M3 $\times$ 6 - 4,8	stainless steel
11	3	parallel pin : ISO 2338 - 6 $\times$ 8	stainless steel
12	1	coupling with pipe thread : ISO 228-1 - G 3/8	copper-zinc alloy
13	1	neoprene gasket, outer diameter 60 mm, material 25 mm $\times$ 2 mm	neoprene
14	1	bottom cap	copper-zinc alloy

1) See figure 2.

Figure 1 — Extrusion device

Dimensions in millimetres



NOTES

- $\sqrt[6.3]{}$ all over except where otherwise stated.
- Parts 10 to 13 are not illustrated.

Specified tolerances

3 H7	10 H7	20 H8	20 e8	50 H7
+0,009 0	+0,015 0	+0,033 0	-0,04 -0,073	+0,025 0

Figure 2 — Parts of extrusion device