



भारतीय मानक ब्यूरो BUREAU OF INDIAN STANDARDS

MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG, NEW DELHI 110002
Phone: + 91 11 23230131, 23233375, 23239402 Extn 8406, 23608406; Website: www.bis.gov.in

व्यापक परिचालन मसौदा

हमारा संदर्भ : सीईडी 43/टी-97

17 अक्टूबर 2022

तकनीकी समिति : मृदा एवं नींव इंजीनियरी विषय समिति, सीईडी 43

प्राप्तकर्ता :

- 1 सिविल इंजीनियरी विभाग परिषद, सीईडीसी के सभी सदस्य
- 2 मृदा एवं नींव इंजीनियरी विषय समिति, सीईडी 43 के सभी सदस्य
- 3 रुचि रखने वाले अन्य निकाय।

महोदया/महोदय,

निम्नलिखित मसौदा संलग्न है:

प्रलेख संख्या	शीर्षक
सीईडी 43 (20668)WC	संकुचन कारकों के निर्धारण के लिए उपकरण – विशिष्टि का भारतीय मानक मसौदा (IS 10077 का पहला पुनरीक्षण) (ICS No. 93.020; 13.080.20)

कृपया इस मसौदे का अवलोकन करें और अपनी सम्मतियाँ यह बताते हुए भेजे कि यह मसौदा प्रकाशित हो तो इस पर अमल करने में, आपको व्यवसाय अथवा कारोबार में क्या कठिनाइयाँ आ सकती हैं।

सम्मतियाँ भेजने की अंतिम तिथि: 17 नवंबर 2022

सम्मति यदि कोई हो तो कृपया अधोहस्ताक्षरी को ई मेल द्वारा madhurima@bis.gov.in पर या उपरलिखित पते पर, संलग्न फॉर्मेट में भेजें।

यदि कोई सम्मति प्राप्त नहीं होती है अथवा सम्मति में केवल भाषा संबंधी त्रुटि हुई तो उपरोक्त प्रलेख को यथावत अंतिम रूप दे दिया जाएगा। यदि सम्मति तकनीकी प्रकृति की हुई तो विषय समिति के अध्यक्ष के परामर्श से अथवा उनकी इच्छा पर आगे की कार्यवाही के लिए विषय समिति को भेजे जाने के बाद प्रलेख को अंतिम रूप दे दिया जाएगा।

यह प्रलेख भारतीय मानक ब्यूरो की वेबसाइट www.bis.gov.in पर भी उपलब्ध हैं।

धन्यवाद।

भवदीय

ह/-

(अरुण कुमार एस.)

वै. 'ई'/निर्देशक और प्रमुख (सिविल इंजीनियरी)

संलग्न: उपरलिखित



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**DRAFT IN
WIDE CIRCULATION**

DOCUMENT DESPATCH ADVICE

Reference	Date
CED 43/T-97	17 October 2022

TECHNICAL COMMITTEE:

SOIL AND FOUNDATION ENGINEERING SECTIONAL COMMITTEE, CED 43

ADDRESSED TO:

1. All Members of Civil Engineering Division Council, CEDC
2. All Members of Soil and Foundation Engineering Sectional Committee, CED 43
3. All others interests

Dear Madam/Sir,

Please find enclosed the following draft:

Doc. No.	Title
CED 43 (20668)WC	Draft Indian Standard Equipment for Determination of Shrinkage Factors — Specification (<i>First Revision of IS 10077</i>) (ICS No. 93.020; 13.080.20)

Kindly examine the draft and forward your views stating any difficulties which you are likely to experience in your business or profession, if this is finally adopted as National Standard.

Last Date for comments: 17 November 2022

Comments if any, may please be made in the enclosed format and emailed at madhurima@bis.gov.in or sent at the above address.

In case no comments are received or comments received are of editorial nature, you will kindly permit us to presume your approval for the above document as finalized. However, in case comments, technical in nature are received, then it may be finalized either in consultation with the Chairman, Sectional Committee or referred to the Sectional Committee for further necessary action if so desired by the Chairman, Sectional Committee.

The document is also hosted on BIS website www.bis.gov.in.

Thanking you,

Yours faithfully,

Sd/-

(Arun Kumar S.)

Sc. 'E'/Director and Head (Civil Engg.)

Encl: As above

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

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Draft Indian Standard

EQUIPMENT FOR DETERMINATION OF SHRINKAGE FACTORS — SPECIFICATION

(First Revision of IS 10077)

Soil and Foundation Engineering
Sectional Committee, CED 43

Last date of Comments:
17 November 2022

Soil and Foundation Engineering Sectional Committee, CED 43

FOREWORD

(Formal clauses will be added later)

There is a series of standards on methods of testing of soils. It has been recognized that reliable and inter-comparable test results can be obtained only with the standard testing equipment capable of giving that desired level of accuracy. With this objective, a series of specifications covering the requirements of equipment used for testing soils have been published to encourage their development and manufacture in the country.

The equipment covered in this standard is used in the apparatus for determination of shrinkage factors of soils covered in IS 2720 (Part 6) : 1972 'Methods of test for soils: Part 6 Determination of shrinkage factors (*first revision*)'.

This standard was first published in 1982. The present revision has been taken up with a view to incorporating the modifications found necessary as a result of experience gained in the use of this standard. Also, in this revision, the standard has been brought into latest style and format of Indian Standards, and references to Indian Standards, wherever applicable have been updated. The other major modifications incorporated in this revision of the standard are given below:

- a) The requirement of conformity of Polymethyl methacrylate (acrylic) sheets to IS 14753 : 1999 'Polymethyl methacrylate (PMMA) (Acrylic) sheets' has been added.
- b) BIS certification marking clause has been modified to align with the revised *Bureau of Indian Standards Act, 2016*.

This standard contributes to the Sustainable Development Goal 9 - Industry, Innovation and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

BUREAU OF INDIAN STANDARDS

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Draft Indian Standard

EQUIPMENT FOR DETERMINATION OF SHRINKAGE FACTORS — SPECIFICATION

(First Revision of IS 10077)

Soil and Foundation Engineering
Sectional Committee, CED 43

Last date of Comments:
17 November 2022

1 SCOPE

This standard covers the requirements of equipment for the apparatus used for determination of shrinkage limit, shrinkage ratio, shrinkage index and volumetric shrinkage of soils.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication the editions indicated are valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
319 : 2007	Free cutting brass bars, rods and section — Specification <i>(fifth revision)</i>
620 : 1985	Specification for wooden tool handles general requirements <i>(fourth revision)</i>
878 : 2008	Laboratory glassware — Graduated measuring cylinders <i>(second revision)</i>
2102 (Part 1) : 1993	General tolerances: Part 1 Tolerances for linear and angular dimensions without individual tolerance indications <i>(third revision)</i>
2220 : 1990	Engineering metrology — Steel straightedges — Specification <i>(first revision)</i>
2507 : 1975	Specification for cold rolled steel strips for springs <i>(first revision)</i>
2837 (Part 2) : 1977	Specification for porcelain crucibles and basins: Part 2 Basins <i>(first revision)</i>
6911 : 2017	Stainless steel plate, sheet and strip — Specification <i>(second revision)</i>
14753 : 1999	Polymethyl methacrylate (PMMA) (Acrylic) sheets

3 DIMENSIONS

Dimensions and tolerances of different equipment shall be as detailed in Fig. 1 to 6. Except where tolerances are specifically mentioned against the dimensions, all dimensions shall be taken as nominal dimensions and tolerances as given in IS 2102 (Part 1) shall apply.

4 MATERIALS

The materials of construction of various parts of the equipment shall be as given in Table 1.

Table 1 Materials of Construction of Parts of Equipment
(Clause 4)

SI No.	Equipment	Material	Special requirement, if any	Relevant Grade/Conforming to Indian Standard
(1)	(2)	(3)	(4)	(5)
i)	Evaporating dish	Porcelain	-	IS 2837 (Part 2)
ii)	Spatula			
	a) Blade	Steel	Polished	IS 2507
	b) Handle	Wood	Painted	IS 620
iii)	Shrinkage dish	Stainless steel	-	Grade X07Cr18Ni9 of IS 6911
iv)	Prong plate			
	a) Prong	1) Brass	-	IS 319
		2) Stainless steel	-	Grade X07Cr18Ni9 of IS 6911
	b) Plate	Acrylic plastic	-	IS 14753
v)	Plain plate	Acrylic plastic	-	IS 14753
vi)	Glass cup	Glass	-	IS 878

5 CONSTRUCTION

5.1 Evaporating Dish

The evaporating dish shall be as detailed in Fig 1. The inside of the evaporating dish shall be smooth.

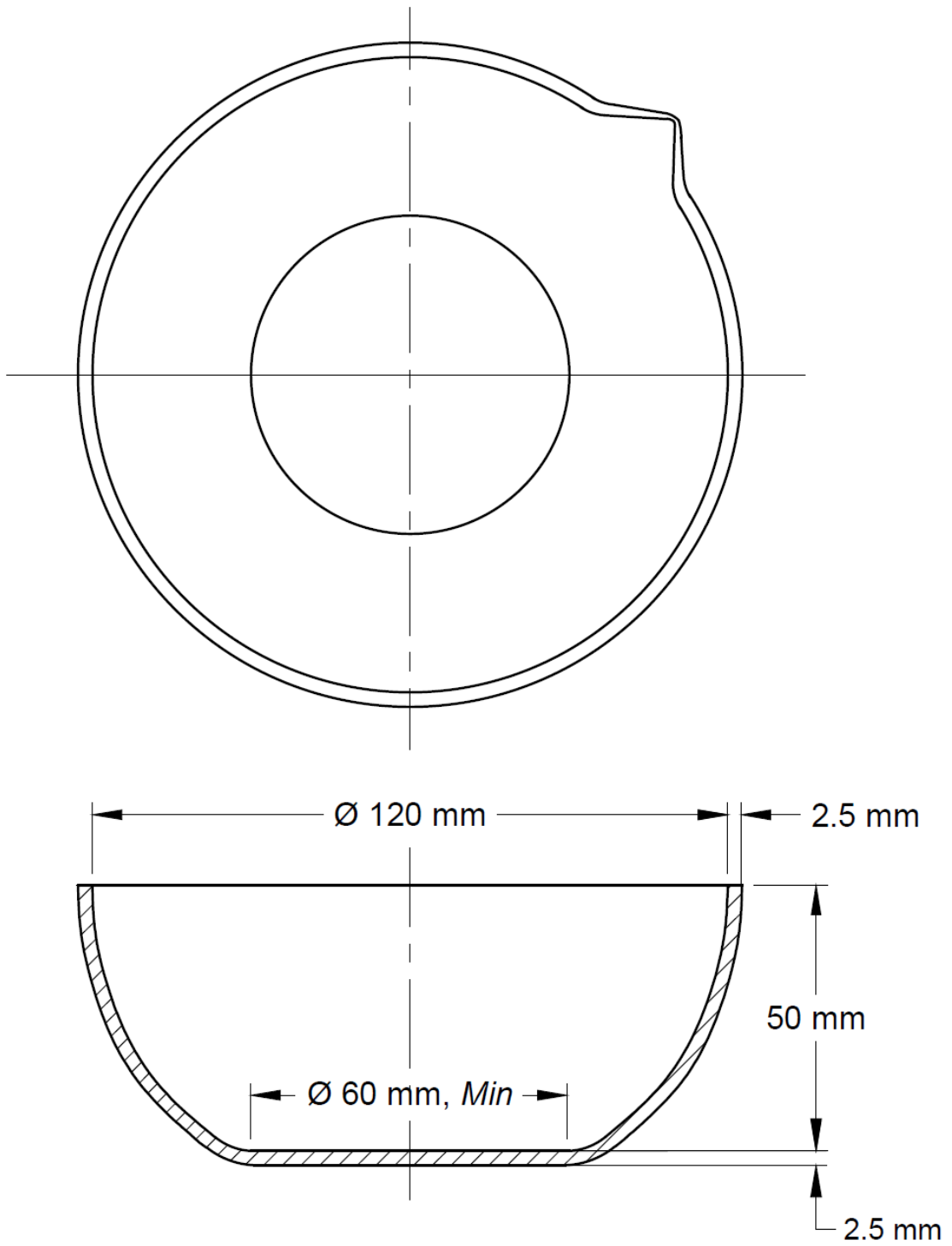
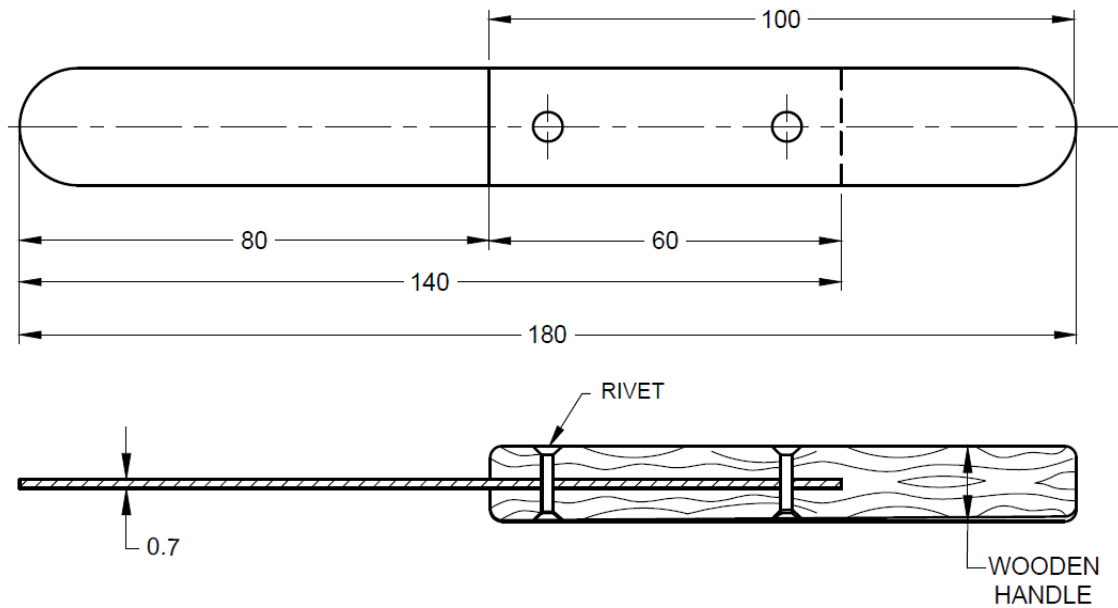


FIG. 1 EVAPORATING DISH

5.2 Spatula

The spatula shall be as detailed in Fig. 2. A wooden handle shall be fixed as shown in Fig 2.

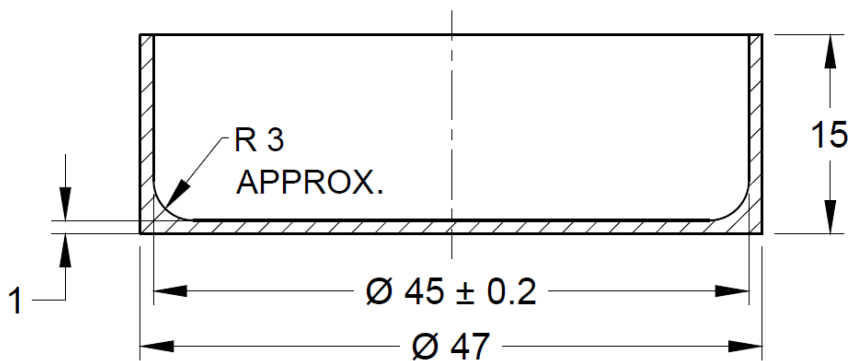


All dimensions in millimetres.

FIG. 2 SPATULA

5.3 Shrinkage Dish

The shrinkage dish shall be as detailed in Fig. 3. The internal corner between the bottom and the vertical sides shall be rounded into a smooth concave curve of approximately 3 mm radius.



All dimensions in millimetres.

FIG. 3 SHRINKAGE DISH

5.4 Glass Cup

The glass cup shall be as detailed in Fig. 4.

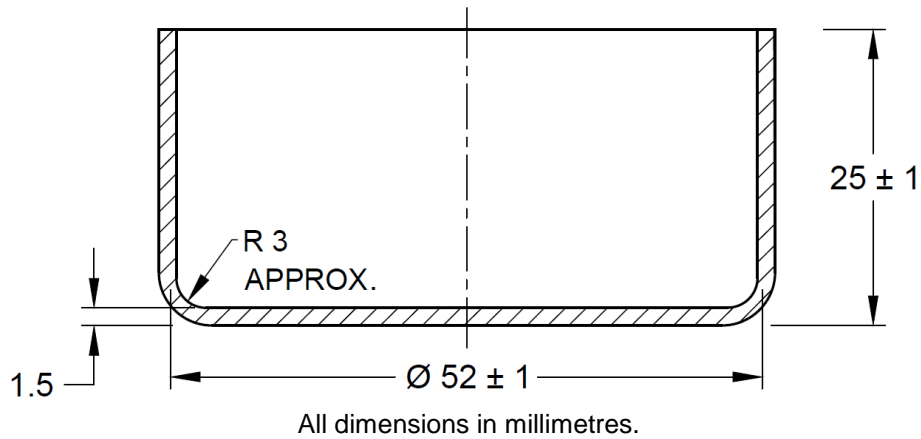
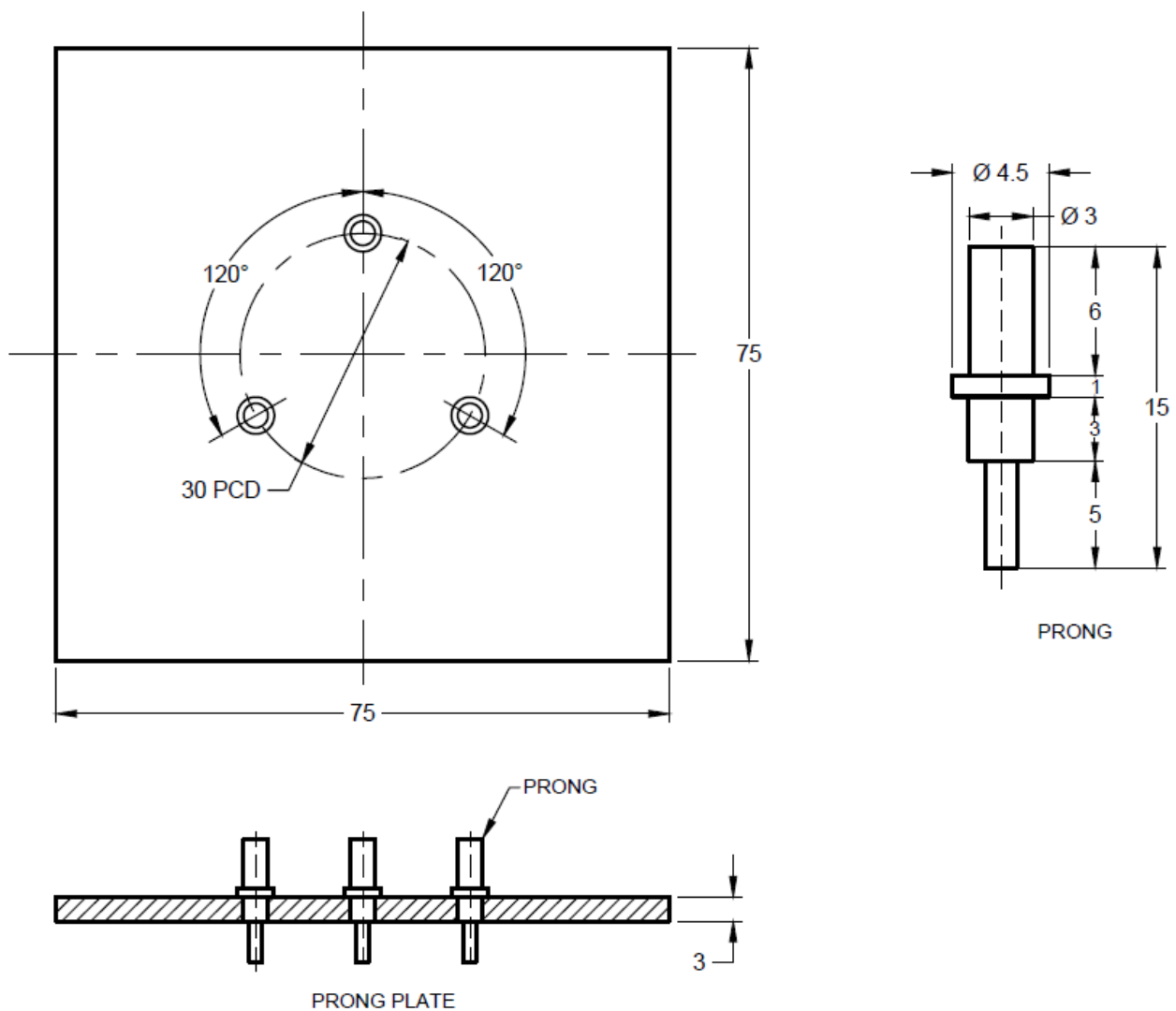


FIG. 4 GLASS CUP

5.5 Prong Plate

The prong plate shall be as detailed in Fig. 5. The plate shall be plain. Three prongs as detailed in Fig. 5 shall be fixed to the plate at 120° to each other and at a spacing of 30 mm (centre to centre).

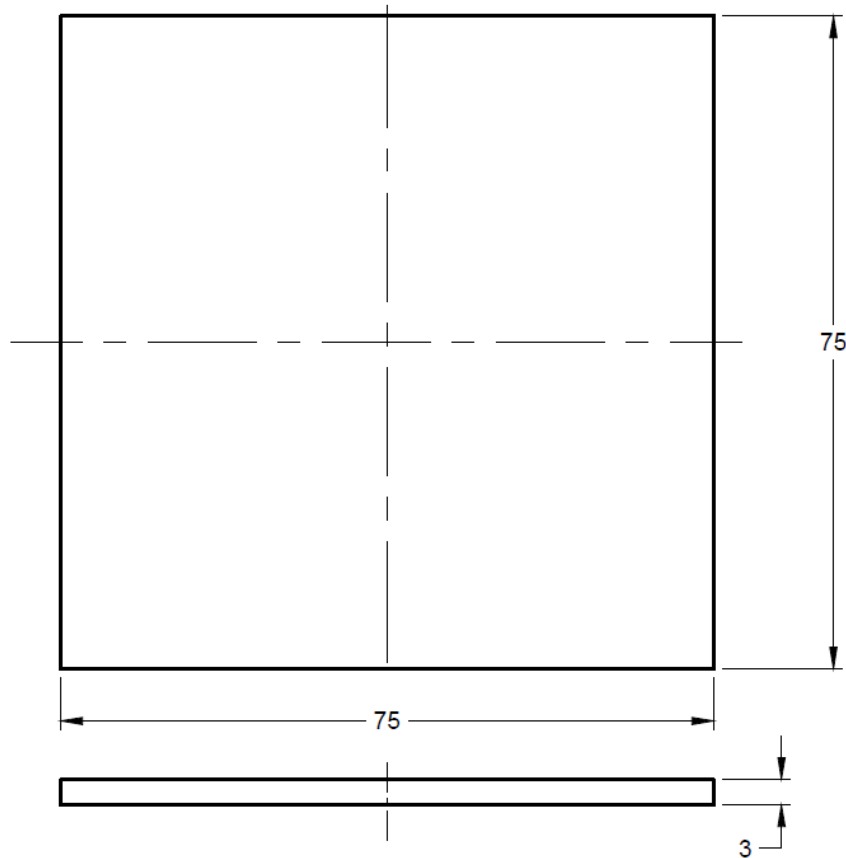


All dimensions in millimetres.

FIG. 5 DETAILS OF PRONG

5.6 Plain Plate

The plain plate shall be of size 75 mm square and of 3 mm thickness. The plate shall be plain (see Fig. 6).



All dimensions in millimetres.

FIG. 6 PLAIN PLATE

5.7 Other Accessories

The equipment shall also have the following other accessories:

- a) Straight edge, 150 mm long and 25 mm wide as per IS 2220.
- b) Measuring cylinder of 25 ml capacity as per IS 878.

6 MARKING

6.1 The following information shall be clearly and indelibly marked on the equipment:

- a) Name of the Manufacturer or his registered trade-mark or both;
- b) Type of material used; and
- c) Date of manufacture.

6.2 BIS Certification Marking

The product conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product may be marked with the Standard Mark.