

Specification for Test sieves

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The preparation of this British Standard was entrusted by the General Mechanical Engineering Standards Committee (GME/-) to Technical Committee GME/29, upon which the following bodies were represented:

- BCIRA
- British Aggregate Construction Materials Industries
- British Ceramic Society
- British Laboratory Ware Association
- Cement and Concrete Association
- Cement Makers' Federation
- Coated Abrasives Manufacturers Association
- Department of Trade and Industry (Warren Spring Laboratory)
- Department of Transport (Highways)
- Guild of Metal Perforators
- Incorporated National Association of British and Irish Millers
- Institution of Chemical Engineers
- Institution of Mining and Metallurgy
- Mechanical Handling Engineers Association
- Ministry of Defence
- National Coal Board
- Society of Chemical Industry
- Society of Cosmetic Scientists
- Woven Wire Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Institution of Mining Engineers
- Oil and Colour Chemists Association
- University of Bradford

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Foreword

This British Standard, having been prepared under the direction of the General Mechanical Engineering Standards Committee, supersedes BS 410:1976 which is withdrawn.

For wire cloth test sieves the R 40/3 series of aperture sizes, where successive sizes have a ratio of about 1.2, are specified. For perforated plate test sieves both the R 40/3 and the R 20 series are specified particularly to meet the requirements of the aggregate, coal and iron industries. A few special non-ISO¹⁾ aperture size perforated plate test sieves, some of such long standing that they have to be retained and others of larger size than is required by ISO/TC 24, are also included [see Table 3 c)].

Mesh numbers are included in Appendix E.

A specification for electroformed test sieves is being developed by ISO/TC 24 and the “nominal size of openings” is specified in ISO 565-1983. A British Standard specification for electroformed sheet test sieves is in preparation.

The methods of use of test sieves are described in BS 1796.

In Figure 3 and Figure 7 the term “micron” is used as this is widely accepted in industry as representing micrometre (μm).

This revised standard now includes an additional aperture size, 32 μm , and requirements for nesting round test sieves.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ International Organization for Standardization.

1 Scope

This British Standard specifies requirements for sieves used for testing the size distribution of granular products in the particle size range from 125 mm down to 32 μm .

Appendix G gives information on the maintenance of test sieves.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply²⁾.

2.1

test sieve

a sieve, intended for the particle size analysis of the material to be sieved, which conforms to a test sieve standard specification

2.2

nest of test sieves

a set (regular or irregular) of test sieves assembled together with a lid (cover) and receiver (pan)

2.3

sieving medium

a surface containing regularly arranged apertures of uniform shape and size

2.4

frame

a rigid framework which supports the sieving medium and limits the spread of the material being sieved

2.5

lid (cover)

a cover which fits snugly over a sieve to prevent escape of the material being sieved

2.6

receiver (pan)

a pan which fits snugly beneath a sieve to receive the whole of the passing fraction

2.7

aperture size

the dimension defining an opening

2.8

woven wire cloth

a sieving medium of wires which cross each other to form the apertures

2.9

wire diameter

the diameter of the wire in the woven cloth

2.10

warp

all wires running lengthwise of the cloth as woven

2.11

weft (shoot)

all wires running crosswise of the cloth as woven

2.12

type of weave

the way in which warp and weft wires cross each other

2.13

plain weave

the weave in which every warp wire crosses alternately above and below every weft wire and vice versa [see Figure 1 a)]

2.14

twilled weave

The weave in which every warp wire crosses alternately above and below every second weft wire and vice versa [see Figure 1 b)]

2.15

perforated plate

a sieving medium consisting of a plate with uniform holes in symmetrical arrangement

2.16

pitch (centres)

the distance between corresponding points of two adjacent holes in a perforated plate

2.17

bridge width (bar)

the distance between the nearest edges of two adjacent holes in a perforated plate

2.18

margin

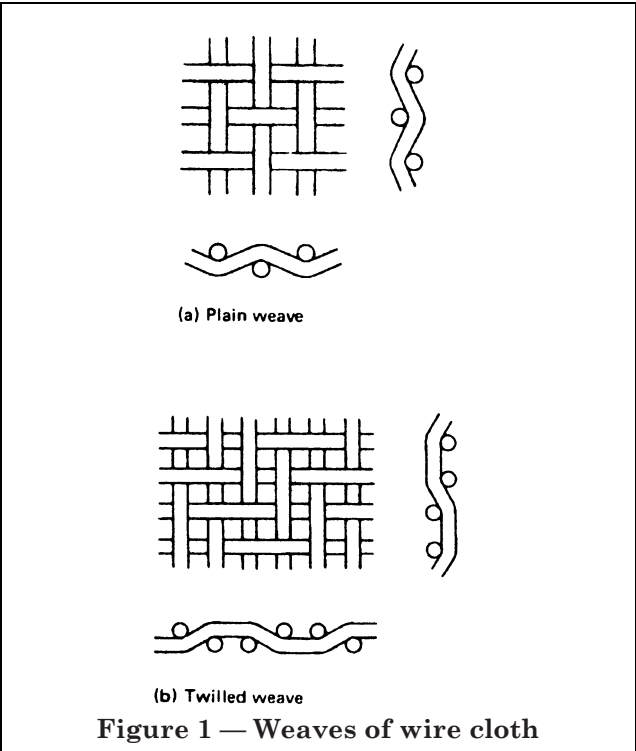
the distance between the outside edges of the outside rows of holes and the edges of a perforated plate

2.19

plate thickness

the thickness of the plate after perforation

²⁾ Taken from ISO 2395.



3 Sieve designation, construction and marking

3.1 Designation

Test sieves shall be designated by the nominal aperture size, which is the nominal central separation of opposite sides of a square aperture or the nominal diameter of a round (circular) aperture. The type of hole, square or round, in perforated plate shall be stated.

3.2 Sieve frames

The dimensions of round sieve frames shall be as given in Table 1.

- NOTE 1 Frames should be made of brass, plated steel or stainless steel.
- NOTE 2 The appropriate sieving medium is included in Table 1.
- NOTE 3 For special purpose sieving, other shapes of frame are available.

3.3 Lid and receiver

When required for round sieves, lids and receivers shall be of the same metal and gauge as the sieves (see Figure 2).

3.4 Finish

Test sieves, receivers and lids shall be smoothly finished.

³⁾ Marking BS 410:1986 on or in relation to a product is a claim by the manufacturer that the product has been manufactured in accordance with the requirements of the standard. The accuracy of such a claim is therefore solely the manufacturer's responsibility. Enquiries as to the availability of third party certification should be addressed to the appropriate certification body.

The seal between frame and sieving medium shall be formed so as to prevent lodging of the material to be sieved. There shall be no lacquer on surfaces that come into contact with the sample.

3.5 Nesting

Sieves to the dimensions in Table 1, complete with lid and receiver, in a nest, shall so assemble that escape of sample during the test sieving operations is prevented.

3.6 Marking

A label shall be permanently attached to the frame of each sieve complying with this standard, legibly marked with the following information (see Figure 3).

- a) The designation. The figures shall be bold, and preferably not less than 5 mm tall, on the left side of the label.
- b) The wording "TEST SIEVE TO BS 410:1986"³⁾.
- c) The material of the wire cloth or of the perforated plate.
- d) The material of the sieve frame.
- e) The maker's name or trade mark.
- f) An identification number.
- g) If required, the wire diameter.

NOTE The purchaser should state in the enquiry and order (see Appendix A) if this marking is required.

4 Woven wire cloth in test sieves

4.1 Material

Wires in test sieves shall not be plated.

NOTE 1 The material for woven wire cloth is not specified. The following materials are commonly supplied.

Material	Range of aperture size for which suitable
Phosphor bronze	Less than 250 µm
Brass	250 µm to 166 mm
Stainless steel	All sizes

NOTE 2 The purchaser should state in the enquiry and order (see Appendix A) specific requirements, if any, for the material of the wire cloth.

4.2 Wire

After the cloth is mounted in the sieve, the average wire diameter at different positions across the sieving surface shall be uniform so that the limits on aperture size can be satisfied.

A band of choice of ± 15 % about the wire diameters given in Table 2 is permitted.

Table 1 — Dimensions of round test sieve frames

Nominal diameter, <i>D</i> and <i>d</i>	Tolerance		Diameter of sieving surface		Nominal depth, <i>H</i>		Appropriate sieving medium
	<i>D</i>	<i>d</i>	min.	max.	Full	Half	
mm	mm	mm	mm	mm	mm	mm	
100	+ 0.4 – 0	– 0.01 – 0.4	90	100	40	20	Wire cloth
200	+ 0.8 – 0	– 0.01 – 0.4	185	200	50	25	Wire cloth or perforated plate
300	+ 0.9 – 0	– 0.01 – 0.6	275	300	75	40	Wire cloth ^a or perforated plate
450	+ 1.0 – 0	– 0.01 – 1.0	425	450	Not less than 100	—	Wire cloth ^a or perforated plate

^a When fine wire cloth is used in large diameter sieves, it should be supported by means of a support mesh or spider.

