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Surface plates —

Part 2:
Granite

Marbres de traçage et de contrôle —

Partie 2: Marbres en roche



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Foreword

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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 8512-2 was prepared by Technical Committee ISO/TC 3, *Limits and fits*.

ISO 8512 consists of the following parts, under the general title *Surface plates*:

- *Part 1: Cast iron*
- *Part 2: Granite*

Annexes A, B, C, D and E of this part of ISO 8512 are for information only.

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Introduction

Surface plates, for many practical purposes, serve the user as a plane or datum surface.

Surface plates are made usually of cast iron or granite; other materials may be used provided that they comply with the requirements for quality and accuracy specified in this International Standard.

For convenience of presentation ISO 8512 comprises two parts, each complete in itself, dealing with cast iron and granite surface plates respectively.

The choice between cast iron and granite surface plates depends on the conditions of use; some general information about care and use, testing, and moderation in loading of plates is given in annex A, annex B and annex C, respectively.

Surface plates —

Part 2: Granite

1 Scope

This part of ISO 8512 specifies requirements for rectangular or square granite surface plates ranging from 160 mm × 100 mm to 2 500 mm × 1 600 mm, as preferred sizes, in four grades of accuracy 0, 1, 2 and 3.

NOTE 1 "Granite" is a commonly used description; a more specific description is given in clause 4.

This part of ISO 8512 applies to new granite surface plates, granite surface plates in use, and those re-conditioned according to their grade.

2 Definition

For the purposes of this part of ISO 8512, the following definition applies.

deviation from flatness of the working surface: The minimum distance separating two parallel planes between which the working surface can just be contained.

3 Nomenclature

For the purposes of this part of ISO 8512, the nomenclature shown in figure 1 applies.

4 Material

Surface plates complying with this part of ISO 8512 shall be made from stable, workable rock presenting a wear-resistant surface which does not tend to scratch steel surfaces. Igneous rocks such as diabase, gabbro and various other granites have been found suitable; they are commonly referred to

as "granite" for the purposes of this part of ISO 8512.

Rock used for surface plates shall be close-grained and of uniform texture, sound and free from flaws and fissures and from inclusions of softer materials. Repair of defects in the top surface is not permitted.

The colour of the granite, which is dependent on the mineral composition, is of no importance, but the colour of any individual plate shall be uniform.

NOTE 2 Some of the physical properties of granite used for surface plates are given in annex E.

5 Preferred sizes

The preferred sizes for granite plates are given in table 1. If plates of other sizes are required, the requirements of this part of ISO 8512 shall nevertheless apply.

The lengths of faces of plates shall be within $\pm 5\%$ of the nominal size.

NOTE 3 It will be seen that the nominal lengths of faces, with one exception, are taken from the R5 series of preferred numbers; one plate, size 2 000 mm × 1 000 mm, is included because it is an established and widely used size, although 2 000 is not an R5 preferred number.

6 Rigidity

The thickness of granite surface plates shall be such that when a concentrated load is applied about the centre of the plate, the loaded area shall not deflect below the remaining area of the plate by more than 1 $\mu\text{m}/200\text{ N}$. The limiting value for deflection applies to surface plates of size 400 mm × 250 mm and larger.

NOTE 4 A test method is given in annex B.

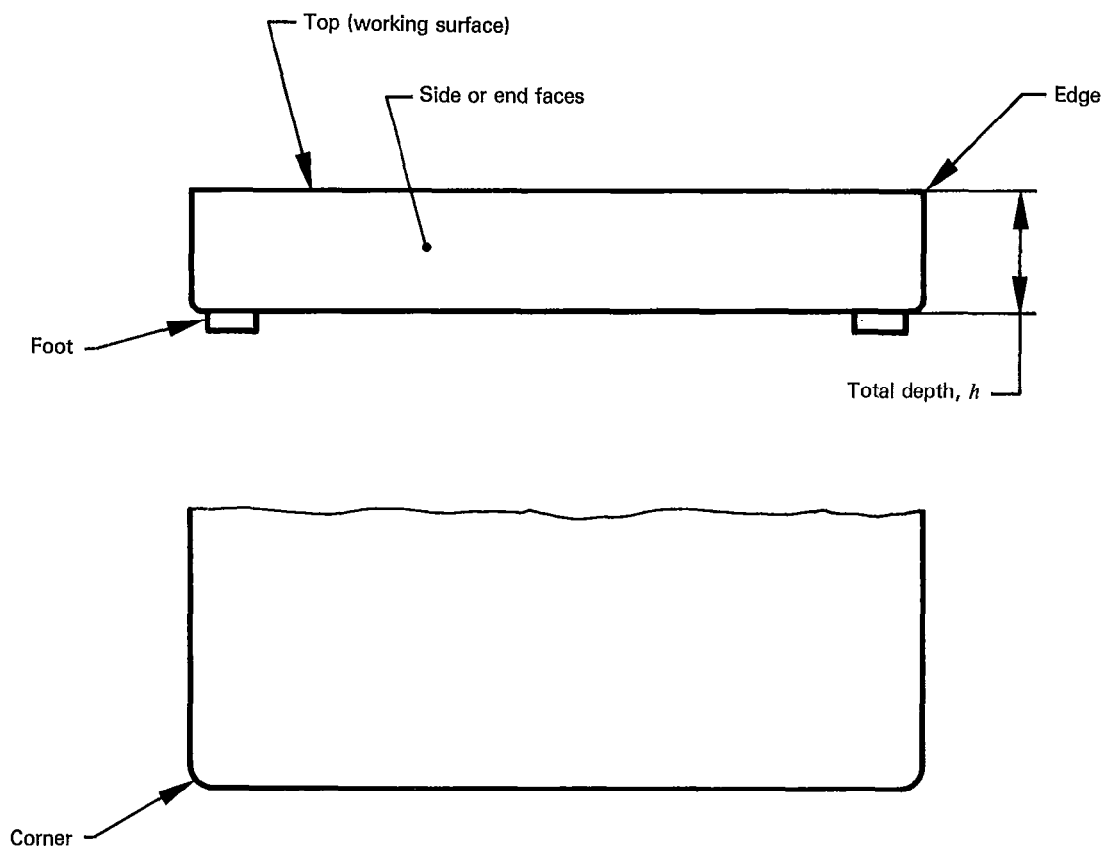


Figure 1 — Nomenclature

7 Finish of the working surface

The top (working surface) of grades 0 and 1 plates shall be finished by lapping, whereas grades 2 and 3 plates may be finished by lapping or left as ground. However, an item placed on it shall not wring to the surface of the plate.

8 General features

8.1 Supporting feet of surface plates

All surface plates shall be supported on three feet. Plates larger than size 1000 mm × 630 mm shall have safety feet. Feet shall be positioned within the boundary of the working surface to minimize deflection.

NOTE 5 The setting of adjustable feet may affect the deviation from flatness of the working surface; specific instructions for adjusting the feet are given in footnote 3 to table 1.

The feet shall be smoothly machined, but machining of the supporting feet into a plane parallel to the working surface is optional.

8.2 Projection of top

If the purchaser so requires, the top of each plate may extend beyond the faces by at least 20 mm on plates of diagonal length up to 400 mm and by at least 25 mm for larger plates. The underside of the projecting surface shall be reasonably flat for accommodating clamps.

8.3 Surfaces other than the working surface

If the purchaser requires the faces to be finished straight, mutually parallel and square, the tolerances shall be specified in the purchasing order.

Side and end faces shall be finished smooth. All edges and corners shall be rounded with a radius of at least 2 mm. Alternatively, the edges and corners may be chamfered at an angle of approximately 45° using the value given above.