
INTERNATIONAL STANDARD



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Non-destructive testing — Aids to visual inspection — Selection of low-power magnifiers

Essais non destructifs — Moyens d'examen visuel — Choix des loupes à faible grossissement

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FOREWORD

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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.

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It has been approved by the Member Bodies of the following countries :

Austria	Germany	Sweden
Belgium	Ireland	Switzerland
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No Member Body expressed disapproval of the document.

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Non-destructive testing — Aids to visual inspection — Selection of low-power magnifiers

0 INTRODUCTION

0.1 Experience has shown that lack of familiarity with the principles underlying the performance, selection and use of low-power magnifiers is a cause of significant loss in terms of time and effort and markedly detrimental to the efficiency of visual inspection.

0.2 This International Standard is intended to provide general guidance on the choice of low-power magnifiers used in the examination of metallic and other surfaces in order to detect the presence of imperfections or to assess condition and texture.

0.3 As necessary, terms of special significance in the context of this document are defined in annex A.

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard specifies the characteristics of the following types of low-power magnifiers and gives recommendations for their selection for the inspection of surfaces :

- 1) Single-element magnifiers of magnification up to X3 (Type A).
- 2) Multi-element magnifiers of magnification up to X10 (Type B).
- 3) Twin-system magnifiers of magnification up to X15 (Type C), categorized as follows :
 - binocular, normally with a long working distance (Type C.1), and
 - bi-ocular¹⁾, including those fitted with stops or other attachments, for quasi-stereoscopic vision (Type C.2).
- 4) Concave-mirror magnifiers with front-surface reflectors in powers up to X6 (Type D).

1.2 This International Standard is not concerned with :

- 1) watch-makers' loupes and spectacles;

2) single-element, spherical- or cylindrical-lens magnifiers in which either the lens or the lens-mount rests on the surface of the object to be examined (this includes magnifiers provided with any form of graduated scale for the purpose of measurement);

3) plastics lens sacs, liquid-filled;

4) magnifiers intended for the examination of internal surfaces.

2 DESCRIPTION OF TYPES

2.1 In all types of magnifier, except Type A, an illuminator may be incorporated in the lens mount or the stand.

The stand may take the form of a distance-piece, tripod, pillar or other support.

2.2 "Reading-glass" magnifiers, Type A, will normally be hand-held. Hand-held pocket-size magnifiers are also included in Types A and B.

2.3 Twin-system magnifiers, Type C.1, will normally be mounted on a stand, but may be demountable for use when access to the surface to be examined is difficult. Type C.2 is, of necessity, stand-mounted.

2.4 Types C.1 and D, and also some forms of Type A, provide the viewing conditions required for binocular vision, with the accompanying extended field of view and depth of focus. The use of Type D is confined to small objects.

3 MAGNIFICATION

3.1 Magnification shall be stated in terms of linear enlargement (see annex A). Where appropriate, magnifiers of Types A and B shall have the nominal magnification permanently marked on the lens mount.

3.2 In cases where the manufacturer customarily rates lens power in dioptres, the equivalent linear magnification shall also be marked. If this is not practicable, the magnification shall be certified in a written statement.

1) The distinction between bi-ocular viewing and stereoscopic viewing is defined in annex A.