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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 22525-2008

Regular polygon mirror

正多面棱体

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Foreword

GB/T 22525-2008 was issued on 12 November 2008 by the General Administration of Quality Supervision, Inspection and Quarantine and the Standardization Administration of the People's Republic of China, and has been in force since 1 May 2009.

The document is a recommended national standard: the /T in the designation marks it as recommended rather than compulsory.

1 Scope

China's national standard for the polygon mirror, the reference standard against which angle-measuring instruments are calibrated. It is a solid block of glass or steel cut into a regular polygon whose faces are optically flat, so that the normals of adjacent faces make angles that are exactly equal by construction: a twelve-sided polygon divides the circle into twelve angles of thirty degrees, and it does so because the sum of the angles round a point is fixed at 360 degrees whatever the errors of the individual faces. That property is what makes the instrument self-proving - the errors of the faces must add to zero - and it is why the polygon, read with an autocollimator, is the working standard for calibrating rotary tables, index heads, theodolites and angle encoders in metrology laboratories and machine tool works. The standard specifies the terms and definitions, the types, basic parameters and dimensions, the requirements, the inspection methods and the marking and packaging of regular polygon mirrors, and applies to polygons of accuracy grades 0, 1, 2 and 3.

This standard specifies the terms and definitions, the types, the basic parameters and dimensions, the requirements, the inspection methods, and the marking and packaging of regular polygon mirrors.

This standard applies to regular polygon mirrors of accuracy grades 0, 1, 2 and 3, referred to below as polygons.

2 Normative references

The provisions of the following document become provisions of this standard through reference in it. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this standard; however, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition. For undated references, the latest edition applies.

GB/T 17163 Geometrical measuring instrument - Vocabulary of terms - Basic terms.

3 Terms and definitions

The terms established in GB/T 17163 and the following apply to this standard.

3.1 regular polygon mirror - a material measure in the form of a regular polygon, in which the angles between the normals of adjacent plane faces are equal measuring angles and which has an accurate angular value; see Figure 1.

3.2 measuring level - the plane perpendicular to the centre line of the polygon and passing through the mid-section of its working faces; see Figure 1.

3.3 working angle - the angle formed on the measuring level by the normals of any two working faces; see Figure 1.

3.4 base level - the surface used as the locating datum during measurement; see Figure 1.

3.5 up level - the surface opposite to the base level, the one bearing the marking; see Figure 1.

4 Types, basic parameters and dimensions

The types, basic parameters and dimensions of the polygon are given in Figure 2 and Table 1; the figures are for illustration only. Figure 2 shows the polygon in plan and in section, with the width of a working face, the outside diameter, the height, the central bore and the marking, and the working angles built up as successive multiples of the single measuring angle round the centre, up to the last face.