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Measuring method for the homogeneity of glasses by laser interferometry

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Measuring method for the homogeneity of glasses by laser interferometry

1 Scope This Japanese Industrial Standard specifies the measuring method for the homogeneity of the refractive index of glasses by laser interferometry.

NOTE : The normative references of this Standard shall be as follows.

JIS Z 8401 *Rules for rounding off of numerical values*

JIS Z 8703 *Standard atmospheric conditions for testing*

2 Terms and definitions For the purposes of this Standard, the following terms and definitions apply.

(1) **homogeneity of refractive index of glass**

maximum of the refractive index variations, excluding linear changes, among refractive index variations within the predetermined area in a single glass sample

(2) **refractive index matching liquid**

transparent liquid with the refractive index which is equivalent or approximate to the refractive index of a glass sample

The refractive index shall be a value in the wavelength of a laser.

(3) **flatness correction plate**

plane-parallel plate obtained by polishing an optical glass with high homogeneity to a high degree of accuracy (for example, 1/20 of a laser wavelength), which is stuck to a sample by using an index-matching liquid as an intermediate liquid, for the purpose of correcting the flatness of the sample

(4) **PV value of wavefront**

difference between the maximum and the minimum deviations of the wavefront, observed when light transmits through a sample once with an interferometer, from the approximated plane

3 Principle The PV value of wavefront of a luminous flux that transmits through a sample with sufficient flatness is measured using a laser interferometer, and the homogeneity of the refractive index of the sample is obtained.

4 Measuring apparatus The measuring apparatus shall consist of a laser interferometer, an interferogram analysis device, a sample, a vibration isolation device, a thermostatic chamber, etc. as shown below (see figure 1).