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# Ophthalmic optics and instruments — Correlation of optotypes

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TECHNICAL REPORT

# ISO/TR 19498

First edition
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# Ophthalmic optics and instruments — Correlation of optotypes

*Optique et instruments ophtalmiques — Corrélation des optotypes*

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# Foreword

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 172, *Optics and photonics*, Subcommittee SC 7, *Ophthalmic optics and instruments*.

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# Ophthalmic optics and instruments — Correlation of optotypes

## 1 Scope

This Technical Report specifies a method of correlation between a given set of optotypes and the standard optotype (Landolt ring) formed and presented as specified in ISO 8596.

All test methods are type tests and suitable equivalent test methods may be substituted.

## 2 General requirements for optotypes

Each size of a set of optotypes is specified in terms of the size of the standard Landolt ring that is equally recognizable as determined according to the method of Clause 3.

This means that the size of a set of optotypes is the size of the nominal 1,0 acuity set magnified or minified by a multiple of the ratio 1,2589 (see ISO 8596:2009, Clause 10).

## 3 Correlation of optotypes

### 3.1 Selection of optotypes for correlation testing

Sufficient grades or steps should be used to establish a frequency of seeing curve for the standard optotype and the optotype being investigated.

A recommended range of decimal acuity sizes to use is 2,0 to 0,4 in Log MAR steps of 0,1.

### 3.2 Test area

The test area is circular with a diameter of 4° ± 1°. The surrounding field has a diameter of 15° ± 1,5° and is illuminated homogeneously so that it does not influence the measurement. The luminance of the surrounding field does not exceed that of the test area.

### 3.3 Presentation of the optotypes

**3.3.1** When a measurement of visual acuity is made with the eight-position Landolt ring for purposes of correlation, 120 presentations are made one ring at a time with the ring positions for successive presentations arranged in random order. The optotypes to be correlated are also presented one at a time in random order until a series of 120 presentations has been completed. In the 120 presentations, the different optotypes in each set are represented approximately the same number of times.

**3.3.2** The number 120 is divisible by 2, 3, 4, 6, 8, 10, 12, 15, 20, 30, 40, and 60. Hence, with sets of optotypes having any of these numbers of different optotypes, it is possible for each optotype to be represented the same number of times in 120 presentations. The comparison is started with a grade of optotypes large enough to yield a frequency of seeing of 100 %. Measurements are made with both eight-position Landolt rings and the optotypes of the same size being correlated. When this has been completed, the procedure is repeated with smaller and smaller sizes until the failure rate corresponds to the level of guessing of 0,125. The probability of guessing $p$ of 0,125 results from the choice of eight different optotypes per acuity grade and the definition of $p$ given in 4.2. Each optotype is exposed for 3 s with an interval of 4 s between exposures.

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