



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS S 0032 : 2003
(AIST/NITE)

**Guidelines for the elderly and
people with disabilities—
Visual signs and displays—
Estimation of minimum legible size
for a Japanese single character**

ICS 13.120; 37.080; 97.020

Reference number : JIS S 0032 : 2003 (E)

PROTECTED BY COPYRIGHT

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from National Institute of Advanced Industrial Science and Technology (AIST)/National Institute of Technology and Evaluation, Conformity Assessment Center (NITE), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

Date of Establishment: 2003-10-20

Date of Public Notice in Official Gazette: 2003-10-20

Investigated by: Japanese Industrial Standards Committee
Standards Board
Technical Committee on Consumer Life
Products

JIS S 0032:2003, First English edition published in 2004-01

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

PROTECTED BY COPYRIGHT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	2
3 Definitions	2
4 Observation conditions	2
5 Estimation of minimum legible character size for a Japanese character	2
6 Record	4
7 Precautions on dealing with estimation result of minimum legible character size	4
Annex 1 (informative) Method for evaluation of legibility of Japanese text	7
Annex 2 (informative) Dimensions of Japanese character size and their example	10

Guidelines for the elderly and people with disabilities—Visual signs and displays— Estimation of minimum legible size for a Japanese single character

Introduction Although character information is indispensable to the social life of the information technology (IT) age, since it is displayed and printed in various forms and sizes, characters which are hard to read for the elderly whose visual acuity is being reduced mainly because of aging are displayed in many cases. This Standard describes the method for estimating the minimum legible size for various characters quantitatively as a guideline for designing the characters used for visual signs and displays, such as signs, indicating labels, and pamphlets. It is expected that the establishment of this Standard will be the first step in realizing the environment where suitable characters which are easily legible for many people in everyday life are used.

1 Scope This Japanese Industrial Standard specifies the estimation method of minimum legible size for a single character of Japanese characters such as HIRAGANA characters, KATAKANA characters, Arabic numerals and Chinese characters which the target to be observed of any age from the young to the elderly (hereafter referred to as “the target”) can read under various environments. The target characters shall be of two typefaces, Ming type and Gothic type, which are displayed in a dark colour in a bright background with the high contrast such as a black design on a white background and shall be used for visual signs and displays, such as signs, indicating labels, and pamphlets. Characters displayed with a dot-type electronic display are excluded.

In addition, although the alphabet is not within the scope of this Standard, the estimation of minimum legible size for an alphabetical character may be done according to the specification for HIRAGANA characters, KATAKANA characters, Arabic numerals.

- Remarks
- 1 In this Standard, the target shall be in any age between 10 years old and 80 years old, and the minimum legible size for a character, which the healthy target without a visual medical history can read by the percentage of correct answers of 80 %, can be estimated.
 - 2 In this Standard, the minimum legible size for a character, which can be read by the target whose vision is corrected to have the maximum visual acuity at a viewing distance of 5 m, can be estimated. This Standard does not apply in the case of the vision correction performed at a viewing distance other than 5 m. For example, in the case of the vision correction performed at a viewing distance shorter than 5 m, even a character of smaller character size than that estimated in this Standard will be legible.
 - 3 As the information in this Standard, *Method for evaluation of legibility of Japanese text* is given in Annex 1 (informative), and *Dimensions of the Japanese character size and their example* is given in Annex 2 (informative).

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) shall be applied.

JIS T 7309 *Visual acuity testing equipment*

JIS Z 8113 *Lighting vocabulary*

JIS Z 8305 *Dimensions of printing types*

3 Definitions For the purposes of this Standard, the definitions given in **JIS Z 8113** and the following definitions apply.

- a) **visual acuity** A reciprocal of angle (minute) from the target to the minimum width such that the break of the Landolt-ring sign is able to be distinguished using the Landolt-ring sign specified in **JIS T 7309**.
- b) **landolt ring** A sign used for the measurement of visual acuity when using the visual acuity testing equipment specified in **JIS T 7309**.
- c) **viewing distance** A distance (expressed in m) between the eye of the target and the object to look at.
- d) **luminance correction coefficient** The coefficient for correcting the effects of luminance on visual acuity on the basis of 100 cd/m².
- e) **character size** A size (expressed in point) of the character specified in **JIS Z 8305**.
- f) **size coefficient** Quantity defined by D/V using visual acuity V at a viewing distance of D (m). It corresponds to the minimum resolution of vision under the relevant observation conditions.
- g) **minimum legible character size** The minimum character size (expressed in point) for a single character of Japanese characters such as HIRAGANA characters, KATAKANA characters, Arabic numerals and Chinese characters which can be read under the relevant observation condition by the percentage of correct answers of not less than 80 %.

4 Observation conditions The observation conditions shall be as follows, and the minimum legible character size of a Japanese character in the respective ranges shall be estimated.

- a) **Age of the target** The age of the target shall be from 10 years old to 80 years old.
- b) **Viewing distance** The viewing distance shall be from 0.2 m to 100 m.
- c) **Luminance** The luminance shall be 0.01 cd/m² to 3 000 cd/m². The luminance here refers to the luminance of background, and not characters.

5 Estimation of minimum legible character size for a Japanese character The minimum legible character size for a Japanese character shall be estimated according to the following procedure.

- a) Obtain vision acuity V_0 in luminance of 100 cd/m² according to the age of the target and viewing distance from Attached Table 1.