

JIS

JAPANESE INDUSTRIAL STANDARD

Measuring Methods of Eye-hazardous Ultraviolet Radiation

JIS Z 8812—1987

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by

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Measuring Methods of Eye-hazardous Ultraviolet Radiation

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1. Scope

This Japanese Industrial Standard specifies the physical measuring methods of eye-hazardous irradiance of eye-hazardous ultraviolet radiation relative to human eyes in general artificial light and natural light, hereinafter referred to as the "eye-hazardous ultraviolet radiation". However, except the measurement of direct radiation of laser.

2. Definitions

For the purposes of this Standard main terms are in accordance with JIS Z 8113, and for others following definitions apply:

- (1) eye-hazardous ultraviolet radiation The ultraviolet radiation giving rapid hazard corner or conjunctive of human eye. The wavelength range is 200 to 315 nm, and the hazardous spectral action characteristics are as shown in Fig. 1.

Remark: Previously it is called eye-hazardous ultraviolet rays.

- (2) TLV The abbreviation of Threshold Limit Values. Concerning the ultraviolet radiation of 200 to 315 nm in wavelength, the quantity which the worker under its illuminating may receive the exposure repeatedly without receiving harmful affects, and the value indicated by J/m^2 for each wavelength.

Further, this TLV shall not be considered to be one line to divide the safety level and dangerous level.

- (3) relative spectral eye-hazardous action The inverse number of TLV, and the value expressed by standardizing the maximum value (the value of 270 nm) as 1.
- (4) eye-hazardous radiant flux The effective radiant flux of eye-hazardous ultraviolet radiation. It is obtained by the integrated style of the spectral radiant flux of radiation source multiplied by the value of relative spectral eye-hazardous action and its strength is expressed by eye-hazardous watt [W (haz)].
- (5) eye-hazardous irradiance The density of eye-hazardous radiant flux per unit area of plane of incidence. The unit shall be W/m^2 (haz) or $\mu W/m^2$ (haz) or the like.

Applicable Standards:

JIS C 7604-High Pressure Mercury Vapour Lamps

JIS C 7605-Low Pressure Mercury Germicidal Discharge Lamps

JIS Z 8113-Glossary of Lighting Terms

- (6) normal irradiance The irradiance on a plane perpendicular to advancing direction of radiation.
- (7) horizontal-plane irradiance The irradiance on a horizontal plane.
- (8) vertical-plane irradiance The irradiance on a vertical plane.

3. TLV

TLV and relative spectral eye-hazardous action shall be as shown in Table 1 and Fig. 1.

Table 1. TLV and Relative Spectral Eye-Hazardous Action

Wavelength nm	TLV J/m ²	Relative spectral eye-hazardous action
200	1000	0.03
210	400	0.075
220	250	0.12
230	160	0.19
240	100	0.30
250	70	0.43
254	60	0.5
260	46	0.65
270	30	1.0
280	34	0.88
290	47	0.64
300	100	0.30
305	500	0.06
310	2000	0.015
315	10000	0.003

Remark: TLV is the recommended value of ACGIH (American Conference of Governmental Industrial Hygienists) and this value is the allowable amount in the case where receiving exposure taking one day (8 h) as one period.

ACGIH: See Threshold Limit Values for Physical Agents in the Work Environment Adopted by ACGIH with Intended Changes for 1985-1986.