

15 Glossary

adaptation: the process by which the state of the visual system is modified by previous and present exposure to stimuli that may have various luminances, spectral distributions and angular subtenses.

ballast: device connected between the supply and one or more discharge lamps which serves mainly to limit the current of the lamp(s) to the required value.

brightness: attribute of a visual sensation according to which an area appears to emit more or less light.

British thermal unit (Btu): unit of energy equivalent to 1055 joules.

bulb: transparent or translucent gas-tight envelope enclosing the luminous element(s).

colour rendering: effect of a light source on the colour appearance of objects by conscious or subconscious comparison with their colour appearance under a reference light source.

colour rendering index: measure of the degree to which the psychophysical colour of an object illuminated by the test light source conforms to that of the same object illuminated by the reference light source, suitable allowance having been made for the state of the chromatic adaptation.

colour temperature: temperature of a Planckian radiator whose radiation has the same chromaticity as that of a given stimulus; unit: K.

compact fluorescent lamp (CFL): a fluorescent lamp with bent tubes to reduce the size of the lamp.

contrast: assessment of the difference in appearance of two or more parts of a field seen simultaneously or successively (hence: brightness contrast, luminance contrast, colour contrast, simultaneous contrast, successive contrast, etc.).

correlated colour temperature: the temperature of the Planckian radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions; unit: K.

daylight factor: ratio of the illuminance at a point on a given plane due to the light received directly or indirectly from a sky of assumed or known luminance distribution, to the illuminance on a horizontal plane due to an unobstructed hemisphere of this sky, excluding the contribution of direct sunlight to both illuminances.

direct lighting: lighting by means of luminaires having a distribution of luminous intensity such that the fraction of the emitted luminous flux directly reaching the working plane, assumed to be unbounded, is 90% to 100%.

disability glare: glare that impairs the vision of objects without necessarily causing discomfort.

discharge lamp: lamp in which the light is produced, directly or indirectly, by an electric discharge through a gas, a metal vapour or a mixture of several gases and vapours.

discomfort glare: glare that causes discomfort without necessarily impairing the vision of the objects.

ecological footprint: a measure of how much biologically productive land and water an individual, population or activity requires to produce all the resources it consumes and to absorb the waste it generates using prevailing technology and resource management practices; measured in global hectares.

electroluminescence: luminescence caused by the action of an electric field in a gas or in a solid material.

emission: release of radiant energy.

flicker: impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time.

fluorescence: photoluminescence in which the emitted optical radiation results from direct transitions from the photo-excited energy level to a lower level, these transitions taking place generally within 10 nanoseconds after the excitation.

fluorescent lamp: a discharge lamp of the low pressure mercury type in which most of the light is emitted by one or several layers of phosphors excited by the ultraviolet radiation from the discharge.

general lighting: substantially uniform lighting of an area without provision for special local requirements.

general lighting service (GLS) lamp: always used to refer to a standard incandescent light-bulb.

glare: condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or to extreme contrasts.

greenhouse gases: gases in the atmosphere that contribute to the greenhouse effect by absorbing infrared radiation produced by solar warming of the Earth's surface.

high intensity discharge lamp: an electric discharge lamp in which the light-producing arc is stabilized by wall temperature and the arc has a bulb wall loading in excess of 3 watts per square centimetre.

high pressure sodium lamp: a high intensity discharge lamp in which the light is produced mainly by radiation from sodium vapour operating at a partial pressure of the order of 10 kilopascals.

illuminance: quotient of the luminous flux incident on an element of the surface containing the point, by the area of that element; unit: lx.

incandescence: emission of optical radiation by the process of thermal radiation.

incandescent lamp: lamp in which light is produced by means of an element heated to incandescence by the passage of an electric current.

indirect lighting: lighting by means of luminaires having a distribution of luminous intensity such that the fraction of the emitted luminous flux directly reaching the working plane, assumed to be unbounded, is 0 to 10%.

infrared radiation: optical radiation for which the wavelengths are longer than those for visible radiation.

lamp: source made in order to produce an optical radiation, usually visible.

LED driver: a device to power and control a light-emitting diode.

life cycle: consecutive and interlinked stages of a product system, from raw material acquisition or generation of natural resources to final disposal.

light emitting diode (LED): solid state device embodying a p-n junction, emitting optical radiation when excited by an electric current.

light trespass: a situation that occurs when light from a source is emitted into areas where the light is unwanted.

lighting power density: a measurement of the amount of electric power required to illuminate an area. Light power density is equal to the electrical power used to produce light in a given area divided by the floor area served by that light; measured in watts per square metre.

linear fluorescent lamp (LFL): a straight fluorescent lamp.

low pressure sodium lamp: a discharge lamp in which the light is produced by radiation from sodium vapour operating at a partial pressure of 0.1 to 1.5 pascal.

lumen (lm): SI unit of luminous flux; luminous flux emitted in unit solid angle by a uniform point source having a luminous intensity of 1 candela.

luminaire: apparatus which distributes, filters or transforms the light transmitted from one or more lamps and which includes, except the lamps themselves, all the parts necessary for fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electric supply.

light output ratio of a luminaire (LOR): ratio of the total flux of the luminaire, measured under specified practical conditions with its own lamps and equipment, to the sum of the individual luminous fluxes of the same lamps when operated outside the luminaire with the same equipment, under unspecified conditions.

luminance: the luminous flux emitted in a given direction divided by the product of the projected area of the source element perpendicular to the direction and the solid angle containing that direction; unit: $\text{cd}\cdot\text{m}^{-2}$.

luminous efficacy of a source: quotient of the luminous flux emitted by the power consumed by the source; unit: lm/W .

luminous environment: lighting considered in relation to its physiological and psychological effects.

luminous flux: quantity derived from radiant flux by evaluating the radiation according to its action upon the CIE standard photometric observer; unit: lm .

luminous intensity: the quotient of the luminous flux leaving the source and propagated in the element of solid angle containing the given direction by the solid angle; unit: cd .

lux (lx): SI unit of illuminance; illuminance produced on a surface of area 1 square meter by a luminous flux of 1 lumen uniformly distributed over that surface.

megalumen-hour (Mlmh): 1×10^6 lumen-hours; a quantity of light.

mercury vapour lamp: a type of high-intensity discharge lamp that contains mercury vapour.

metal halide lamp: a high intensity discharge lamp in which the major portion of the light is produced from a mixture of a metallic vapour and the products of the dissociation of halides.

normalized power density of lighting installation: lighting power density divided by the mean maintained illuminance on the reference plane; unit: $\text{W}/(\text{m}^2 \cdot 100 \text{lx})$

organic light emitting diode (OLED): a semiconductor device made from an organic compound and which emits light when a current is passed through it.

overhead glare: a form of glare caused by excessive brightness directly above the user.

petalumen-hour (Plmh): 1×10^{15} lumen-hours; a quantity of light.

Photobiology: branch of biology which deals with the effects of optical irradiation on living systems.

Planckian radiator: ideal thermal radiator that absorbs completely all incident radiation, whatever

the wavelength, the direction of incidence or the polarization. This radiator has, for any wavelength and any direction, the maximum spectral concentration of radiance for a thermal radiator in thermal equilibrium at a given temperature.

power factor: the ratio of total real power in watts to the apparent power (root-mean-square volt amperes).

primary energy: the energy embodied in natural resources (e.g. coal, crude oil, uranium, etc.) prior to undergoing any human-made conversions or transformations.

quantity of light: time integral of the luminous flux over a given duration; unit: lumen-hour (lm.h).

radiation: emission or transfer of energy in the form of electromagnetic waves with the associated photons.

reflectance: ratio of the reflected radiant or luminous flux to the incident flux in the given conditions.

reflector: device used to alter the spatial distribution of the luminous flux from a source and depending essentially on the phenomenon of reflection.

source-lumen: lumen emitted by a light source.

spectrum: displays specification of the monochromatic components of the radiation considered.

starter: a starting device, usually for fluorescent lamps, which provides for the necessary pre-heating of the electrodes and, in combination with the series impedance of the ballast, causes a surge in the voltage applied to the lamp.

stroboscopic effect: apparent change of motion and/or appearance of a moving object when the object is illuminated by light of varying intensity.

task lighting: lighting directed to a specific surface or area that provides illumination for visual tasks.

tungsten halogen lamp: gas-filled lamp containing halogens or halogen compounds, the filament being of tungsten.

ultraviolet radiation: optical radiation for which the wavelengths are shorter than those for visible radiation.

utilance (U): ratio of the luminous flux received by the reference surface to the sum of the individual total fluxes of the luminaires of the installation.

veiling reflections: specular reflections that appear on the object viewed and that partially or wholly obscure the details by reducing contrast.

visual comfort: subjective condition of visual well-being induced by the visual environment.

visual comfort probability (VCP): the rating of a lighting system expressed as a percentage of people who, when viewing from a specified location and in a specified direction, will be expected to find it acceptable in terms of discomfort glare.

visual performance: performance of the visual system as measured for instance by the speed and accuracy with which a visual task is performed.

visual task: visual elements of the work being done.