

## APPARENT COLOUR

Of a light source, subjectivity the hue of the source or of a white surface illuminated by the source; the degree of warmth associated with the source colour. Lamps of low correlated colour temperature are usually described as having a warm apparent colour, and lamps of high correlated colour temperature as having a cold apparent colour.

## ASPECT FACTOR (AF)

A function of the angle subtended at a point by the length of a linear source, and of the axial distribution of luminous intensity from the source; used in the calculation of illuminance at a point.

## BZ (BRITISH ZONAL) SYSTEM

A system for classifying luminaires as described in CIBSE Technical Memorandum No.5. The BZ class number (e.g. BZ3) denotes the classification of a luminaire in terms of the flux from a conventional installation directly incident on the working plane, relative to the total flux emitted below the horizontal (the direct ratio).

## CANDELA (CD)

The SI unit of luminous intensity, equal to one lumen per steradian.

## CAVITY INDEX (CI)

A term, indicating the proportions of boundary surfaces, used in determining the effective reflectances of room surfaces for interior lighting design: defined for cavity of length L, width W, and depth d, as  $LW/(d(L+W))$ .

## CHROMA

In the Munsell system, and index of saturation of colour ranging from 0 for natural grey to 16 for strong colours. A low chroma implies a pastel shade.

## CHROMATICALLY

The colour quality of stimulus, usually defined by coordinates on a plane diagram in the CIE colourimetric system (IE Publication 15) or by the combination of dominant wavelength and purity.

## COLOUR RENDERING

A general expression for the appearance of surface colours when illuminated by light from a given source compared, consciously or unconsciously with their appearance under light from some reference source. 'Good colour rendering' implies similarity of appearance to that under an acceptable light source, such as daylight.

## COLOUR RENDERING INDEX (CRI)

A measure of the degree to which the colours of surfaces illuminated by a given light source conform to those of the same surfaces under a reference illuminant, suitable allowance having been made for the state of chromatic adaptation (CIE Publication 13.2).

## COLOUR TEMPERATURE

The temperature of a full radiator which emits radiation of the same chromaticity as the radiator being considered.

## CORRELATED COLOUR TEMPERATURE (UNIT:K)

The temperature of a full radiator which emits radiation having a chromaticity nearest to that of the light source being considered, e.g. the colour of a full radiator at 3500K is the nearest match to that of a White tubular fluorescent lamp.

## DAYLIGHT FACTOR

The illuminance received at a point indoors, from a sky of known or assumed luminance distribution, expressed as a percentage of the horizontal illuminance outdoors from an unobstructed hemisphere of the same sky. Direct sunlight is excluded from both values of illuminance.

## DESIGN SERVICE ILLUMINANCE

The service illuminance used in the lighting specification. Design service illuminance is derived from the standard service illuminance by taking account of modifying factors.

## DIFFUSED LIGHTING

Lighting in which the luminous flux comes from many directions, none of which predominates.

## DIRECT LIGHTING

Lighting in which the greater part of the luminous flux from the luminaires reaches the surface (usually the working plane) directly, i.e. without reflection from surrounding surfaces. Luminaires with a flux fraction ratio less than 0.1 are usually regarded as direct.

## DISCOMFORT GLARE

Glare which causes visual discomfort.

## DOWNWARD LIGHT OUTPUT RATIO (DLOR)

The ratio of the total light output of a luminaire below the horizontal under stated practical conditions to that of the lamp or lamps under reference conditions.

## EMERGENCY LIGHTING

Lighting provided for use when the main lighting installation fails.

## ESCAPE LIGHTING

Emergency lighting provided to ensure that the means of escape can be safely and effectively used at all material times.

## FLICKER

A visible oscillation in luminous flux.

## FLUX FRACTION

The proportion of luminous flux emitted from a luminaire in the upper or lower hemisphere (upper and lower flux fraction).

## FLUX FRACTIONS RATIO (FFR)

The ratio of the upward luminous flux to the downward luminous flux from a luminaire. It is also the ratio of the upper flux fraction to the lower flux fraction and the ratio of the upward light output ratio to the downward light output ratio.

## GENERAL LIGHTING

Lighting designed to illuminate the whole of an area uniformly, without provision for special local requirements.

## GENERAL SURROUND LIGHTING

Lighting designed to illuminate the non-working parts of a working interior.

## GLARE

The discomfort or impairment of vision experienced when parts of the visual field are excessively bright in relation to the general surroundings.

## HAZARDOUS ENVIRONMENT

An environment in which a risk of fire or explosion exists.

## ILLUMINANCE (E) (UNIT: LM/M2, LUX)

The illuminous flux density at a surface, i.e. The luminous flux incident per unit area (this quantity was formally known as the illumination value or illumination level).

## INITIAL LIGHT OUTPUT (UNIT: LM)

The luminous flux from a lamp after 100 hours of operation.

## INSTALLED EFFICACY (UNIT: LM/W)

A factor which quantifies the efficiency of a lighting installation in converting electrical power to light. Specifically it is the product of the lamp circuit luminous efficacy and the utilisation factor.

## ISOLUX DIAGRAM

A diagram showing contours of equal illuminance.

## LAMP LUMEN MAINTENANCE FACTOR (LLMF)

The proportion of the initial light output of a lamp that is produced after a set time.

## LIGHT LOSS FACTOR (LLF)

The ratio of the illuminance provided by the installation at some stated time, with respect to the initial illuminance, i.e. That after 100 hours of operation. The light loss factor is the product of the lamp lumen maintenance factor, the luminaire maintenance factor and the room surface maintenance factor.

## LIGHT OUTPUT RATIO (LOR)

The ratio of the total light output of a luminaire under stated practical conditions to that of the lamp or lamps under reference conditions. For the luminaire, the output is usually measured in the designated operating position at 25°C ambient temperature with control gear of the type usually supplied in a luminaire and operated at its normal voltage. For the lamp the output is measured at 25°C ambient temperature and with control gear of standard properties. This is a practical basis for evaluating the total light output to be expected under service conditions.

## LIGHTING DESIGN LUMENS (LDL) (UNIT: LM)

Lamps vary in flux output, both between themselves and through their operating lives. The lighting design lumen is a nominal value which is representative of the average light output of each type or size of lamp throughout its life.

## LOAD FACTOR

The ratio of the energy actually consumed by a lighting installation over a specified period of time to the energy that would have been consumed had the lighting installation always been operating during the period of time.

## LOCAL LIGHTING

Lighting designed to illuminate a particular small area which usually does not exceed far beyond the visual task, e.g. A desk light.

## LOCALISED LIGHTING

Lighting designed to illuminate an interior and at the same time to provide higher illuminance over a particular part or parts of the interior.

## LUMEN (LM)

The SI unit of luminous flux, used in describing a quantity of light emitted by a source or received by a surface. A small source which has a uniform luminous intensity of one candela emits a total of 4 lumens in all directions and emits one lumen within unit solid angle (steradian).

## LUMINAIRE

An apparatus which controls the distribution of light given by a lamp or lamps and which includes all the components necessary for fixing and protecting the lamps and for connecting them to the supply circuit. Luminaire has superseded the term light fitting.

## LUMINAIRE MAINTENANCE FACTOR (LMF)

The lumen output from a luminaire declines with time because of dirt deposition on and in the luminaire. The luminaire maintenance factor quantifies this decline, being the proportion of the initial light output from the luminaire that occurs after a set time, allowance having been made for the decline in light output from the lamp.

## LUMINANCE (L) (UNIT: CD/M<sup>2</sup>)

The physical measure of the stimulus which produces the sensation of brightness measured by the luminous intensity of the light emitted or reflected in a given direction from a surface element, divided by the area of the element in the same direction. The SI unit of luminance is the candela per square metre, the relationship between luminance and illuminance is given by the equation.

## LUMINOUS EFFICACY (UNIT: LM/W)

The ratio of the luminous flux emitted by a lamp to the power consumed by the lamp. When the power consumed by control gear is taken into account this term is sometimes known as lamp circuit luminous efficacy and is expressed in lumens/circuit watt.

## LUMINOUS EFFICIENCY

The ratio of the radiant flux weighted according to the CIE standard photometric observer to the corresponding radiant flux.

## LUMINOUS FLUX (UNIT: LM)

The light emitted by a source, or received by a surface. The quantity is derived from radiant flux by evaluating the radiation in accordance with the spectral sensitivity of the standard eye as described by the CIE Standard Photometric Observer.

## LUMINOUS INTENSITY (UNIT: CD)

A quantity which describes the power of a source or illuminated surface to emit light in a given direction. It is the luminous flux emitted in a very narrow cone containing the given direction divided by the solid angle of the cone: the result is expressed in candelas.

## LUMINOUS INTENSITY

The distribution of the luminous intensity of a lamp or luminaire in all spatial directions. Luminous intensity distributions are usually shown in the form of a polar diagram or as a table for a single vertical plane, in terms of candelas per 1000 lumens of lamp flux.

## MAINTENANCE FACTOR (MF)

The ratio of the illuminance provided by an installation in the average condition of dirtiness expected in service, to the illuminance from the same installation when clean. The maintenance factor is always less than unity, 1.

## MOUNTING HEIGHT (MH)

Usually the vertical distance between a luminaire and the working plane, but sometimes the distance between the luminaire and the floor.

## OPERATING EFFICACY (UNIT: LM/W)

A term which qualifies the efficacy of a lighting installation in use. Specifically operating efficacy is the quotient of the installed efficacy of the installation and the load factor.

## POWER FACTOR

In an electric circuit, the power factor is equal to the ratio of the root mean square power in watts to the product of the root mean square values of voltage and current; for sinusoidal wave forms the power factor is also equal to the cosine of the angle phase difference between voltage and current.

## ROOM INDEX (RI)

An index related to the dimension of a room and used when calculating the utilisation factor and other characteristics of the lighting installation:

$$\text{Room index} = \frac{l w}{h m (l + w)}$$

where l is the length of the room, w the width and hm the height of the luminaires above the working plane.

## ROOM SURFACE MAINTENANCE FACTOR (RSMF)

The proportion of the illuminance provided by a lighting installation in a room after a set time compared with that which occurred when the room was clean, allowance having been made for the depreciation in lumen output of lamps and the effect of dirt deposition on luminaires.

## SERVICE ILLUMINANCE

The mean illuminance throughout the maintenance cycle of an installation, averaged over the relevant area. The area may be the whole of the working plane or just the area of the visual task and its immediate surround, depending on the lighting approach used.

## SPACING TO HEIGHT RATIO (SHR)

This ratio describes the distance between luminaire centres in relation to their height above the working plane. For a regular square arrangement of luminaires, it is the distance between adjacent luminaires divided by their height above the working plane. More generally;

$$\text{Spacing/height ratio} = \frac{1 w}{h_m} \sqrt{\left(\frac{A}{N}\right)}$$

where A is the total floor area, N is the number of luminaires and hm is their height above the working plane.

## STANDARD SERVICE ILLUMINANCE

The service illuminance recommended for the assumed standard conditions of the application, specified by the CIBSE guide.

## STANDBY LIGHTING

Emergency lighting provided to enable normal activities to continue.

## STERADIAN (SR)

The unit of solid angle. A complete sphere subtends 4 steradians from the centre.

## STROBOSCOPIC EFFECT

An illusion caused by oscillation in illuminous flux, that makes a moving object appear as stationary or as moving in a manner different from that in which it is truly moving.

## UPWARD LIGHT OUTPUT RATIO (ULOR)

The ratio of the total light output of a luminaire above the horizontal under stated practical conditions to that of the lamp or lamps under reference conditions.

## UTILISATION FACTOR (UF)

The proportion of the luminous flux emitted by the lamps which reaches the working plane.

## WORKING PLANE

The horizontal, vertical, or inclined plane in which the visual task lies. If no information is available, the working plane may be considered to be horizontal and 0.7m above the floor for offices, horizontal and 0.5m above the floor for industry.

## EMERGENCY LIGHTING

**Maintained** - in this the lamp is on all the time. Under normal conditions it is powered directly or indirectly by the mains. Under emergency conditions, one of the lamps normally operated by the mains, is energised from its own battery supply.

**Non-maintained** - in this the lamp is off when mains power is available to charge the batteries. Upon supply failure the lamp is energised from the battery pack.

**Sustained** - this is a hybrid of the previous two, M3 and NM3. A lamp provided which operates from the mains supply under normal conditions. Under emergency conditions a second lamp, not normally energised under mains operation, powered from the battery pack, takes over. Sustained luminaires are often used for exit signs. Systems of self-contained luminaires are the easiest and most flexible to install but their effective life is likely to be less than that of central battery systems. Also, maintenance and testing must be thorough if operation in the event of emergency is to be guaranteed.

## Technical reports and monographs

No 4 - Daytime lighting in buildings (and supplement) (To be superseded by a CIBSE window design guide).

No 7 - Flux distribution within a sector solid and total flux from a linear source (A.R. Bean) (Monograph).

No 10 - Evaluation of discomfort glare, the IES glare Index System for artificial lighting installations (and supplement) (To be superseded by a CIBSE Technical Memorandum).

No 15 - The multiple criterion design method: a design method for electric lighting installations.