Since 1959

**CEC Industries LTD Technical Information**
*Lighting Glossary Common Terms*

**Alternating Current (AC)**
Electron flow that periodically reverses polarity and direction of travel through a circuit.

**Ampere (amp)**
A standard unit of measurement of electrical current. Amps = Watts/ Voltage

**Argon**
Inert gas used in incandescent and fluorescent lamp types. In incandescent light sources, argon retards evaporation of the filament.

**Average Rated Life**
A statistical average of lamp life while in a controlled laboratory environment. Vibration, shock, voltage, and temperature variance could alter actual life.

**AIAG MMOG**
Odette Global Material Management Operations Guideline contact Quality Department for details.

**Base Type**
Refer to Base Type Section of on Line Information.

**Bulb**
Term for electrical light source or lamp; the outer shell of the lamp.

**Beam Spread**
Approximate measurement of the height and width of a beam pattern, which is calculated in horizontal and vertical degrees.

**Bulb Darkening**
Darkening or discoloration of an incandescent lamp due to tungsten particles collecting on the inside of the glass as the filament burns and diminishes over its life.

**Candela**
Unit measurement of luminous intensity.

**Candlepower**
The luminous intensity of a light source expressed in candelas. The rating shown is the mean spherical candlepower produced at design voltage

**Color Temperature**
The actual color of a light source, also referred to as Correlated Color Temperature (CCT), measured in degrees Kelvin (K). Typical color temperature are:

2700K Incandescent
3000K Halogen
3500K Fluorescent - Warm White
4100K Fluorescent - Cool White
5000K Fluorescent - White Light
6500K Fluorescent - Daylight

**Current**
A measure of the rate of flow of electricity, expressed in amperes (A).

**Design Lumens**
Lumen value at 40% of rated average life.

**Design Volts**
The voltage at which the lamp was designed to operate.

**Design Watts**
The measure of power consumption when the lamp is operated at design volts.

**Design Amps**
The measure of current consumption when the lamp is operated at design volts.

**Etch**
Markings on the glass envelope or shell of a lamp designating product description, logo and/or brand name.

**Exitance**
The total light which comes off of a surface. Exitance is dependent upon the illuminance on and reflectance of the surface.

**ELV Compliant**
End of Life Vehicles (ELV) Directive 2000/53/EC requires that certain automotive products be free (except for trace impurities) of mercury, cadmium and lead as of 2003-7-1. Lead can still be used as an alloying additive in copper, steel and aluminum and in solderable applications. These products comply with the ELV directive.

**Filament**
Wire used in incandescent lamps, usually made of tungsten and often coiled, that emits light when heated by an electrical current.

**Filament Type**
Please refer to Filament Type section

**Footcandle (FC)**
A unit of measurement of direct illumination. One footcandle is equal to one lumen per square inch.

**Halogen Lamp**
is an incandescent lamp with a tungsten filament contained within an inert gas and a small amount of a halogen such as iodine or bromine. The combination of the halogen gas and the tungsten filament produces a chemical reaction known as a **halogen cycle** (see below) that increases the lifetime of the bulb and prevents its darkening by re-depositing tungsten from the inside of the bulb back onto the filament.

**Halogen Cycle**
A regenerative cycle of tunsten and halogen atoms which prevents blackening of the lamp envelope during the life of the lamp.

**Halogen Infrared (HIR Lamps)**
Tungsten-halogen bulb which has a coating that passes visible light and reflects infrared radiation. The glass in such a bulb is spherical, rather than tubular. The reflected infrared radiation strikes the filament located at the centre of the sphere, heating the filament to a degree greater than occurs by passing an electric current through the filament. The filament thus superheated emits more light, without an increase in power consumption or a decrease in lifespan.

**High Intensity Discharge (HID) Lamp**
Automotive HID lamps are commonly called "xenon headlamps", though they are actually metal halide lamps that contain xenon gas. The xenon gas allows the lamps to produce minimally adequate light immediately upon power up, and accelerates the lamps' run-up time.

**Illuminance**
Light arriving at a surface, expressed in lumens per unit area; 1 lumen per square foot equals 1 foot-candle, while 1 lumen per square meters equals 1 lux.

**Illumination**
The results of the use of light.

**Incandescent Lamp**
A light source that produces light by the heating of a filament by an electric current.

**Inches to Millimeters Conversion**
To calculate the metric equivalent of inches in millimeters (mm), multiply inches by 25.4.

**Infrared**
Radiant energy in the wavelength range of about 770 to 1100 nanometers (nm). Energy in this range is not visible to the naked eye, but can be sensed by the skin. Applications include heat lamps, photography, medical therapy, and industry.

**Intensity**
The light emitted from a source. Intensity varies given the direction at which one views the source. Intensity does not vary with distance.

**Kelvin Scale**
Apparent color temperature of a light source indicates its degrees of blueness or redness as we view it. The higher the number, the bluer the light appears: the lower the number, the more red the light looks. A candle flame has an apparent color temperature of about 1750 degrees Kelvin, incandescent lamps are about 2900K, cool white lamps are about 4200K and an overcast sky appears at 6500K. The Kelvin scale gives no indication about color rending index.

**Krypton**
A heavy inert gas used in incandescent lamps which allows the filament to glow hotter and brighter and last longer.

**Lamp**
Lighting industry term used for a light bulb.

**Lamp Dimensions**
Bulb designations consist of a letter(s) to indicate shape and a number to indicate the diameter in eighths of an inch.

**Lamp Number**
Lamps are marked, in most cases with a CEC Industries LTD lamp number.

**Lens**
A glass or plastic element used in luminaires to change the direction and control the distribution of light rays.

**Light**
Radiant energy that is capable of producing a visual sensation.

**Light Center Length (L.C.L.)**
The distance from a reference point, usually the bottom of the lamp base, to the center of the light source (filament).

**Light Loss Factor**

Used to calculate or project the performance of a lighting system after a given period of time under certain conditions; includes environmental conditions, such as temperature, voltage, dust and/or dirt and lamp depreciation.

**Lumen**
International unit (SI) of luminous flux or quantity of light. Expresses quantity of light regardless of direction. Lumens + 12.57 X MSCP.

**Lumen Depreciation**
The gradual decline in light output from a light source over time. Due to filament deterioration and bulb darkening.

**Lumen Maintenance**
A measurement of how a lamp maintains its light output over time.

**Lumens Per Watt (LPW)**
A measurement of the efficancy (efficiency) of a light source. The number achieved by dividing lumens produced by watts consumed.

**Luminance (L)**
Light reflected in a particular direction; the photometric quantity most closely associated with brightness perception, measured in units of luminous intensity (candelas) per unit area (square feet or square meters).

**Lux (lx)**
A unit of illuminance equal to 1 lumen per square meter.

**Maximum Overall Length (M.O.L)**
The overall length of a lamp, from the top of the shell to the bottom of the base.

**Mean Lumens**
The average light output of a lamp over its rated life.

**Mean Spherical Candlepower (MSCP)**
Candlepower produced at design volts. Candlepower is increased rapidly with an increase of applied voltage and conversely is reduced rapidly with a reduction of applied voltage.

**Nanometer**
A unit of length equal to 10 to the -9th meters, or one billionth of a meter; commonly used as a unit of wavelength.

**Ohm's Law**
A scientific law which states that current (amperes) in a circuit depends on resistance (ohms) and applied electromotive force (volts).

Current (I) = Voltage (E) / Resistance (R).

**Operating Position**
Lamps may be operated in any position unless otherwise noted.

**Projector Lamps**
In this system a filament is located at one focus of an ellipsoidal reflector and has a condenser lens at the front of the lamp. A shade is located at the image plane, between the reflector and lens, and the projection of the top edge of this shade provides the low-beam cutoff.

**Resistance**
A measure of resistance to flow of current, expressed in ohms.

**Reflector Lamps**
A light source (filament or arc) is placed at or near the focus of a reflector, which may be parabolic or of non-parabolic complex shape. Fresnel and prism optics molded into the headlamp lens then shift parts of the light laterally and vertically to provide the required light distribution pattern. The lens may use both refraction and TIR to achieve the desired results. Most sealed-beam headlamps have lens optics

**EU RoHS Compliant**
Restrictions on Certain Hazardous Substances (EU RoHS) Directive 2002/95/EC requires that certain electrical and electronic products be free (except for trace impurities) of mercury, cadmium, hexavalent chromium, PBB, PBDE and lead as of 2006-7-1. Certain exemptions are allowed such as lead used as an alloying additive in copper, steel and aluminum. These products comply with the EU RoHS directive.

**EU Reach Compliant**
Registration, Evaluation, Authorization and Regulation of Chemicals (REACH) Refer to Quality Department

**Volt**
The unit of electromotive force (emf). The difference in electrical potential that will cause a current of one ampere to flow through a resistance of one ohm.

**Voltage Rating**
The recommended operating voltage for a lamp.

**Watt**
A unit of electrical power. One watt is equal to one ampere of current flowing through one ohm of resistance. Watts = Volts X Amps.

**Wavelength**
Distance between two successive points of a periodic wave; the wavelength of light are expressed in nanometers.

**Xenon**
A heavy inert gas used in incandescent lamps which allows the filament to glow hotter and brighter and last longer.

**Weilbull data for lamp life**
Service life distribution can now be accurately defined by specifying two points on the straight line, without having to refer to a failure curve. In accordance IEC 810, the following failure rates have been defined as standard failure rates: The B3 value represents the premature failure rate of lamps. It means that 3% of all lamps tested failed after this number of hours burned. The Tc life value represents the failure rate of 63.2% of the lamps. B3 and Tc are of great interest in the lighting industry. The retail market makes more use of the B50 value, which indicates the average life of the lamps tested (50%).