


Thorn Lighting is committed to providing its customers with products and services that are of the highest quality. All Thorn Lighting products are designed and manufactured to ensure safety, reliability and performance.

Our expertise in meeting these goals is recognised internationally. Thorn is an active participant in developing the European and International Standards which are used through the Lighting Industry and that third party endorsements, such as BSI approvals/registrations are based upon.


Quality Assurance (BSEN/ISO 9000)

All activities associated with providing a quality product - design, development, testing, production, despatch, customer service - are covered by BSEN/ISO 9000. Thorn Lighting's site at Spennymoor is registered by IQNET to the highest standard, ISO 9001 and our UK distribution and sales operation to BSEN/ISO 9000. Thorn Lighting's sister companies in France and Sweden operate to the same exacting standards and have achieved EN ISO 9001 quality system registration with their own local authorities.

 Quality in test and measurement has been further assessed by BSI under the scheme of Photometric registration and BSEN ISO/IEC 17025 - Operation of testing laboratories. In-house test facilities cover all aspects of lighting product performance and safety and are considered to be amongst the finest in the world.

Third Party Product Approvals

A third party approval is an independent endorsement that product design is in accordance with published standards, and that controls to maintain quality in manufacture are applied.


 Thorn Lighting holds many third party approvals, such as the BSI Kitemark for its luminaires and components parts.

Many of our products carry other European Test House approvals such as those shown. This can assist wider market acceptance in Europe.




European Harmonisation

For luminaires and lighting components, European harmonisation of national approval marks (above) has been achieved through introduction of the ENEC mark.

 The ENEC mark may be awarded by any one of the recognised European approval authorities, such as BSI, VDE or SEMKO, in the same way as a national approval mark. ENEC is important however, because it indicates that the product is suitable for use throughout Europe and that all of the most onerous special national conditions of test standards have been complied with.

In the case of lighting components such as ballasts, transformers, emergency lighting units etc. the ENEC mark indicates that both safety and performance standards have been complied with.

Thorn Lighting supported the introduction of the ENEC mark as a major advance in product certification and was the first UK company to secure approvals under this more demanding scheme.

 The CE mark signifies that a product conforms with the requirements of relevant EEC directives. The prime purpose of the mark is to assist customs and market inspectors in facilitating the free trading and movement of products within the EEC.

At this time the directives appropriate to general lighting products are the Low Voltage Directive (LVD), the Electromagnetic Compatibility (EMC) Directive and the Energy Efficiency (Ballasts for Fluorescent Lighting) Directive.

CE marking is compulsory to indicate LVD, EMC and Ballast Efficiency conformity.

Thorn Lighting's comprehensive compliance with all relevant standards, and implementation of systems to meet them, means its products automatically comply with these directives.

Assurance of Safety

Under the Consumer Protection Act 1987, it is unlawful to make, or hold in stock, or to offer for sale any electrical appliance that is unsafe.

In order to give assurance that lighting products are safe, manufacturers have two options:

1. To mark with the symbol of a third party approval authority. This is a mark of guarantee endorsed by an independent testing authority. The mark guarantees that compliance has been checked by an independent test house and that third party monitoring of the producing factory's quality system has been undertaken.
2. Self certification. The manufacturer claims that the product is safe and fit for purpose. The value of such a claim is directly related to the standing of the firm making it. In the case of Thorn Lighting, all products are designed, developed, tested and manufactured under the scope of BSEN/ISO 9000 quality systems that are registered and audited by independent third parties. Consequently Thorn products, approval marked or not, are designed, tested and manufactured to the same exacting standards - not all companies apply this principle.

Standards

Subject	British Standard	European Standard	International Standard
Luminaires - General types	BS 4533: 102.1	EN 60598 2-1	IEC 60598-2-1
Luminaires - Recessed	BS 4533: 102.2	EN 60598 2-2	IEC 60598-2-2
Luminaires - Street lighting	BS 4533: 102.3	EN 60598 2-3	IEC 60598-2-3
Luminaires - Floodlights	BS 4533: 102.5	EN 60598 2-5	IEC 60598-2-5
Luminaires - with transformers	BS 4533: 102.6	EN 60598-2-6	IEC 60598-2-6
Luminaires - Air handling	BS 4533: 102.19	EN 60598 2-19	IEC 60598-2-19
Luminaires - Emergency	BS 4533: 102.22	EN 60598 2-22	IEC 60598-2-22
Luminaires Track systems	BS 4533: 102.57	EN 60570	IEC 60570
Photometric Measurements	BS 5225	-	CIE24/CIE27
EMC Emissions-Lighting	BSEN 55015	EN 55015	CISPR15
EMC Immunity-Lighting	BSEN 61547	EN 61547	IEC 61547
Quality Systems	BSEN ISO 9000	EN ISO 9000	ISO 9000
Code of Practice - Emergency Lighting	BS 5266	EN 1838	-
Luminaires with type protection 'N'	BS 4533:102.51		
Flameproof enclosure 'd'	BS 5501: Part 5	EN 50018	IEC 79-1
Electronic transformers for lamps -	BSEN 61 046	EN 61046	IEC 61046
Safety			
Electronic transformers for lamps -	BSEN 61 047	EN 61047	IEC 61047
Performance			
Safety isolating transformers	BS 3535	EN 60742	IEC 742
Lighting Columns	BS 5649	EN 40	-

Standards

Some of the relevant British Standards, together with their European and International equivalents, relating to lighting are listed in the above table.

Safety Classifications

The following provides an explanation of some of the most common classifications applied to luminaires:

Class I:

Luminaires in this class are electrically insulated and provided with a connection to earth. Exposed metal parts that could become live in the event of basic insulation failure are protected by earthing.

Class II:

Class II luminaires are designed and constructed so that protection against electric shock does not rely on basic insulation only. This can be achieved by means of reinforced or double insulation. No provision for earthing is provided.

Class III:

Protection against electric shock relies on supply at Safety Extra - Low Voltage (SELV) and in which voltages higher than those of SELV are not generated (max. 50V ac rms).



F F mark (mounting surface):
Luminaires suitable for mounting on normally combustible surfaces (ignition temperature at least 200°C) are marked with the 'F' symbol.

Ta classification:

Denotes the maximum ambient temperature in which the luminaire is suitable for use. No Ta mark indicates suitable for use in max. 25°C ambients.

850° hot wire:

Abbreviation for compliance with glow wire test for plastic parts tested at the stated temperature.



Touch symbol:
A Thorn Motif for recessed amenity fittings indicating the versions which feature a reduced temperature surface glass (below 70°C).

Lighting for People using Display Screen Equipment

For guidance, please refer to page 10. A product's luminance limit is given within the standard symbols area.

Ingress Protection

The ingress protection (IP) code denotes the protection against dust, solid objects and moisture provided by the luminaire enclosure. If no code is marked the luminaire is deemed to be IP20.

Ingress protection (IP) code

- i) First digit of code denotes protection against dust and solid objects
 - IP2X No entry of standard test finger to live parts
 - IP3X No entry of 2.5mm Ø probe to live parts
 - IP4X No entry of 1mm Ø probe to live parts
 - IP5X Dust proof (no dust deposit around live parts)
 - IP6X Dust tight (no dust entry)
- ii) Second digit of code denotes protection against moisture
 - IPX0 No special protection
 - IPX1 Drip-proof (vertical falling drops)
 - IPX3 Rain-proof (rain up to angles of 60°)
 - IPX4 Splash proof (spray from any angle)
 - IPX5 Water jet
 - IPX6 Heavy downpours
 - IPX7 Temporary immersion
 - IPX8 Submersion to declared depth

Emergency Lighting

Emergency lighting is provided when the supply to the mains lighting fails. It helps people avoid panic, restores their confidence and guides them quickly and safely out of the building.

Thorn Lighting offers a wide range of fluorescent emergency lighting luminaires. These may be integrated standard luminaires or separate dedicated emergency units.

Thorn luminaires are supplied complete with transistorised control gear for d.c. operation, white fluorescent tubes and nickel cadmium batteries (unless otherwise stated).

A test record card is included so that a maintenance programme can be followed in accordance with the Code of Practice BS 5266.

Definitions

There are three main types of emergency lighting in the range:

Non Maintained: Luminaires containing one or more lamps which operate from the emergency supply only upon failure of the normal supply.

Maintained: Luminaires containing one or more lamps which operate from the normal supply or from the emergency supply at all times.

Sustained/Combined: Luminaires containing two or more lamps, at least one of which is energised from the emergency supply and the remainder from the normal supply.

Relevant Regulations and Legislation

Emergency lighting is governed by legislation and codes of practice.

There are numerous acts now in force in the UK requiring the provision of suitable means of escape during an emergency, for example the Building Regulations, the Fire Precautions Act (HMG 1971), and the Health and Safety at Work Act (HMG 1974).

These Acts are supported by several British Standards, in particular those covering the requirements and operation of emergency lighting systems, namely: the recently harmonised Emergency Lighting Code of Practice BS 5266 (EN 1838) and Code of Practice BSCP 1007 - 1955: Maintained Lighting for Cinemas. Furthermore there are also guides and other publications by organisations to help and clarify specifications and procedures, such as the CIBSE-TMI2 Emergency Lighting; Guides to fire precautions; Safety signs and signal guidance on regulations and the ICEL guides.

The current situation and implications of the recently adopted, seven-part, common European standard, BS 5266, may be obtained from our regional Lighting Design Centres. An informative CD-ROM is also available.

Colour Rendering

The European Lighting Application Standard CEN 12464-1:2002 and new SLL Lighting Code give new design advice concerning minimum colour rendering index figures (Ra). Besides specific Ra's, recommended in the schedule for various task types, all continuously occupied spaces, that are used for more than two hours, should employ light sources with an Ra of not less than 80. The use of halo phosphate phosphor lamps is restricted to transition areas. An exception is made for high bays where HPS lamps are accepted.

Amendments to Part L of the Building Regulations for England and Wales

The Government's revision of Part L, which includes limits on the energy efficiency of lighting in domestic and non-domestic buildings, has been published and came into force on 1 April 2002. An Application Performance Listing of the majority of Thorn luminaires is given on page 558 to aid your system compliance calculations. Full details of the new regulations, complete with worksheets, can be obtained from Thorn Regional offices or visit the company website.

Climate Change Levy (CCL) and Enhanced Capital Allowances (ECA)

Having chosen the fiscal route to encourage UK commerce and industry to use less energy the UK Government introduced the CCL on all non-domestic energy use in April 2001. To enable businesses to claim 100% first year capital allowances the ECA scheme was introduced from 7 August 2001. Qualifying products are listed on an Energy Technology Product List and Lighting Fittings Efficiency Codes (LFEC's) have been introduced to determine the performance of a luminaire and simplify Inland Revenue validation. Thorn has determined the LFEC Codes for its luminaires (see page 558). A detailed guide can be obtained from Thorn Regional offices or visit the company website.

Luminaires for Hazardous Areas

In July 2003 the Atex Directive became a mandatory requirement for all hazardous equipment sold in the EU. Atex certification requires compliance with latest standards and concepts and imposes new requirements on certificate holders for quality systems, documentation, installation information, labelling etc. It imposes new requirements on users and installers, including risk assessments to determine the relevant Atex category and maintenance programmes.

The technical details of Gas Grouping and Temperature Classification are unaltered, but zoning references are amended and gas, vapour, mist and dust are combined under a single classification as below:

Pre Atex	Atex
Zone 0 & 20	Category 1
Zone 1 & 21	Category 2
Zone 2 & 22	Category 3

Atex Category 1 applies to areas where the risk of explosion is constantly present. Such areas are usually quite small and are often lit by locating luminaires outside the Category 1 area. If luminaires must be located within a Category 1 area highly specialised products will be required, which are not included in the Thorn offer.

Atex Category 2 applies to areas where there is a risk of explosion during normal operation of a building or plant.

Atex Category 3 applies to areas where there will only be occasional risk of explosion and only during abnormal operation conditions.

Ignition Temperature Classification

The ignition temperature is defined as the lowest temperature at which the most explosive mixture of a given substance will ignite at a heated surface. The value will vary according to the substance. A set of temperature grades (T class) has been agreed internationally. These normally apply when a luminaire is operated in an ambient temperature of -20°C to +40°C unless otherwise stated. The user must ensure that the T Class of the luminaire does not exceed the ignition temperature of gases or vapours that will be encountered.

T Class	Surface Temperature Max Permitted
T1	450°C
T2	300°C
T3	200°C
T4	135°C
T5	100°C
T6	85°C

Gas Groups

The explosive gases, vapours and mists present in the atmosphere are classified into temperature classes and gas groups according to various properties such as ignition temperature. Under CENELEC EN 50014 and IEC 79-12 standards explosive gas/air mixtures are placed into the following groups:

Group I Electrical equipment for use underground in mines susceptible to the hazard of firedamp (methane)

Group II Electrical equipment for use in other hazardous areas. This being subdivided into 3 according to the maximum experimental safety gap for non-transmission of an internal ignition, plus the minimum ignition current of the mixture:

Subdivision A
(Representative Gas Propane)

Subdivision B
(Representative Gas Ethylene)

Subdivision C
(Representative Gas Hydrogen)

For further guidance, please refer to the Petrelux Hazardous Area brochure available from Thorn Lighting.

Working to Prevent Light Pollution

Throughout the world people are becoming more aware of the concerns of light pollution.

'Sky glow' is one form. 'Glare', the uncomfortable brightness of a light source, and light trespass, the spilling of light beyond the boundary of a property, are other forms which can also cause physiological and ecological problems.

Thorn Lighting is committed to the application of better quality lighting. Properly designed luminaires and lighting schemes can substantially reduce the levels of wasted light and Thorn Lighting's philosophy is to reduce spill light at every opportunity without compromising the important role which lighting plays in saving lives on roads, reducing crime and the fear of crime and improving the urban night time environment and therefore the social lives of many people.

To achieve this, the Company uses the most efficient light sources and computer-optimised optics in its products in order to maximise the light output and enable precise control of the direction of the light. Thorn Lighting will continue to contribute to all bodies working in favour of better lighting and to advise all its clients of the contribution that reducing spill light makes towards better quality lighting and improving the night time environment.