

# Guidance for Electrical Contractors on Emergency Lighting Legislation



*Issued in the interests of safety by*



Representing the best in electrical  
engineering and building services

*in conjunction with the Industry  
Committee for Emergency Lighting*

# ECA / ICEL Guidance For Electrical Contractors on Emergency Lighting Legislation

## 1 Upgrading Fire Safety signs

Although most people have become aware that new formats of Fire Safety signs have been introduced in the UK over the past decade, the introduction of legislation that demanded that the oldest format of signs be replaced is still unknown to many people.

The Health and Safety (Safety Signs and Signals) Regulations i, SI 341, introduced in 1996 to enact the EU Signs Directive ii, required that all text-only fire safety signs (i.e. EXIT or FIRE EXIT signs) produced to comply with BS 2560 should be replaced by 24th December 1998 with the pictogram format "running man" signs.

This mandatory change of signage presents a considerable opportunity for business. Text only signs may still be seen in many premises and the occupiers are quite unaware that their Fire Safety signs are no longer acceptable and should have been replaced.



Text Exit signs to be replaced by 24 December 1998



BS5499 Pt.1 Sign Format. Suitable for extensions of existing installations



Signs Directive Format complying with Health and Safety Regulations for all installations

Figure 1 - Fire Safety Sign Formats

The Industry Committee for Emergency Lighting Ltd. (ICEL) publishes a useful guide to the design of emergency lighting installations, ICEL 1006 iii, which offers additional advice on the requirements for the siting of Fire Safety signs.

Consideration should not only be given to updating signs by changing the legend panels or diffusers, but also to taking the opportunity to test the installed signage products. Testing will often reveal that the internal battery also needs replacing. Replacement of just the legend panels or diffusers may be difficult if the sign luminaire type has been discontinued by the maker. This, combined with the possible need to replace the internal battery, will usually mean that it is more cost effective to replace the whole sign luminaire.

### 1.1 Choice of Replacement Sign Format

Considerable debate continues about whether the running man signs should be of the BS 5499 type, with the man in the doorway, or of the more recently introduced EU Signs Directive type, with the man running toward the door.

The Health and Safety (Safety Signs and Signals) Regulations, as explained in the HSE guidance document "Safety Signs and Signals - Guidance on Regulations" iv, states that small differences in the pictograms or symbols are acceptable providing that they do not affect or confuse the message that the sign conveys. Thus, either format of pictogram sign is acceptable providing that all signs within the installation are of the same format.

If Fire Safety signs are to be fitted to a new installation, it is recommended that they should be of the EU Signs Directive type format. When signs are fitted to extend an existing installation they shall be of the same format as those previously fitted if complying with either BS 5499 Pt.1. or the EU Signs Directive type format.

### 1.2 Minimum Height of Signs

The viewing distance ( $d$ ) of any exit sign should be no more than 200 times the height ( $H$ ) of the sign if internally illuminated or 100 times the height ( $H$ ) of the sign if externally illuminated.



Figure 2 - Maximum viewing distance for Fire Safety signs

## 2 Emergency Lighting Maintenance

All emergency lighting systems are required to be subjected to regular testing and inspection to ensure correct operation when required to operate in an emergency.

All too often emergency lighting has been seen as a 'fit and forget' product. A consultant or specifier may have carefully designed an emergency lighting installation,

the equipment may have been correctly installed and certified as complying with the appropriate standards and then it is totally neglected. It should not, then, be a surprise when it fails to operate when required.

The implications of failure of the emergency lighting may of course be catastrophic, with the lives of building occupants being put at risk.

## 2.1 Maintenance Business Opportunities

Both BS 5266 and European draft standard prEN 50172 define detailed requirements for inspection and testing at regular intervals. Emergency lighting testing requirements are detailed in ICEL 1008 and the general schedule of requirements is shown as follows:

<b>Daily</b>	<ul style="list-style-type: none"> <li>◆ Visually check that all maintained lamps are operating and that all system healthy indicators on Central Power Supply Systems (sometimes called Central Battery Systems) are illuminated</li> <li>◆ Check that any recorded system fault is given urgent attention and record all corrective actions in the logbook provided.</li> </ul>
<b>Monthly</b>	<ul style="list-style-type: none"> <li>◆ Check all luminaires and other emergency lighting equipment are in a good condition, all lamps and light controllers are clean, undamaged and not blackened.</li> <li>◆ Briefly test all emergency lighting equipment by simulating a failure of the normal lighting supply. The test should not exceed a quarter of the equipment rated duration. Check that all equipment functions correctly.</li> <li>◆ Check that, upon restoring the mains supply, all supply healthy indicators are again illuminated.</li> </ul>
<b>Six Monthly</b>	<ul style="list-style-type: none"> <li>◆ Carry out the inspection and testing as described in the monthly test schedule, but conduct a test of the equipment for one third of its rated duration.</li> </ul>
<b>Annually</b>	<ul style="list-style-type: none"> <li>◆ A full system test should be conducted by a competent service engineer including a full rated duration test of the system.</li> <li>◆ Compliance of the installation and system with the requirements of BS 5266 should be considered and documented.</li> </ul>

Figure 3 - General Routine Test Schedules

The results of all testing and any necessary corrective action shall be recorded in a log record held on site and shall be made available, if required, for inspection by any authorised person.

Insurance cover of premises may also be affected if emergency lighting systems are not correctly maintained.

The majority of occupiers of premises do not understand the operation of their emergency lighting systems. If occupiers realise their obligations to test and maintain emergency lighting at all, most are only concerned to maintain the systems to correctly fulfil their statutory obligations. Sub-contracting the task of maintaining systems is therefore an attractive proposition to many occupiers and landlords.

Although some central battery systems may need to be maintained by specialists, trained, competent electrical contractors can maintain many emergency lighting systems.

Routine maintenance contracts can be good business if well managed but it is necessary to follow the schedules of routine maintenance described in BS 5266 and the European draft standard prEN 50172. Inspection certificates should be issued upon successful completion of routine maintenance and testing.

In addition to training available from manufacturers for specific products, consult ECA or ICEL about emergency lighting training courses including training to satisfy the requirements of "Competent Enterprise", qualified to sign test certificates for installations.

## 2.2 Methods of Testing

All emergency lighting installations should be provided with a method of testing, usually by means of simulating failure of the normal lighting supply, through a test switch. Test switches must be designed or positioned to avoid unauthorised switching and be arranged to ensure the supply is never unintentionally left disconnected.

Some emergency lighting manufacturers provide automatic test systems that conduct tests in accordance with the requirements of the standards. Advice on their availability can be obtained through ICEL.

Because of the risk of failure of the normal lighting supply just after a test has been conducted and subsequent risk of having too little charge in the batteries to provide the required discharge duration, tests must be conducted at a time of least risk. Additionally, if possible, only alternate fittings should be tested at any time to further minimise the risk of having insufficient emergency lighting cover after testing.

When carrying out a test by simulating a mains failure, safe procedures must be followed:-

- a) Do not switch off other essential services or equipment.
- b) Do not fully discharge a system if the building has to be re-occupied before re-charge is completed (typically 24 hours).
- c) Do not test by removing fuses. This practice is not acceptably safe. Purpose designed test switches or systems should be utilised.

Existing luminaires should be regularly checked to ensure lamps and lighting controllers are clean, undamaged and not blackened. Clean as required and lamps should be replaced as required.

For Central Power Supply Systems (Central Battery Systems), the batteries should regularly be cleaned and inspected. Electrolyte levels within the cells must also be checked and topped up, if appropriate.

### 3 Emergency Lighting Risk Assessment

Emergency Lighting Risk Assessment offers a significant opportunity for trained and qualified contractors to assess current installations for compliance with recently introduced legislative requirements and, where non-compliance is found, to quote for the supply and installation of suitable equipment to achieve compliance.

The implementation of the Fire Precautions (Workplace) Regulations 1997 in the UK and amendments to the regulations in 1999, together with the subsequent deregulation of some premises previously covered by Fire Certificates, has led to the requirement to carry out emergency lighting risk assessments of many premises.

#### 3.1 What is Risk Assessment?

Fire risk assessment is a fourfold process:-

- a) Identifying fire hazards.
- b) Taking account of the fire risk and reducing the fire hazards where possible.
- c) Assessing the means of escape and reducing the escape time if necessary.
- d) Assessing the need for a fire detection and alarm system.

When carrying out a risk assessment, it is important that it should be both practical and systematic to ensure that the whole of the workplace is examined - every room or area, particularly any areas not in regular use.

The HSE publication "Fire safety - an employers guide" v details fire risk assessment procedures to be followed.

Before carrying out an emergency lighting risk assessment, a comprehensive fire precautions risk assessment should have already been carried out. This should include assessment of possible sources of ignition of a fire, assessment of combustible materials, assessment of people at significant risk, assessment of fire spread as a result of structural features of the premises and assessment of risks during maintenance and refurbishing.

Other fire precautions such as passive fire protection, active fire detection and alarm requirements of the premises must also have been considered.

A detailed guide to carrying out Emergency Lighting Risk Assessments is contained in the ICEL publication ICEL 1008 vi.

Emergency lighting is one of the life safety systems required to be provided, where necessary, in premises where people are employed. The requirement for Emergency Lighting, its type and location should all be defined through the risk assessment.

#### 3.2 Who Needs to Carry Out Risk Assessments?

Owners or occupiers of all premises in which people are employed must, by law, carry out fire precautions risk assessments.

If you employ 5 or more persons, whether or not they are at work at any one time, or at separate workplaces, there is a legal requirement to make a record of significant findings of the risk assessment and measures proposed to deal with them. A formal record must be kept of all significant findings together with details of measures taken to deal with the risks identified. If less than 5 persons are employed, there is still a requirement to carry out a risk assessment at each workplace, although it may not need to be formally recorded.

Where a current fire certificate covers premises, the fire certificate is not a substitute for risk assessment, however it may be acceptable to the enforcing authority as part of a risk assessment.

Every person other than an employer (e.g. a landlord) who has, to any extent, control of a workplace consisting (or forming part) of premises requiring a fire certificate must ensure that, so far as it relates to matters within his / her control (e.g. the common parts), the workplace complies with the applicable requirements of the regulations.

#### 3.3 Emergency Lighting must be included in Risk Assessments

If artificial lighting is installed in the workplace, some form of Emergency Lighting is likely to be a mandatory requirement.

Emergency Lighting is installed to assist occupants to evacuate the premises in case of an emergency. The effectiveness of the escape routes can be very much improved by the provision of adequate emergency lighting which is properly maintained. This is why emergency lighting installations must be examined as a part of the overall fire precautions risk assessment.



Compliance demonstrated by:	Regulation or Guide
Risk Assessment	a) The Fire Precautions (Workplace) Regulations 1997 require where necessary: <i>Emergency routes and exits must be indicated by signs and emergency routes and exits requiring illumination shall be provided with emergency lighting of adequate intensity in the case of failure of their normal lighting.</i>
Risk Assessment	<i>also: . . . devices provided in respect of the workplace (for the above) shall be subject to a suitable system of maintenance and be maintained in good repair.</i>
Completion Certificate	b) BS 5266 part 1 is the 'Code of practice for the emergency lighting of premises other than cinemas and certain other specified premises used for entertainment'. Compliance to this standard is a requirement of various Government documents such as the Building Regulations.
Completion Certificate	c) Home Office guides.
Completion Certificate	d) The Health and Safety (Safety Signs and Signals) Regulations require that: <i>Permanent signboards must be used to indicate the location and direction of emergency escape routes....</i> and clarifies: <i>"Signboard" means a sign which is rendered visible by lighting of sufficient intensity. Signs requiring a power source must be provided with a guaranteed emergency supply ...</i>

Figure 4

Figure 4 shows the methods by which compliance with regulations or guides may be achieved. It is evident that contractors must be able to provide risk assessment as well as completion certificates to fully service the emergency lighting requirements of any installation.

To comply, emergency lighting should be constructed in accordance with appropriate standards, correctly installed in accordance with verified performance data, regularly tested and maintained as specified.

### 3.4 Carrying Out Risk Assessments

In order to make emergency lighting risk assessments straightforward and also to promote a standard approach to risk assessment, the Industry Committee for

Emergency Lighting (ICEL) has developed a risk assessment guide, ICEL 1008, of which Figure 5 is an extract.

Members of the Electrical Contractors' Association (ECA) are able to provide qualified advice and an expert installation service.

The ECA is dedicated to ensuring that all members' electrical installation work is undertaken by qualified people to high standards of quality and safety.

The installation work of members is inspected rigorously to ensure technical compliance and sound business practices.

More information and details of the unique range of benefits available to clients of ECA members is available from the address overleaf.

Section Ref	BS5266 Clause Ref	E.1. Assessment of the Escape Routes	Complies	Not Applicable	Does Not Comply
		◆ Where artificial lighting is installed, is emergency lighting fitted on the escape routes and in open areas?	<input type="checkbox"/>		<input type="checkbox"/>
		◆ Is emergency lighting and fire safety signage on the existing escape routes adequate to permit occupants to reach a place of safety within 2-3 minutes?	<input type="checkbox"/>		<input type="checkbox"/>
		◆ Is emergency lighting installed in all open areas of greater than 60m <sup>2</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		◆ If there are special risks e.g. Flammable materials used in processes, areas having restricted access, is emergency lighting fitted?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Section Ref	BS5266 Clause Ref	E.2. Assessment of existing Emergency Lighting Luminaires and Escape Route Signs	Complies	Not Applicable	Does Not Comply
		◆ Are the existing luminaires clean, undamaged and are all lamps intact, operational and unblackened?	<input type="checkbox"/>		<input type="checkbox"/>
6.10.2		◆ Are luminaire housings on escape routes fire retardant in accordance with BS5266? ICEL Registered products automatically comply, for others refer to original equipment manufacturer.	<input type="checkbox"/>		<input type="checkbox"/>

Figure 5 -Extract of ICEL 1008 Emergency Lighting Risk Assessment Check List

## A1 Emergency Lighting Legislative Requirements

In the UK the following documents refer to legislation affecting Emergency Lighting and provide information about the interpretation of legislation:

- ◆ Fire Precautions Act 1971 - ISBN 0-10-544071
- ◆ Guide to fire precautions in existing places of work that require a fire certificate - Home Office / The Scottish Office ISBN 0-11-341079-4
- ◆ Guide to fire precautions in premises used as hotels and boarding houses which require a fire certificate - ISBN 0-11-341005-0
- ◆ Fire Safety at Work - Home Office / The Scottish Office - ISBN 0-11-341161-8
- ◆ Building Regulations 1991 - Approved Document B - ISBN 1-851123-51-2
- ◆ The Workplace (Health, Safety and Welfare) Regulations - S.I. 1992 / 3004 - ISBN 0-11-034049-3
- ◆ Workplace Health, Safety and Welfare - Approved code of practice - ISBN 0-7176-04313-6
- ◆ Management of Health and Safety at Work - Approved code of practice - ISBN 0-7176-0412-8
- ◆ The Health and Safety (Safety Signs and Signals) Regulations S.I. 1996/ 341-ISBN 0-11-054093-X
- ◆ Safety Signs and Signals - Guidance on Regulations - ISBN No. 0-7176-0870-0
- ◆ Guide to Safety at Sports Grounds - ISBN 0-11-300095-2
- ◆ 16th Ed. Wiring Regulations - Protection Against Fire - Guidance Note 4 -ISBN 0-85296-868-X
- ◆ Fire Precautions (Workplace) Regulations 1997 - S.I. 1997 / 1840 - ISBN 0-11-064738-6
- ◆ Fire Precautions in the Workplace - Information for Employees - ISBN 0-11-341169-3
- ◆ Fire Risk Management in the Workplace - The Loss Prevention Council - ISBN 0 902167 73-1
- ◆ Fire Precautions (Workplace) (Amendments) Regulations 1999 - S.I. 1999 / 1877 - ISBN 0-11-082882-8
- ◆ Fire Safety - An Employers Guide - ISBN No. 0-11-341229-0

## A2 Standards Applicable to Emergency Lighting

Current installation and product standards applicable to emergency lighting in the UK are:

- ◆ BS 5266 Pt.1: 1999 - Code of practice for the emergency lighting of premises other than cinemas and certain other specified premises used for entertainment

- ◆ BS 5266 Pt. 2: 1998 - Emergency Lighting - Code of Practice for electrical low mounted way guidance systems for emergency use
- ◆ BS 5266 Pt. 4: 1999 - Emergency Lighting - Code of Practice for design, installation, maintenance and use of optical fibre systems
- ◆ BS 5266 Pt. 5: 1999 - Emergency Lighting - Specification for component parts of optical fibre systems
- ◆ BS 5266 Pt. 6: 1999 - Emergency Lighting - Emergency Lighting - Code of Practice for non-electrical low mounted way guidance systems for emergency use - Photo luminescent systems
- ◆ BSEN1838 / BS5266 Pt.7: 1999 Lighting Applications - Emergency Lighting
- ◆ BSEN 12193: 1999 Light and Lighting - Sports lighting
- ◆ CP1007 Pt. 2: 1955 Code of practice for the emergency lighting of cinemas, theatres and certain other specified places of entertainment
- ◆ BSEN 60598-2-22: 1999 Specification for luminaires for emergency lighting
- ◆ S 5499 Pt.1: 1990(1995) Specification for self-luminous fire safety signs
- ◆ BS 5499 Pt.3: 1990 Specification for internally illuminated fire safety signs

## A3 ICEL Publications:

The following publications are available from the Industry Committee for Emergency Lighting Ltd:

- ◆ ICEL 1001 : Scheme of Product and Photometric Registration for Emergency Lighting Luminaires and Conversion Modules - Oct. 1999
- ◆ ICEL 1004 : The Use or Modification of Mains Luminaires for Emergency Lighting Applications. - April 1997
- ◆ ICEL 1006: Emergency Lighting Design Guide. - May 1999
- ◆ ICEL 1008 : Emergency Lighting Risk Assessment Guide. - August 1998
- ◆ ICEL 1009 : Emergency Lighting Central Power Supply Systems Standard and Registration Scheme - June 2000

**Details of Industry Committee for Emergency Lighting Ltd. (ICEL) publications can be obtained from the ICEL Technical Manager on 020 8675 5432**

## References:

- i The Health and Safety (Safety Signs and Signals) Regulations S.I. 1996/ 341-ISBN 0-11-054093-X
- ii European Council Directive 92/58/EEC - Minimum requirements for the provision of safety signs at work
- iii ICEL 1006: Emergency Lighting Design Guide. - May 1999
- iv Safety Signs and Signals - Guidance on Regulations - ISBN No. 0-7176-0870-0
- v Fire Safety - An Employers Guide - ISBN No. 0-11-341229-0
- vi ICEL 1008: Emergency Lighting Risk Assessment Guide. - August 1998



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