

Safety of Electricity - A Guide for Residential Property Owners

As a property owner you are responsible for the overall safety of the electrical installation. Faults in the electrical wiring systems of properties account for the majority of fires and in some cases fatal electric shock accidents.

Main causes of electrical faults

The two most common faults are:

- Insulation failure

The electrical insulation which covers and protects the copper conductors of cables can fail for a variety of reasons. Modern wiring is insulated with pvc which is quite durable. Older installations used rubber, which can become brittle with age and lead to insulation breakdown resulting in short circuits. Short circuit faults can result in fires caused by the sparks and heat generated under fault conditions. They could also result in metal surfaces, which are not adequately earthed, becoming "live" which presents the potential for electric shock which could easily be fatal at 240 volts. Damage can also be caused by vermin such as mice or rats who like to chew the insulation which when exposed can result in the faults identified above.

- Overheating

Overheating occurs when installations are overloaded, a classic example being the use of multi-adaptors or multi-socket extension leads. These are not inherently dangerous as they can be used quite safely to connect several low power items such as the home hi-fi, but they do facilitate overloading. If too many appliances are connected to an electrical circuit, excessive heat will be generated in the copper conductors which can lead to a breakdown of the insulation and a short circuit.

Work carried out by unqualified installers or tenants can also lead to the faults as described.

Installation, Inspection, Testing and Maintenance

It is important to remember that Installation, Inspection, Testing and Maintenance of new or altered electrical systems should only be carried out by a competent qualified electrical tradesmen or contractor.

Preferably the contractor will be approved by the National Inspection Council for Electrical Installation Contractors and be a member of the Electrical Contractors Association.

The electrical installation must be carried out in accordance with the IEE Wiring Regulations (16th edition) now known as BS 7671:2001 AMD 2002 Requirements for Electrical Installations.

The IEE Wiring Regulations establish the accepted safety parameters for designers, erectors and testers of an installation.



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The IEE Wiring Regulations, whilst being non-statutory in nature, may be used in a court of law as evidence of the standard to be achieved.

It is recommended that the electrical installation is tested at least once in every 5 year period or after any additions are made to the system.

Periodic electrical tests will include

- Verification of effectiveness of earthing system
- Polarity
- Earth fault loop impedance
- Insulation resistance
- Operation of devices for isolation and switching
- Operation of residual current devices, over-current circuit breakers and fuses

Visual Inspection of the system will include:

- Safety
- Wear and Tear
- Corrosion
- Damage
- Excessive loading
- Age
- External influences (changes in building/occupancy)
- Suitability (e.g. of protective devices)

A certificate showing details of the installation and the results of the tests should be issued.

Key Action Points

Ensure that electrical installations, and any additions to existing systems, are only carried out by a competent person or contractor. (NICEIC Registered)

Ensure that all electrical accessories (switches, sockets, pendants etc.) are of good quality (relevant BS or EN Standards)

Ensure that the electrical installation is tested at least once in every 5 year period, and a test certificate is issued.

Respond quickly to all reported faults. Delay could result in property damage caused by fire or personal injury or death caused by electric shock.



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Reference Documents:

BS 7671:2001 Requirements for Electrical Installations. IEE Wiring Regulations Sixteenth Edition.

IEE Guidance Note 3 to the 16th. Edition Wiring Regulations.

HSE Guidance Note GS 27 Protection against electric shock.

HSE Free Leaflet IND(G)231(L) Electrical Safety and You.



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