

SECTION 13

ELECTRICITY

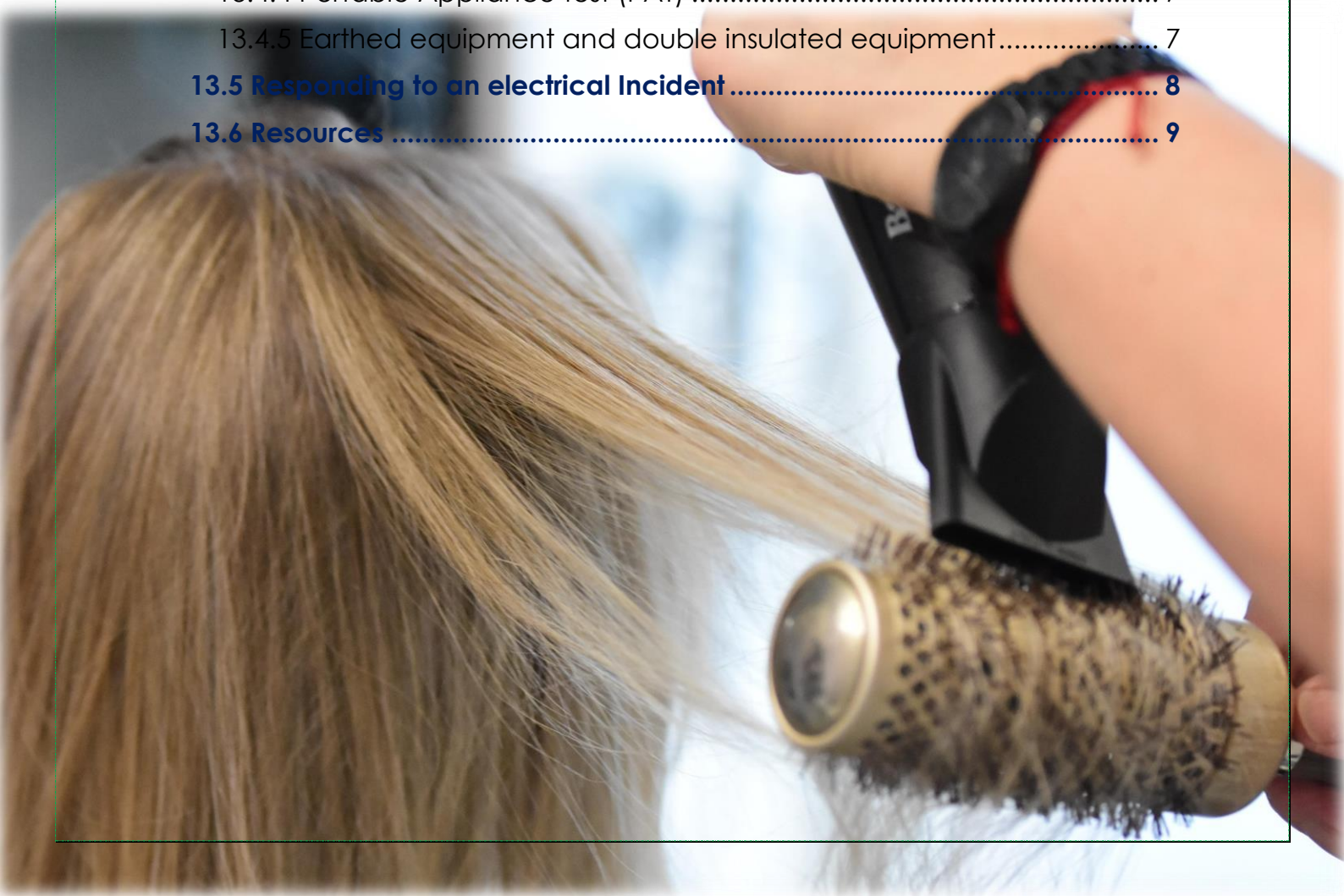


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13.2 Introduction

Electricity can kill or severely injure people and cause damage to property. Even non-fatal shocks can cause severe and permanent injury. This could happen to those working with the electrical equipment, but also to others in the area. Faulty electrical equipment is also a very common cause of fires, both in the workplace and at home.

The use of electrical equipment can create serious health and safety risks in the Hair industry, particularly in wet conditions. Damage to equipment increases this risk. Electrical shock can result in electrocution, burns and injuries.

Health & Safety at Work Legislation requires employers to develop a systematic approach to their management of electrical safety. This approach requires them to consult with workers during the identification, assessment and control of risks associated with electrical plant and electrical installations.

In regards to electrical safety in the workplace Hair industry, workers need to be familiar with the following terms:

- Electrical installation - any accessible electrical wiring, accessory, fitting, consuming device, control or protective gear, or other equipment associated with wiring in or on a workplace
- Electrical plant - any item which consumes, converts or generates electricity e.g. UV lamp
- Residual Current Devices (RCDs) - a safety device that disconnects a circuit when it detects an imbalance of the electric current e.g. due to leakage current. An RCD can be fixed or portable and is also known as a Safety Switch

13.3 Electrical Safety at Work

Electricity is a familiar and necessary part of everyday life and the workplace, but electricity can kill or severely injure people and cause damage to property. Electrical safety is all about the control of risks associated with electrical shock and electrical fire in the workplace.

The most common causes of accidents in the salon environment include:

- Electrical shock
- Electrical burns

- Electrical fires

The risk of electrical shock can arise from:

- exposed live parts e.g. contacts and conductors
- damaged insulation on the electrical plant, power leads or installation wiring/services
- the presence of water and electricity in the area in which equipment is used e.g. wet hands whilst turning on a power point

The risk of electrical fire can arise from:

- overloaded circuits
- loose connections
- heating equipment
- short circuits
- inappropriate electrical plant being used in hazardous environments

All of these may result in death and /or the loss of your business.

There are simple precautions when working with, or near electricity that can be taken to significantly reduce the risk of electrical injury to you and others around you. The Electricity at Work Regulations 1989 require that any electrical equipment that has the potential to cause injury is maintained in a safe condition. However, the regulations do not specify what needs to be done, by whom or how frequently.

13.4 Maintaining electrical equipment

The law requires electrical equipment to be maintained to prevent danger. The type and frequency of user checks, inspections and testing needed will depend

- the type of equipment
- the age of the equipment
- the environment in which it is used
- whether it is hand-held or not - hand-held equipment poses a greater degree of risk, as a faulty device will almost certainly give the user an electric shock
- Whether it's portable equipment or not – portable equipment is at greater risk of physical damage and harsher treatment
- Frequency of use of the equipment
- Age of the equipment
- Any foreseeable misuse of the equipment

- the results of previous checks, modification or repairs to the equipment

There are 3 steps you can take:

13.4.1 User checks

A relatively brief user check (based upon simple training and perhaps assisted by the use of a brief checklist) can be a very useful part of any electrical maintenance regime.

These should be carried out before most electrical equipment is used, with the equipment disconnected. Employees should look for:

- damage to the lead including fraying, cuts or heavy scuffing, e.g. from floor box covers
- damage to the plug, e.g. to the cover or bent pins
- tape applied to the lead to join leads together
- coloured wires visible where the lead joins the plug (the cable is not being gripped where it enters the plug)
- damage to the outer cover of the equipment itself, including loose parts or screws
- signs of overheating, such as burn marks or staining on the plug, lead or piece of equipment
- equipment that has been used or stored in unsuitable conditions, such as wet or dusty environments or where water spills are possible
- cables trapped under furniture or in floor boxes

These checks also apply to extension leads, plugs and sockets. A user check should be made when the equipment is taken into use and during use. Any faults should be reported immediately, and the equipment not used again and labelled as 'faulty' till it has been repaired or replaced.

13.4.2 Formal visual inspections

COMPETENT PERSON

A 'competent person' is someone who has the required skills, knowledge and experience to carry out a certain task.

To carry out a visual inspection you don't need to be an electrician, but you do need to know what to look for and you must also have sufficient knowledge to avoid danger to yourself and others. In other words, you need to be a 'competent person'.

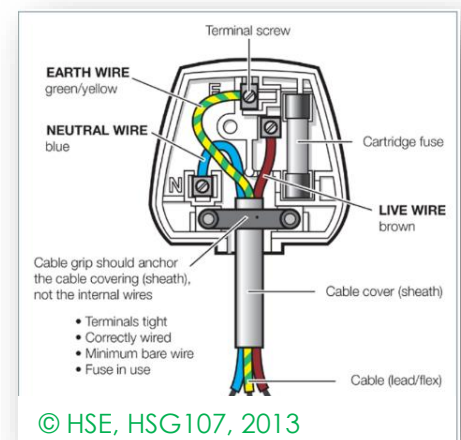
Simple training can equip you (or a member of staff) with some basic electrical knowledge to enable you to carry out a visual inspection competently.

As part of the visual inspection, you should consider whether:

- ❖ the electrical equipment is being used in accordance with the manufacturer's instructions
- ❖ the equipment is suitable for the job
- ❖ there has been any change of circumstances
- ❖ any issues have been reported

The visual inspection could include removing the plug cover and checking internally that:

- there are no signs of internal damage, overheating or water damage to the plug
- the correct fuse is in use and it's a proper fuse, not a piece of wire, nail etc
- the wires including the earth, where fitted, are attached to the correct terminals (see image)
- the terminal screws are tight
- the cord grip is holding the outer part (sheath) of the cable tightly
- no bare wire is visible other than at the terminals



For moulded plugs, **only** the fuse can be checked. The formal visual inspection should **not** include taking the equipment apart.

Please note:

- ❖ Always switch off and unplug the equipment before you start any checks
- ❖ Check that the plug is correctly wired (but only if you are competent to do so)
- ❖ Ensure the fuse is correctly rated by checking the equipment rating plate or instruction book

- ❖ Check that the plug is not damaged and that the cable is properly secured with no internal wires visible
- ❖ Check the electrical cable is not damaged and has not been repaired with insulating tape or an unsuitable connector. Damaged cable should be replaced with a new cable by a competent person
- ❖ Check that the outer cover of the equipment is not damaged in a way that will give rise to electrical or mechanical hazards
- ❖ Check for burn marks or staining that suggests the equipment is overheating
- ❖ Position any trailing wires so that they are not a trip hazard and are less likely to get damage

13.4.3 Residual Current Devices (RCDs)

RCDs are required in workplaces where plugged-in electrical equipment is used; i.e., the supply of electricity is through the wall socket outlet.

The need for an RCD is particularly important in the Hair industry as the everyday work practices exposes the equipment to operating conditions that are likely to result in damage to the equipment or a reduction in its expected life span.

For example, it is common for a salon's electrical equipment to be exposed to moisture, heat, vibration, mechanical damage (from knocks and dropping), corrosive chemicals or be moved frequently.

RCDs can either be Non-portable (or 'fixed') or portable as explained below:

- Switchboard - Non-portable (or 'fixed') RCD
 - Installed at either the switchboard or a fixed socket outlet. Non-portable RCDs installed at the main switchboard protect the wiring connected to the RCD and electrical equipment plugged into the protected circuit.
 - ❖ Fixed Socket - Non-portable (or 'fixed') RCD
 - Part of the fixed socket outlet, they provide protection to electrical equipment plugged into the outlet. It is common to see a combination RCD/Circuit
- Non-portable RCDs must be regularly tested

- ❖ Portable RCD
 - Generally plugged into a socket outlet and, depending on design, may protect one or more items of electrical equipment. Portable RCDs can only be used to minimise risk when the electrical installation is not a

new installation or a new and modified circuit in an existing installation, in these cases a fixed RCD should be installed.

- ❖ Testing and maintenance of RCDs and portable RCDs that are moved from place-to-place, need to be push button tested immediately after connection and each day prior to use

13.4.4 Portable Appliance test (PAT)

Portable appliance testing (PAT) is the term used to describe the examination of electrical appliances and equipment to ensure they are safe to use. Most electrical safety defects can be found by visual examination but some types of defect can only be found by testing.

A portable appliance test does not need to be carried out by an electrician, but greater knowledge and experience is needed than for inspection alone, and the person performing the test must have the right equipment for the task. They should know how to use the test equipment and how to interpret the results.

It is important to continue to carry out user checks on electrical equipment that has been tested. This is because portable appliance testing can only give an indication of the safety of an appliance at the time of the test and does not imply that the item will be safe for a further period of time.

The frequency of inspection and testing depends upon the type of equipment and the environment it is used in. Checks should be carried out often enough to ensure there is little chance the equipment will become unsafe between checks.

It is good practice to make a decision on how often each piece of equipment should be checked, write this down, make sure checks are carried out accordingly and write down the results. You should change how often you carry out checks, according to the number and severity of faults found.



13.4.5 Earthed equipment and double insulated equipment

When deciding whether to test electrical equipment, you need to consider the type of construction of the equipment in use. There are two basic types of electrical equipment construction – Class I (earthed) and Class II (double insulated).

For safety reasons, Class I equipment has an earth connection. If there is a fault within the equipment there is a possibility that the outside of the equipment could cause an electric shock if the earth connection is not there. As a result, it is recommended that Class I equipment has a portable appliance test to ensure the earth connection is sound.

Double insulated equipment Class II equipment is sometimes referred to as 'double insulated' equipment. This means that there is extra insulation within the construction of the equipment to prevent accidental contact with live parts, even if there is a fault.

Class II equipment does not need an earth connection to maintain safety. It will not need a portable appliance test, although you should ensure that user checks and visual inspections are carried out as the integrity of the equipment casing is a key safety feature. Class II equipment is marked with a square symbol - □. If you cannot see this symbol, you should assume that the item is a Class I appliance and carry out a portable appliance test.

13.5 Responding to an electrical Incident

Turn off the electricity supply to the electrical equipment involved in the incident. This is usually the wall power socket outlet that is closest to the equipment. If not, locate the closest switchboard/distribution board supplying electricity to the salon. A trained/competent person should proceed to safely break the electrical contact between the injured person and the electricity supply. Where practical, remove the equipment power plug from the power socket outlet.

If this is not possible for any reason, use a non-conductive item such as a wooden chair or broom handle break the contact point(s) between the person and the electrical item (source of electrical hazard).

Do not get close to the person till the electricity has been switched off.

If someone is receiving an electric shock and another person touches this person may also receive the electric shock.

Call 999 for an ambulance. If you do this as soon as possible, help can be on the way while you are assisting the injured person.

Once you have broken the contact between the casualty and the source of the shock commence First Aid as required.

Be aware that the person will have two burns – one where the electricity entered their body, and one where it left the body. The latter wound tends to

be worse. Also note that the electricity will have burned a pathway between those two points, and a lot of damage may have been done to their body and organs. So, always always ensure they go to A&E.

13.6 Resources

For more information, see

[HSG85, Electricity at Work. Safe working practices](#) (HSE)

[HSG107 Maintaining portable electrical equipment](#) (HSE)

[INDG231 Electrical safety and you](#) (HSE)

[INDG236 Maintaining portable electric equipment in low-risk environments](#) (HSE)

[HSR25, The electricity at work regulations 1989](#) (HSE)

[Product Safety Beauty Products](#) (Electrical Safety First)