THE UNIVERSITY OF SHEFFIELD

INSPECTION AND TESTING OF ELECTRICAL EQUIPMENT POLICY AND PROCEDURES
Statement

This University Policy and associated procedures were approved by the Health and Safety Committee on 25 February 2009 on behalf of the University of Sheffield Council and forms part of the Health and Safety Policy of the University of Sheffield.

The use of the Management Procedure and the incorporation of its requirements into working practices and activities will ensure that the University of Sheffield and its community achieve compliance with its legal duties with regard to health and safety.

The most recent version of this document can be found at: -

http://www.shef.ac.uk/polopoly_fs/1.128498!/file/patpolicy.pdf

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1.0 INTRODUCTION

The Electricity at Work Regulations 1989 came into force on 1 April 1990. The Regulations are made under the Health & Safety at Work etc Act 1974 and require precautions to be taken to prevent death or personal injury from the use of electricity in work activities. The Regulations impose responsibilities on the employer and employees to conform to these regulations in every respect.

The inspection and testing of electrical equipment is an inherent part of compliance with the Regulations, therefore, The Institute of Electrical Engineering and Technology (IET) have issued a Code of Practice for In-service Inspection and Testing of Electrical Equipment (IET Code of Practice).

Applicable Legislation

- The Health & Safety at Work etc Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Provision & Use of Work Equipment 1992
- The Electricity at Work Regulations 1989

2.0 INSPECTION AND TESTING OF ELECTRICAL EQUIPMENT POLICY

The University of Sheffield shall take all reasonable steps to ensure that electrical appliances and equipment are inspected and tested in accordance with all relevant health and safety legislation see the IET Code of Practice ‘In-Service Inspection and Testing of Electrical Equipment’.

3.0 ROLES AND RESPONSIBILITIES

3.1 VICE CHANCELLOR

The Vice Chancellor has ultimate responsibility to ensure that the University of Sheffield is compliant with all statutory health and safety requirements. This responsibility is devolved to The Registrar and Secretary who is responsible on a delegated basis for the general oversight and development of health and safety policy and ensuring coordination of such policies and practices University wide.

3.2 DIRECTOR OF ESTATES AND FACILITIES MANAGEMENT

The Director of Estates and Facilities Management (DoEFM) shall: -
• Ensure compliance and that of EFM staff with the provisions set out within this Policy.

• Appoint a staff member with the required competencies to act a Duty Holder for this statutory provision.

• Provide and maintain a central University electrical testing service to ensure compliance with statutory health and safety legislation.

• Ensure that adequate resource is made available to carry out the programme to the set time frames.

• Ensure that suitably trained and competent staff are appointed to carry out the relevant duties required to undertake the relevant electrical testing regimes (ie portable appliance testing and 3-phase and hard wired electrical equipment).

• Ensure that suitable testing equipment is provided, maintained and calibrated for the Central Testing Team to carry out the task.

• Ensure the maintenance and currency of the Electrical Testing programme ensuring compliance with statutory obligations and the time frames set down in this Policy.

• To ensure that all data collated by the central University service provided by EFM is duly recorded on the University’s Shared Equipment Database.

• To ensure that all external contractors appointed by EFM are informed that their equipment, and that of their sub-contractors, must be:
  
  ❖ Tested in accordance with the IET Code of Practice and this Policy.
  
  ❖ Display a current test sticker and that all equipment not conforming to this requirement must not be used and is removed from University.

3.3 DUTY HOLDER

The Duty Holder shall ensure that:

• Risk assessments are in place to ensure that the tasks involved can be carried out safely.

• There is a system in place to review the testing frequencies for all types of equipment.
• There is a system in place for recording equipment testing information.
• There is a system in place for labelling equipment with test information.
• There is a system in place for removing unsafe equipment from service.

3.4 DIRECTOR OF ACCOMMODATION AND COMMERCIAL SERVICES

The Director Accommodation and Commercial Services (DoACS) shall be responsible for compliance with this Policy and ensuring that: -

• All University owned electrical equipment within their Department, the Student Villages and commercial outlets under their control, are tested in line with this Policy.

• All electrical vending equipment etc that is hired/contracted in from third parties is subject to the statutory testing and an appropriate test sticker displayed.

• An electrical appliance testing service is made available to students who bring in items of electrical equipment from home for use in their residences.

• All external contractors appointed by ACS are informed that their equipment, and that of their sub-contractors, must be:
  a. Tested in accordance with the IET Code of Practice and this Policy.
  b. Display a current test sticker and that all equipment not conforming to this requirement must not be used and removed from University.

3.5 HEADS OF DEPARTMENTS

Heads of Departments shall be responsible for compliance with this Policy and ensuring that:

• Provision is made for all University owned electrical equipment within their Departments to be tested in line with this Policy. This may be carried out by the University central service provided by EFM or in-house departmentally by a suitably trained competent person.

• Where the option to use in-house departmental staff to carry out the testing is implemented then suitable testing equipment must be provided, maintained and calibrated to carry out the task.
• All electrical equipment that is hired/contracted in from third parties is subject to the statutory testing and an appropriate test sticker displayed.

• Any item of personal electrical equipment brought into the University to be used by staff must have the prior approval in writing from the Head of Department or nominated Deputy. Approved items must be inspected or tested in accordance with this Policy prior to use and must be fitted with a suitably fused, 3-pin UK plug to BS 1363.

• All external contractors appointed by ACS are informed that their equipment, and that of their sub-contractors, must be:
  • Tested in accordance with the IET Code of Practice and this Policy.
  • Display a current test sticker and that all equipment not conforming to this requirement must not be used and removed from the University.

• Users of equipment receive the required training for the use of equipment and that they are aware that:
  a. Faulty equipment should not be used; and
  b. Faulty equipment should be reported and withdrawn from service.

### 3.6 HEAD OF HEALTH AND SAFETY

The Head of Health and Safety will ensure the effectiveness of this Policy through regular auditing of this Policy and its Procedures.

The Head of Health and Safety has a central co-ordinating role in relation to general health and safety matters and acts as Advisor to the University on health and safety strategy and the requirements and interpretation of relevant legislation.

Heads of Departments shall be responsible for making their own inspection and testing arrangements and take all reasonable steps to ensure that this Policy is complied with.

### 3.7 DEPARTMENTAL CONTACTS

The Departmental Contact responsibilities will include:

• Acting as point of contact for the EFM Electrical Testing Team.
• Arranging keys and access to all areas of the department for testing to be carried out.

• Informing departmental staff of when the electrical testing of equipment will take place.

• Informing the EFM Electrical Testing Technician of any equipment that cannot be switched off, or which may be damaged by testing; and any safety issues within the department.

• Dealing with ‘FAILED’ equipment as reported by the EFM Electrical Testing Technician.

• Receiving the departmental report from EFM Electrical Testing Service on completion of testing.

3.8 DUTIES OF ELECTRICAL EQUIPMENT TESTERS

The Electrical Equipment Testers are responsible for:

• Carrying out testing of electrical equipment in accordance with both this Policy and the Electrical Testing Programme.

• Ensuring that ‘failed’ items of equipment are labelled appropriately made safe or unusable and inform the Departmental Contact to immediately remove from service until such time that a repair and re-test can be implemented.

• Assessing and determining the period for re-test of all items of electrical equipment.

• Carrying out repairs and re-test of ‘failed’ electrical equipment where applicable.

• Recording the test results on the University’s Shared Equipment database.

• Updating the University’s Shared Equipment database where new items of electrical equipment have been identified (including fixed wired) to ensure that they are added to the programme.

• Producing and delivering reports of testing to the Departmental Contacts.

• Ensuring that the testing and repair equipment is suitably maintained and calibrated in line with manufacturer’s recommendations.
3.9 DUTIES OF EMPLOYEES

All staff have a duty to take reasonable care for the health and safety of themselves and others who may be affected by their work. They also have a duty to comply with the University’s arrangements for health and safety.

It is the responsibility of the equipment user to carry out a pre-use checks on the equipment before plugging in and switching on the equipment. These checks comprise of:

a) Carrying out a visual inspection of the plug, the flex and the appliance.

b) Assessing the suitability of the appliance for the environment and the task.

c) Reporting and logging any identified faults.

4.0 COMPETENCE

Portable and fixed wired appliance testing, microwave oven testing or the visual inspection of electrical equipment within departments must be carried out by competent persons ie:

- The Electrical Testing Team within EFM.

- Departmental staff who have been trained and have the required knowledge and experience who are deemed competent to carry the required visual inspection or testing of electrical equipment.

- A commercial external electrical contractor with the required knowledge, competence and experience.

In the case of inspecting or testing hard wired, single or 3-phase equipment, the persons must be competent to isolate equipment before testing. This aspect of testing will be carried out by the EFM Central Testing team ONLY.

As to whether an individual is deemed competent to undertake a particular task is the responsibility of the Head of Department. It is necessary to assess the job’s skill content against the individual’s attributes taking into account his/her:

a) Electrical knowledge

b) Electrical experience

c) Understanding the hazards which could arise; and

d) Ability to recognise at any time whether it is safe to continue to work.
Where commercial external electrical contractors are employed, the Head of Department shall ensure that written evidence of their competence is supplied and assessed.

5.0 TRAINING

To comply with the requirements of the Policy it is essential that any member of staff involved in the inspection and testing of electrical appliances has received adequate training to carry out the task safely. This Policy places responsibilities on:

- Users of the equipment – the equipment should be checked before use.
- The Duty Holder – the person with responsibility for maintaining the system of inspection, testing and training; and who are required to know their legal responsibilities as set down in the Electricity at Work Regulations.
- The Electrical Equipment Testers – who will have the required training knowledge and experience to inspect and test equipment in line with this Policy.
- The person repairing faulty equipment – must have the required training knowledge and experience to be able to safely and effectively repair a faulty without putting themselves or others at risk.

6.0 DEFINITION OF PORTABLE APPLIANCES FOR THIS POLICY

- Only Class I and Class II (see APPENDIX D) electrical equipment fitted with a plug, and allowing disconnection from the electrical supply without the use of a tool, will fall within the scope of this Policy.
- There are other classes of electrical equipment but these tend to be specialist items and advice on suitable test frequencies should be sought from competent testers.
- All portable electrical equipment should be fitted with a suitably fused, standard UK 3-pin plug. EU to UK plug adapters should only be used for very short-term usage. All permanent University equipment must have a suitably fused 3-pin UK BS 1363 plug fitted.
- Microwave ovens are to be tested for microwave leakage on a regular basis. Where applicable this should be undertaken by the PAT testing resource for each Department.
• The IET Code of Practice also makes provision for the testing of single and 3-phase equipment, connected by means of a cord or cable, to a fused or unfused connection unit or isolator (fixed wired); or connected using a suitable single or 3-phase industrial plug and socket system. This equipment can be movable, stationary or built in. (Testing of fixed wired equipment shall NOT be tested by departmental testers but its existence and location will be notified to the Central Testing Team based in EFM by the department.)

7.0 FIXED WIRED EQUIPMENT

All equipment not included in the definition for portable appliances covered in the Section above (other than battery powered) must be identified by the Directors / Heads of Faculties / Departments and brought to the attention of the central Testing Team based in Estates and Facilities Management for inclusion in the Fixed Wired Equipment Testing Register.

8.0 FREQUENCY OF TESTING

All appliances, including new appliances shall be visually inspected or tested prior to being put into use within the University and thereafter the frequency shall be dictated by a risk based approach which will consider the following factors: -

- User safety.
- Construction of equipment.
- The type of equipment ie hand held.
- Condition of equipment.
- Frequency of use of the equipment.
- Movement of equipment.
- Likelihood that the equipment could become damaged.
- The installation method for the equipment ie hard wired.
- The environment that the equipment is located/used/stored in.
  (See APPENDIX A – “Testing Frequencies’ for guidance).
- Previous testing records (where available).

9.0 TESTING PROCEDURE

Portable electrical appliances shall be regularly inspected and tested in accordance with this Policy by competent persons to ensure that they can continue to be used safely.

The planned inspection and testing will include: -

a) Visual Inspection for signs of damage or deterioration/ and
b) Electrical tests, ie:

(i) an earth continuity test; and

(ii) relevant insulation tests

Additional procedures will include that:

- All new, on-loan, or personal equipment etc that is brought into the University is visually inspected or tested and deemed to be safe in accordance with this Policy before being put into service.
- Any electrical equipment that is not deemed 'safe to use' is withdrawn from use into a suitable location to prevent re-introduction to use before it has been repaired/disposed of.
- The risks to personnel are assessed and recorded.
- Records of inspections and tests are maintained.
- All inspected or tested equipment displays the relevant sticker.
- Members of staff who have been appointed to inspect/test portable electrical appliances are competent to undertake the duties imposed upon them.
- Equipment located in their Faculty/Department etc, which falls outside the scope of this Policy, is brought to the attention of Estates Services.

10.0 LABELLING

Each item of equipment tested by the University Central Testing Team or by Departments shall have the correct colour-coded label attached with the following information:

- The month and the year that the next test is due.
- A unique identifier code on the item of equipment

A clear method of labelling must also be implemented by Departments who use an external electrical service for the testing of portable electrical appliances.
11.0 RECORDS

The tests will be recorded on the University’s Shared Equipment database to allow for future comparison, for written identification of defects to be remedied and to provide information for an assessment of risk.

The University’s Shared Equipment database issues asset numbers and records both visual and electrical testing results.

Departments using external contractors for the testing of electrical equipment shall keep the results for auditing purposes, these may also be requested by Enforcing Authorities etc for inspection.

12.0 EQUIPMENT SUPPLIED FOR SERVICE (HIRE, LOAN OR OTHER)

It is the responsibility of the Head of Department to inform suppliers that equipment must be tested and labelled in accordance with the Policy prior to the equipment being brought into service.

13.0 PERSONAL EQUIPMENT

Any item of personal electrical equipment brought into the University and falling under Section 6, to be used by staff must have the prior approval in writing from the Head of Department or nominated Deputy. Approved items must be inspected or tested in accordance with this Policy prior to use and must be fitted with a suitably fused, 3-pin UK plug to BS 1363.

Personal electrical equipment in use in the University which has been brought in from countries outside the EU and is not CE Marked, should be taken out of use immediately, as many operate using different voltages to that in the EU and it can be unsafe, as well as illegal (not CE Marked), to use such equipment in the UK.

Equipment manufactured in the EU since 1995 will be CE marked and can therefore be used legally in the UK, but those fitted with “continental” plugs will not fit into British electrical sockets and you will need to either: -

a) Remove and replace the continental plug by a British 13 Amp 3-pin plug with the appropriate fuse fitted for the equipment or cables to be protected (to be done by a person competent to undertake such work).

b) For short durations only, use a fused 2-pin to 3-pin adapter to enable them to be used with British electrical sockets. However, the adapter should: -
 Be CE marked,

 Be fused appropriately for the equipment or cables to be protected,

 Include an appropriate ‘earth’ connection,

 Have “shuttering” protecting the holes into which the plug is inserted to avoid the potential for accidental contact with live connectors in the adapter. Plug-in adapters (i.e. not extension cables) without “shuttering” should not be used.

 Be able to accept a single plug only unless the adapter is an “extension lead” with a suitably rated, and minimum length of cable between the fused plug-head and the multiple continental-socket box. If the continental sockets are not shuttered then the trailing lead must be fitted with a British 13 Amp 3-pin plug that has an integral Residual Current Device (RCD) with 30mA rated residual operating current.

 CE-compliant 2-pin to 3-pin adapters are available from CiCS.

14.0 STUDENT EQUIPMENT

Any item of personal electrical equipment (for exceptions see APPENDIX C) brought into the University academic areas to be used by students should have the prior approval in writing from the Head of Department or nominated Deputy.

Items that are approved for use must be visually inspected or tested by a competent person in accordance with this Policy prior to use; and must be fitted with a suitably fused, 3-pin UK plug to BS 1363.

15.0 RESIDENTIAL ACCOMMODATION

Equipment owned and supplied by the University of Sheffield as part of the lease agreement with the resident eg fridge, kettles, toasters, microwaves etc shall be tested in accordance with this Policy.

Equipment owned by students and brought into the residences for their own use should be tested in accordance with this Policy.
16.0 EQUIPMENT FAILURE

Any item of equipment which fails the inspection / test, shall be: -

- Clearly labelled with a "FAIL" or "DO NOT USE" sticker.
- Removed from service IMMEDIATELY by the Department.
- Cable or plug removed or Plug-lock fitted, to ensure that it cannot be used.
- Not put back into service until the fault is rectified and the equipment is re-tested, or
- The item is deemed redundant and disposed of accordingly by the Department and the disposal registered on the Department’s Asset Register.
## APPENDIX A - TESTING FREQUENCIES

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Class of Equipment</th>
<th>Condition / Usage / Environmental Conditions</th>
<th>Visual Inspection (VI)</th>
<th>Combined Inspection &amp; Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handheld (During normal use)</td>
<td>Class I earthed</td>
<td>Heavy / frequent use; harsh environments; high potential for damage / misuse/cable damage etc. E.g. Heavy engineering workshops, excavations &amp; other construction-type sites.</td>
<td>Daily user check</td>
<td>On acquisition &amp; 3+1 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benign environment, light infrequent use, low potential for damage / misuse etc. Research laboratories, electrical workshops, building maintenance equipment.</td>
<td>Daily user check</td>
<td>On acquisition &amp; 6+2 months</td>
</tr>
<tr>
<td>Handheld (During normal use)</td>
<td>Class II double insulated</td>
<td>Heavy / frequent use, harsh environments, high potential for damage / misuse / cable damage etc. E.g. Heavy engineering workshops, excavations &amp; other construction-type sites.</td>
<td>Daily user check</td>
<td>On acquisition &amp; 6+2 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benign environment, Light infrequent use, low potential for damage / misuse etc. Research laboratories, electrical workshops, building maintenance equipment. Extension Leads.</td>
<td>Formal VI on acquisition &amp; Daily user check</td>
<td>12+3 months</td>
</tr>
<tr>
<td>Moveable/Transportable equipment</td>
<td>Class I E</td>
<td>Heavy / frequent use, harsh environment, high potential for damage / misuse/cable damage etc. E.g. Heavy engineering &amp; transport workshops and construction sites.</td>
<td>Formal VI on acquisition weekly check</td>
<td>3+1 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benign environment, Light infrequent use/movement, low potential for damage / misuse etc. Research &amp; teaching laboratories and associated equipment, light engineering workshops.</td>
<td>Formal VI on acquisition</td>
<td>12+3 months</td>
</tr>
<tr>
<td>Moveable/Transportable equipment</td>
<td>Class II DI</td>
<td>Heavy / frequent use, harsh environment, high potential for damage / misuse/cable damage etc. E.g. Heavy engineering &amp; transport workshops and construction sites.</td>
<td>Formal VI on weekly check acquisition</td>
<td>6+2 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benign environment, light infrequent use/movement, low potential for damage / misuse etc. Research &amp; teaching laboratories and associated equipment, light engineering workshops.</td>
<td>REASON – cables live – potential damage causing exposed conductors</td>
<td></td>
</tr>
<tr>
<td>Stationary appliance and appliance</td>
<td>Class I E</td>
<td>Operating in harsh environment or potential for damage / being struck by other equipment /cable damage etc. e.g. engineering workshop,. research &amp; teaching laboratories.</td>
<td>Formal VI on monthly check acquisition</td>
<td>12+3 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benign environment, low risk of damage. E.g. offices etc.</td>
<td>Formal VI on acquisition</td>
<td>24+3 months</td>
</tr>
<tr>
<td>Stationary appliance and appliance</td>
<td>Class II DI</td>
<td>Operating in harsh environment or potential for damage / being struck by other equipment /cable damage etc. E.g. engineering workshops, research &amp; teaching laboratories.</td>
<td>Formal VI on acquisition</td>
<td>12+3 months</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benign environment, low risk of damage. E.g. offices etc.</td>
<td>Formal VI on acquisition</td>
<td>48-60 months</td>
</tr>
<tr>
<td>Permanent secure IT installations</td>
<td>Server Rooms etc with restricted access, optimum environmental conditions and no movement of equipment or potential for mechanical damage following testing on installation</td>
<td>12-24 months</td>
<td>On installation &amp; every 60 months</td>
<td></td>
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<td></td>
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<tr>
<td>Hard Wired/Fixed Equipment eg hand dryers</td>
<td>Single and 3 Phase Equipment May fall into any of the above categories, but is single and 3-phase equipment, connected by means of a cord or cable, to a fused or un-fused connection unit or isolator (hard wired).</td>
<td>Formal VI per 12 months</td>
<td>On installation 12-60 months Risk Based</td>
<td></td>
</tr>
<tr>
<td>Portable Appliance eg desk fan, extension lead</td>
<td>Class I E Harsh environment, eg workshops and research teaching labs</td>
<td>6 months check</td>
<td>12+3 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benign environment, low risk</td>
<td>1 year check</td>
<td>24+3 months</td>
<td></td>
</tr>
<tr>
<td>Toaster, kettle</td>
<td>Class II DI Harsh environment, workshops</td>
<td>1 year check</td>
<td>24+3 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Benign environment, eg offices, low risk</td>
<td>2 year check</td>
<td>48-60 months</td>
<td></td>
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</table>

NB Inspection and testing shall be more often where indicated by local risk assessment ie more demanding conditions of use will require more frequent inspections.
APPENDIX B

Examples of Equipment Covered by the Policy
APPENDIX C

PERSONAL AND STUDENT EQUIPMENT APPROVAL

Blanket approval is considered reasonable for personal and student equipment which is in good condition with no damage which operates on:-

a. dry cell battery only.

b. internal rechargeable battery with a detachable charger having an output of less than 25 volts, e.g. for mobile telephones,

c. 240 volt transformers for laptops or similar, having an output of less than 25 volts with integral 240 volt lead complying with the requirements of section 9.0,

d. 240 volt equipment which is double insulated (see below) and operates on very low currents, e.g. radios.

Personal and student equipment with heating elements (e.g. kettles, toasters and other cooking equipment) or likely to create significant disruption for others (e.g. HiFi's or other high noise producing equipment), should not be brought into the University under any circumstances.
APPENDIX D

CLASS I EQUIPMENT – Definition and examples

These items have live parts protected by basic insulation and a metal enclosure or accessible metal parts that could become live in the event of failure of the basic insulation (indirect contact). Protection against shock is by basic insulation and earthing via casing the CPC in the supply cable and the fixed wiring.

Typical Class I items include extension cables, fridges, toasters, kettles, autoclaves, some electric heaters, most printers, most photocopiers, centrifuges, freezers, microwave ovens, furnaces, lathes and pillar drills etc.

CLASS II EQUIPMENT – Definition and examples

Commonly known as double insulated equipment, the items have live parts encapsulated in basic and supplementary insulation (double), or one layer of reinforced insulation equivalent to double insulation.

Even if the item has a metal casing (for mechanical protection) it does not require earthing as the strength of the insulation will prevent such metalwork becoming live under fault conditions. The cable supplying such equipment will normally be two core.

Examples of Class II equipment would include adaptor/power supply units, radios, TVs, some electric heaters, desk lamp/fan, some printers, some photocopiers, scanners, relevant mains leads to IT equipment etc. All such items should display a Class II equipment symbol:

Double Insulated

If an item of electrical equipment does NOT have this symbol, then you must treat it as Class I electrical equipment.