

TITLE OF POLICY	Electrical and PAT Testing
COVERAGE	Employees
FIRST RELEASE DATE	31/08/2021
LAST RATIFIED DATE	04/02/2022
DATE FOR NEXT REVIEW	31/08/2023
OWNER	Health and Safety Manager
REVIEWER	Principal

Electrical and PAT Policy

1. Aim

The Electrical and PAT policy will aim to ensure safety and security of all ICS community and premises by ensuring that all electrical equipment within the school meets the safety requirements of the Electricity Regulations, and only suitably qualified and competent persons may carry out any electrical work in the school, we will teach electrical safety through science and ensure compliance with all relevant legislation connected to this policy.

2. Statement of intent

We acknowledge that electrical hazards have the potential to cause harm or damage, and that electrical fires are caused by lack of testing and inspection and poor housekeeping. Therefore, all electrical equipment will be periodically maintained to a satisfactory standard to minimise risk to school personnel.

We have in place a periodic maintenance programme where all electrical equipment is Portable Appliance Tested by a competent person who has the right equipment to do the tests, the ability to use the test equipment and the ability to understand the test results. We are aware that Portable Appliance Testing is not compulsory but it is recommended that all electrical equipment is maintained to prevent danger by taking a risk-based approach by considering the type of equipment and what it is being used for. We have a duty to ensure the safety of all pupils, school personnel and visitors by ensuring all electrical equipment meets current safety regulations.

We will ensure that all tested equipment is labelled with a record being kept of all tested equipment. All new equipment will only require a simple visual check to ensure the product is not damaged in any way; while established equipment that is regularly moved and used will be inspected every week.

ICS will apply the following general principles in using electrical portable appliance:

- Failure to maintain portable electrical equipment adequately is a major cause of electrical accidents;
- Equipment used in the school should be purchased by the school and will be maintained and PAT tested as appropriate;
- The school aims to provide staff and students with all essential equipment required;
- Personal electrical or electronic devices are used at the owner's risk. It is the user's duty to be responsible in the upkeep and protection of the device. ICS will not be responsible for personal devices which are damaged or lost whilst at school;

- The School will not provide technical support for personal devices.

3. Scope

This policy is applicable to all work activities and places requirements on all students, staff, parents, contractors and visitors in order to control risks which can arise from the use of electricity.

4. Unique definitions

A Portable Electrical Appliance is, literally, any electrical equipment capable of being carried and, in general, connected to the mains supply by a flexible lead and a plug. The definition includes appliances with their own power sources, eg, "intrinsically safe" equipment used in potentially explosive environments and equipment designed to operate at 220 volts. The definition does not include equipment which is "hard" wired, eg, heavy equipment supplied by a fixed armored power cable, which is tested using other regimes.

Class I appliances rely on earthing of the conductive case and one layer of insulation covering its live internal parts for protection against electric shock.

Class II appliances are "double insulated", i.e. they rely on two layers of insulation between live internal parts and the user for protection against electric shock.

Competent Person is a person who is employed or contracted by ICS who has received suitable and sufficient training in Portable Electrical Appliance Inspection and Testing.

PAT: Portable Appliance Testing is the name of a process by which electrical appliances are routinely checked for safety

5. Processes and practice

5.1 Schedule of Inspection and Testing

5.1.1 Visual Inspection: Since over 80% of electrical faults are discovered by visual inspection, this is the most important element of Inspection and Testing. The following schedule is recommended.

Component	Common Fault
Plug	<ul style="list-style-type: none">• Cracked casing, bent pins• Incorrectly rated fuse• Incorrectly connected wires

	<ul style="list-style-type: none"> • Loose connections • Loose cable clamp
Mains lead	<ul style="list-style-type: none"> • Cuts, fraying, brittle • Kinked, coiled • Taped joints • Overloaded (overheated) • Male connector (if fitted), non-standard (IEC 320, BS4491, CEE22) • Not secured by grommet/clamp on appliance
Appliance	<ul style="list-style-type: none"> • Damage/faulty operation of off/on switch • Damage to casing • Loose parts • Missing screws • Evidence of overheating • Evidence of moisture • Missing double insulation mark on insulating casing (where appropriate) • Accessible fuse holders: damage or removal of carrier permits live part to be touched

5.1.2 Electrical Testing: A commercially available Portable Appliance Tester (PAT) is required for electrical testing of robust appliances. Some PATs have a facility for testing 220 V equipment. A PAT must not be used on sensitive electronic equipment such as computers, as permanent damage may be caused by the high test voltages and currents.

The following schedule is recommended, carried out in the order as written:

- **Class I Appliances**

Test	Procedures
Earth Continuity / Bonding Test	<p>This test is for checking the earth lead continuity and earth connection (or bonding) to the metal casing of an appliance. A voltage is established between the appliance's mains supply earth pin and its case.</p> <p>There are usually two tests available:</p> <p>(I) 4 A / 300 mW for light duty supply cables (up to 6 A); and</p> <p>(II) 25 A / 300 mW for heavy duty supply cables.</p> <p>The resistance between the earthed case and the earth pin on the mains plug must not be more than 300mW.</p>
Insulation test	<p>This test checks the integrity of the appliance's insulation. For Class 1 appliances the test voltage is applied between the</p>

EHS 16

	appliance's mains supply plug P (phase) and N (neutral) pins connected together, and the E (earth) pin which is held at earth potential. The insulation resistance must withstand a high voltage (500V dc / 2 MW) for five seconds.
Earth Leakage test	This test shows the level of leakage current in the appliance by monitoring the difference in currents flowing in the phase and neutral connections; any difference must be flowing to earth. This provides a useful way of predicting the approach of appliance breakdown since the level of leakage current is a guide to the condition of insulation. Since many appliances are designed with earth leakage, this test is not mandatory; faults are indicated in the Insulation Test described above.
Flash test	This test shows the response of the insulation to ac voltage (indicating problems due to excessive capacitive current) and gives an early warning of insulation problems. There is normally a choice of two flash tests; low and high voltage. Since the high voltage test may stress the insulation and cause degradation, it is recommended that the low voltage flash test only is used.
Operation VA test(optional)	This test indicates that the appliance is in good working order and not drawing excessive current.

- **Class II Appliances:** Test as for Class I Appliances, except with the omission of the Earth Continuity / Bonding Test.
- **Sensitive Electronic Equipment**
 - Earth Continuity / Bonding Test ONLY
 - Do NOT use a PAT device
 - Using a multimeter able to read to 300 mW, the resistance between the earth pin and exposed metal (not signal sockets) should be less than 300mW.
- **Three phase equipment:** The inspection and testing of three phase equipment is a specialist task which must be carried out, either:
 - Under service contract; or
 - By Buildings and Estates Division, Electrical Section.

5.2 Requirements for use

5.2.1 Laptops and iPads: Staff are permitted to bring laptops and ipads into school if they are supporting their work.

5.2.2 Other Electrical Equipment:

EHS 16

- Staff needing to bring in an item of electrical equipment to school on a temporary basis should notify the School Engineer who will carry out a check;
- Any electrical item which is donated to the school on a permanent basis should be notified to the School Engineer prior to it being brought into school. It will be given an initial check and then be PAT tested as part of the routine PAT testing periodical programme;
- Any item failing a visual check or a PAT test must be removed from use immediately

6. Associated forms and documents

None.

7. Responsibilities

7.1 SLT

- Ensure all school personnel, pupils, parents and contractors are aware of and comply with this policy;
- Have in place an effective electrical equipment maintenance programme;
- Ensure Portable Appliance Testing takes place in order to reduce risks of shock, burning and faults;
- Ensure all new electrical equipment is visually checked to verify the item is not damaged and has been supplied in a safe condition;
- Provide leadership and vision in respect of equality;

7.2 HSS Manager/School Engineer

- Carry out regular inspections of premises and school activities;
- Assist in carrying risk assessments;
- Investigate potential hazards, employee complaints, accidents and dangerous occurrences;
- Provide information and guidance to school personnel;
- Lead the development of this policy throughout the school;
- Work closely with the School Engineer;
- Provide training for all staff on induction and when the need arises regarding;
- Keep up to date with new developments and resources;
- Review and monitor;
- Comply with the school's Health and Safety Policy, safety procedures and risk assessments;

EHS 16

- Ensure that all cleaning staff are aware of the Health and Safety Policy and its implications such as storage arrangements for materials, use of equipment, substances etc;
- Report immediately and defects or hazards;
- Ensure that all new equipment is supplied with the appropriate documentation;
- Maintain a record of hazardous substances used for cleaning and similar purposes.
- Ensure that any electrical contractor working on site is suitably qualified;
- Ensure electrical contractors will:
 - work in conjunction with all safety regulations;
 - not work on live conductors without authorisation from the Headteacher or the Health and Safety coordinator;
 - ensure all electrical equipment is PAT tested every two years;
 - ensure the safety of all pupils, school personnel and visitors when working on site.

7.4 School personnel

- Comply with this policy;
- Take reasonable care of themselves and others whilst at work;
- Check that electrical equipment, their leads and extension leads have valid and current test labels attached to them;
- Ensure extension leads are covered or out of the way so as to prevent a trip or a fall;
- Report any faulty equipment;
- Not bring into school any personal mains-powered equipment without prior permission and that the equipment has a valid and current test label;
- Teach electrical safety within the science curriculum;
- Inform pupils of:
 - the dangers of electricity
 - the role of electricity in everyday life

7.4 Pupils

- Be aware of and comply with this policy;
- Not bring into school any personal mains-powered equipment without prior permission and that the equipment has a valid and current test label;
- Listen carefully to all instructions given by the teacher;

8. Related information

Related Policies

EHS 16

- [EHS19 - Health and Safety Management](#)
- [EHS18 - Fire Safety](#)
- [EHS01 - Accidents and Emergencies](#)
- [EHS05 - Assessing Risk](#)
- [EHS22 - Medical and First Aid](#)