PAS 141:2011

BSI Standards Publication

Reuse of used and waste electrical and electronic equipment (UEEE and WEEE) – Process management – Specification

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ISBN 978 0 580 71379 8

ICS 13.030.50; 43.040.10; 03.100.50

Publication history
First published March 2011

Amendments issued since publication

Date	Text affected

Contents

Summary of pages
This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 24, an inside back cover and a back cover.

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Foreword

Publishing information

This Publicly Available Specification (PAS) was commissioned by the Department for Business Innovation & Skills (BIS) and its development facilitated by the British Standards Institution (BSI). It came into effect on 31 March 2011.

Acknowledgement is given to the following organizations that were involved in the development of this PAS as members of the Steering Group:

- Association of Manufacturers of Domestic Appliances
- British Retail Consortium
- British Standards Institution (Healthcare & Testing Services)
- Chartered Institution of Wastes Management
- Community Recycling Network
- Department for Business Innovation & Skills
- Environment Agency
- Industry Council For Electronic Equipment Recycling
- Intellect
- Mobile Takeback Forum
- WEEE Advisory Body

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The PAS process enables a specification to be rapidly developed in order to fulfil an immediate need in industry. A PAS may be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or International Standard.

Relationship with other publications

This PAS was developed from the WEEE Advisory Body's *Specification for the reuse of waste electrical and electronic equipment and used electrical and electronic equipment*.

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Product certification/inspection/testing

Users of this PAS are advised to consider the desirability of third-party certification/inspection/testing of product conformity with this PAS. Appropriate conformity attestation arrangements are described in BS EN 45011. Users seeking assistance in identifying appropriate

conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

Environmental management system

Processes used by organizations involved in preparing UEEE and WEEE for reuse need to be designed to identify and minimize the impact they have upon the natural environment. Users of this PAS are advised to consider the desirability of working to an environmental management system such as BS EN ISO 14001 or the Eco-Management and Audit Scheme (EMAS) [1)].

Presentational conventions

The provisions of this PAS are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

1) www.iema.net/ems/emas

0 Introduction

This Introduction provides information to assist users in understanding the application of PAS 141. It does not specify any requirements, it is for information only. To conform to PAS 141, the requirements given in Clauses **4** to **8** need to be met.

0.1 Aims

The main aims of this PAS are to:

a) encourage the reuse of WEEE as promoted by the WEEE Directive (2002/96/EC) [1], Article 1;

b) reduce the amount of WEEE sent to landfill and incineration by diverting WEEE to be prepared for reuse;

c) provide a framework for assuring consumers of the quality and safety of REEE as differentiated from WEEE and UEEE that has not been prepared for reuse;

d) provide a framework for assuring manufacturers that the placing of products on the market for reuse will not adversely affect their brands or reputations for safety and quality;

e) deter the illegal export of WEEE under the guise of sham reuse;

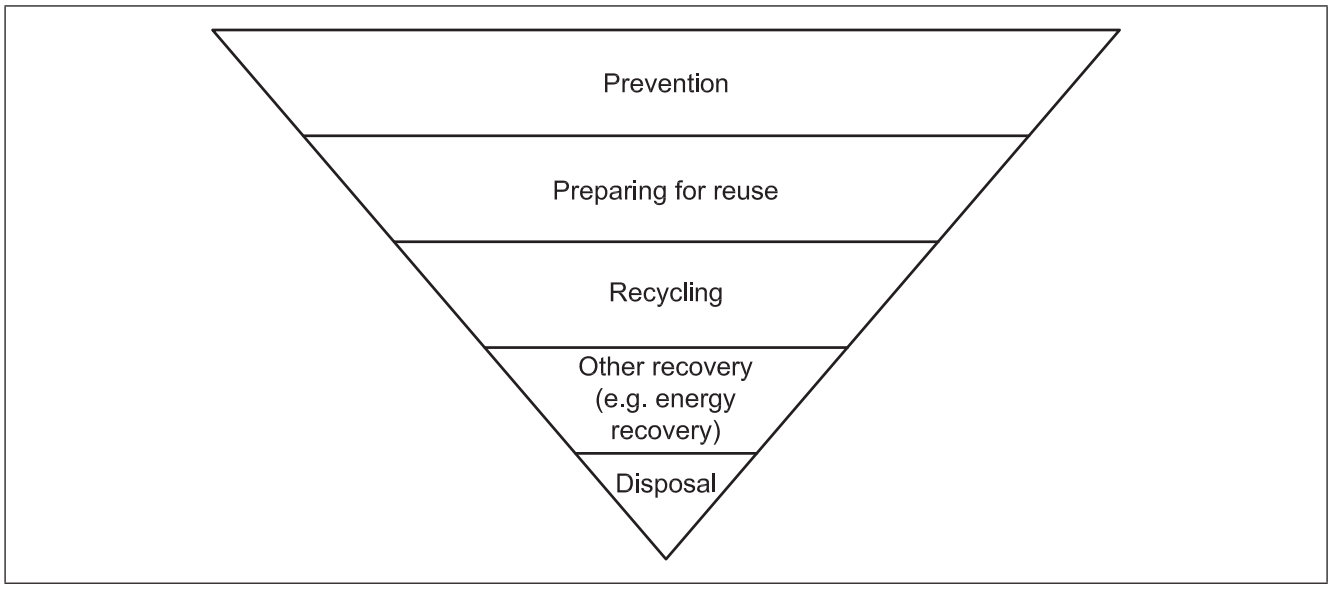
f) provide a tool for identifying REEE that has been subject to the preparing for reuse process set out in this PAS;

g) encourage job creation in organizations involved in preparing WEEE and UEEE for reuse.

0.2 Background

The purpose of the WEEE Directive (2002/96/EC) [1] is, as a first priority, the prevention of waste electrical and electronic equipment (WEEE), and in addition, the reuse, recycling, other recovery (e.g. energy recovery) of electrical and electronic equipment (EEE) so as to reduce the disposal of waste. It also seeks to improve the environmental performance of all operators involved in the life cycle of EEE, e.g. producers, distributors and consumers and in particular those operators directly involved in the treatment of WEEE. Preparing for reuse is viewed as a means of diverting waste material from its disposal to landfill and is seen as preferable to recycling and other recovery in the waste hierarchy (see Figure 1).

Figure 1 **The waste hierarchy**



0.3 EEE, UEEE, WEEE and REEE

Table 1 provides a summary explanation of the differences between the terms EEE, UEEE, WEEE and REEE.

Table 1 **Summary explanation of EEE, UEEE, WEEE and REEE**

Abbrev.	Term	Brief definition	Cross ref. to definition
EEE	electrical and electronic equipment	equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1 000 V for alternating current and 1 500 V for direct current	**3.4**
UEEE	used EEE	EEE that has been used but that might not be waste *NOTE This includes, for example, second hand and pre-owned equipment, service repairs, warranty returns and display stock.*	**3.15**
WEEE	waste EEE	EEE which is waste, including all components, subassemblies and consumables which are part of the product at the time of discarding	**3.18** & **3.16**
REEE	reuse EEE	UEEE or WEEE that has been prepared for reuse for the same purpose for which it was conceived	**3.13**

0.4 The preparing for reuse process

The inputs and outputs of the preparing for reuse process are illustrated in Figure 2.

Some equipment might not be considered as suitable input for the preparing for reuse process. This could be for the following reasons:

a) There is no reuse market for some equipment types.

b) Equipment could be contaminated (e.g. safety concerns for medical and hygiene equipment).

c) Equipment could require destruction for data protection and security reasons.

d) Technology and related safety requirements have advanced to such an extent since the equipment was first placed on the market that the equipment can no longer be considered safe and the cost to meet current requirements is disproportionate.

Following a sorting stage, equipment with an identified potential for reuse may enter the preparing for reuse process. Once prepared, it can leave as either:

1) REEE, the preferred output, which is equipment that can be sold or donated for reuse; or

2) WEEE, whereby the equipment is identified as waste and is assigned for recycling/other recovery or disposal.

Equipment is prepared for reuse through activities such as visual inspection, safety testing and function testing, data eradication, software removal/loading, repair and cleaning (see Clause **5**).

Equipment can be assigned for recycling/other recovery or disposal at any stage of the preparing for reuse process.

Attention is drawn to the WEEE Directive (2002/96/EC) [1] and other legislation on waste, which establish requirements for handling, tracking and reporting of WEEE.

Advice on the classification, handling, tracking and reporting of WEEE as required by the WEEE Directive (2002/96/EC) [1], can be sought from the environmental regulatory authorities.

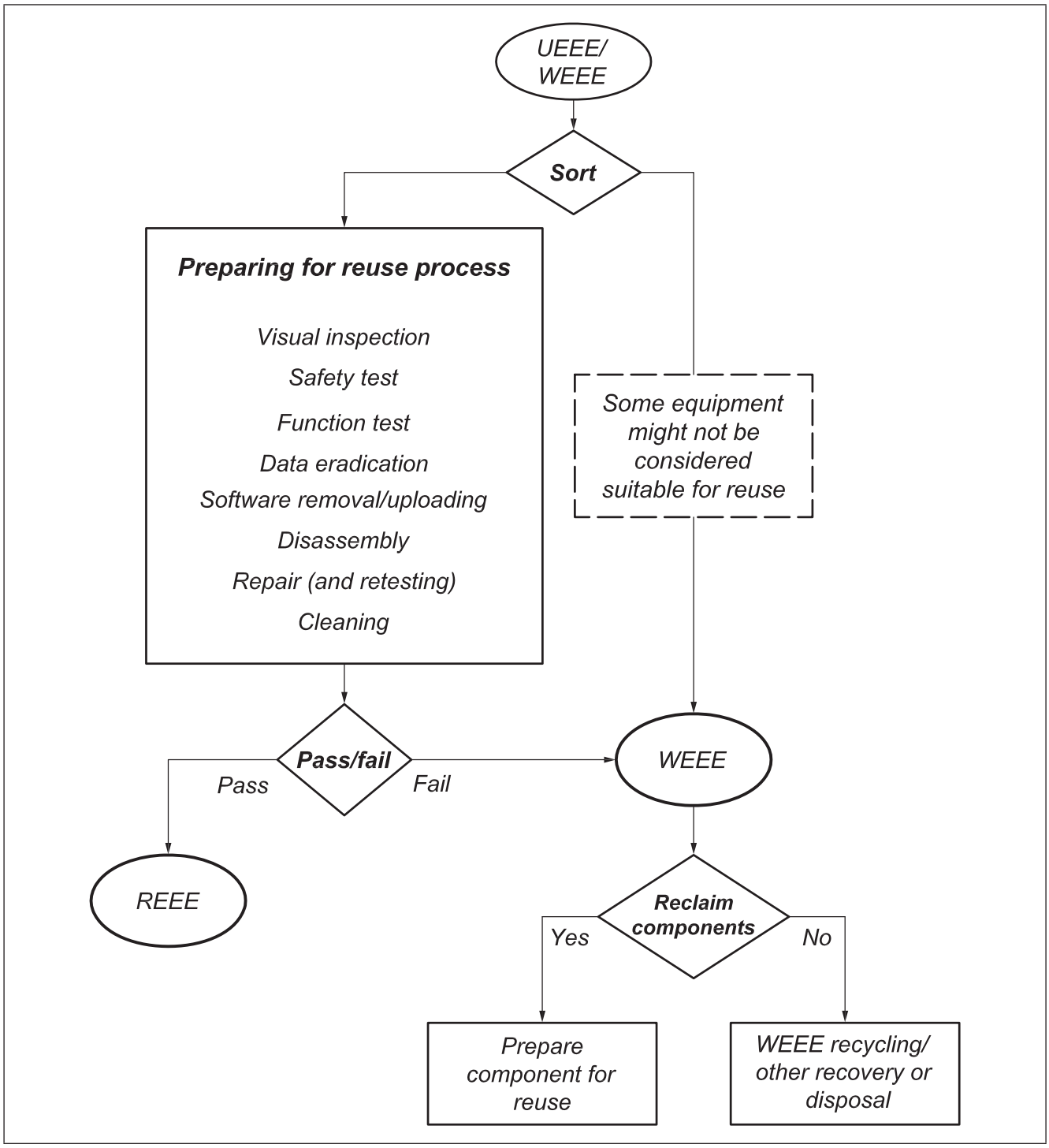
NOTE In the UK, the environmental regulatory authorities are the Environment Agency (for England and Wales), Scottish Environment Protection Agency and Northern Ireland Environment Agency (see the Bibliography under Useful websites).

The recycling/other recovery and disposal processes are beyond the scope of this PAS, although the PAS does include requirements for assigning equipment for recycling/other recovery or disposal.

0.5 Safety of REEE

Equipment can only be offered for reuse if it has been tested to be safe for use. The tests for safety are set out in **5.2**.

Figure 2 **An overview of the preparing for reuse process**



0.6 Certainty of use

WEEE and UEEE can be prepared for reuse and meet all the safety and functionality tests but still be regarded as waste if there is no market for it and it is subsequently discarded. The certainty of use of a piece of equipment changes over time as equipment becomes obsolete when new equipment replaces it. The certainty of use of some equipment might not be determined until it has been prepared for reuse and put

on the market for sale or donation. Certainty of use can be considered at any stage of the preparing for reuse process.

NOTE A video recorder that has been prepared for reuse is an example of a piece of equipment that could be safe and function as originally intended but might still be regarded as waste as it is obsolete technology having been replaced by DVD technology.

0.7 Export for reuse

It is recognized that the illegal export of WEEE can lead to problems with health and safety and environmental contamination in developing countries. There is a need to differentiate illegal exports of WEEE misdescribed as UEEE or EEE from bona fide exports of tested, working EEE.

WEEE can be exported for recycling/other recovery in some circumstances, for example to other EU member states, but only in compliance with the relevant legal procedures as set out in the EU Waste Shipments Regulations (1013/2006/EC) [2]. These regulations set out the control framework for shipments of waste to, from and within the EC, and implement the EC's obligations under the UN Basel Convention and the Organisation for Economic Co-Operation and Development (OECD) decision on transboundary movements of waste. This PAS sets out requirements for managing the process of preparing WEEE and UEEE for reuse and tracking equipment through the preparing for reuse process.

Advice on exports of waste can be sought from the environmental regulatory authorities responsible for the jurisdiction in which the reuse organization operates and is exporting from.

1 Scope

This PAS specifies requirements for managing the process of preparing UEEE and WEEE for reuse.

It covers the preparation for reuse of equipment and components.

This PAS does not cover:

a) the manufacturing of new equipment;

b) the recycling/other recovery or disposal of equipment (although it does include requirements for assigning WEEE for recycling/other recovery).

It is applicable to organizations that prepare equipment for reuse.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

HMG IA Standard No. 5, *Secure sanitisation of protectively marked or sensitive information*. Cabinet Office and Her Britannic Majesty's Communications Electronic Security Group.

3 Terms and definitions

For the purposes of this PAS, the following terms and definitions apply.

3.1 aftermarket component
proprietary accessory or spare part used in repair and maintenance

3.2 collection
gathering of **waste**, including the preliminary sorting and preliminary storage of **waste** for the purposes of transport to a waste treatment facility

[The Waste Framework Directive (2008/98/EC) [3], Article 3(10)]

3.3 disposal
any operation which is not **recovery** even where the operation has, as a secondary consequence, the reclamation of substances or energy

[The Waste Framework Directive (2008/98/EC) [3], Article 3(19)]

NOTE A non-exhaustive list of waste operations that may lead to disposal is given in the Waste Framework Directive (2008/98/EC) [3], Annex I.

3.4 electrical and electronic equipment (EEE)
equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields falling under the categories set out in Annex IA [of the WEEE Directive (2002/96/EC)] and designed for use with a voltage rating not exceeding 1 000 V for alternating current and 1 500 V for direct current

[The WEEE Directive (2002/96/EC) [1], Article 3(a), modified]

3.5 harmonized standard
standard, published by one of the European standards organizations (CEN, CENELEC or ETSI) that has been identified by reference in the Official Journal of the European Union as providing a presumption of conformity with the essential requirements of a specific Directive or EC Regulation

3.6 hazardous waste
waste which displays one or more of the hazardous properties listed in Annex III [of the Waste Framework Directive (2008/98/EC)]

[The Waste Framework Directive (2008/98/EC) [3], Article 3(2)]

NOTE Hazardous properties include being flammable, toxic and carcinogenic.

3.7 original equipment manufacturer (OEM)
natural or legal person who manufactures a product or has a product designed or manufactured, and markets that product under their name or trademark

[Market Surveillance and Accreditation Regulations (765/2008/EC) [4], Article 2(3), modified]

3.8 preparing for reuse
checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be reused without any other pre-processing

[The Waste Framework Directive (2008/98/EC) [3], Article 3(16)]

NOTE For the purposes of this PAS, the definition of preparing for reuse covers WEEE and UEEE in that it applies to equipment that has not been classified as waste as well as to waste items.

3.9 recovery
any operation the principal result of which is **waste** serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or **waste** being prepared to fulfil that function, in the plant or in the wider economy

[The Waste Framework Directive (2008/98/EC) [3], Article 3(15)]

NOTE 1 Recovery includes, for example, recycling and energy recovery through its use principally as a fuel. A non-exhaustive list of recovery operations is given in the Waste Framework Directive (2008/98/EC) [3], Annex II.

*NOTE 2 Recovery is a term often used incorrectly to mean the collection of waste. Collection is defined in **3.2**.*

3.10 recycling
any **recovery** operation by which **waste** materials are reprocessed into products, materials or substances whether for the original or other purposes but not including energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations

[Waste Framework Directive (2008/98/EC) [3], Article 3(17)]

3.11 repair
correction of a technical fault and/or cosmetic damage to prepare the equipment for **reuse**

NOTE This can involve the replacement of missing or faulty components by equivalent components.

3.12 reuse
any operation by which **WEEE** or components thereof are used for the same purpose for which they were conceived, including the continued use of the equipment or components thereof which have been returned to collection points, distributors, recyclers or manufacturers

[The WEEE Directive (2002/96/EC) [1], Article 3(d)]

NOTE 1 Reuse is also known as "re-use".

NOTE 2 For the purposes of this PAS, the definition of reuse covers WEEE and UEEE in that it applies to equipment that has not been classified as waste as well as to waste items.

3.13 reuse electrical and electronic equipment (REEE)
equipment that has been prepared for **reuse**

*NOTE The term REEE is used within this PAS to identify equipment that has met the requirements of the preparing for reuse process set out in Clause **5**. REEE is an output of the preparing for reuse process as distinguished from unprocessed EEE, UEEE or WEEE and also from WEEE that might also be an output of the preparing for reuse process.*

3.14 treatment
any activity after the **WEEE** has been handed over to a facility for depollution, disassembly, shredding, **recovery** or preparation for **disposal** and any other operation carried out for the **recovery** or **disposal** or both of the **WEEE**

[The WEEE Directive (2002/96/EC) [1], Article 3(h)]

3.15 used electrical and electronic equipment (UEEE)
EEE that has been used but that might not be **waste**

NOTE 1 This includes, for example, second hand and pre-owned equipment, service repairs, warranty returns and display stock.

*NOTE 2 See also definition and Notes to **3.8** and **3.12**.*

3.16 waste
any substance or object which the holder discards or intends to or is required to discard

[The Waste Framework Directive (2008/98/EC) [3], Article 3(1)]

3.17 waste management
collection, transport, **recovery** and **disposal** of **waste**, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker

[The Waste Framework Directive (2008/98/EC) [3], Article 3(9)]

3.18 waste electrical and electronic equipment (WEEE)
electrical or electronic equipment which is **waste**, including all components, subassemblies and consumables which are part of the product at the time of discarding

[The WEEE Directive (2002/96/EC) [1], Article 3(b)]

4 Handling

NOTE 1 Attention is drawn to the WEEE Directive (2002/96/EC) [1], which requires that WEEE and components are handled and transported in a way which facilitates the reuse and recycling/other recovery of those components or whole appliances capable of being reused or recovered. Therefore, during handling and transportation, damage to WEEE and its components should be avoided.

Damage can include scratches or discolouration to external surfaces, impairment due to vibration, falling objects or leakages/spillages from other equipment or components, infestation or ingress.

NOTE 2 Waste & Resources Action Programme's (WRAP's) online guide, Good practice collection and treatment *[5], provides advice for organizations involved in the collection and transportation of WEEE with the aim of maximizing reuse potential.*

4.1 Tracking

From receipt of equipment by the reuse organization up to and including the sale or donation of REEE to the next owner, each piece of equipment shall be uniquely identified and tracked through the preparing for reuse process and records maintained to demonstrate completed and outstanding preparing for reuse activities.

NOTE 1 Where accessories, peripherals and internal furniture are available and it is intended to supply them with REEE, they should accompany the equipment through the preparing for reuse process. They do not need to be tracked as individual items but can be considered part of the piece of equipment they are ancillary to. Examples of accessories, peripherals and internal furniture include remote controls, internal shelves and drawers (furniture), power supplies, computer keyboards, mobile phone holders, laptop bags.

*NOTE 2 The preparing for reuse process is specified in Clause **5**.*

NOTE 3 If equipment or components are identified as waste, they will not need to be uniquely tracked as per the requirements of this PAS. However, attention is drawn to the WEEE Directive (2002/96/EC) [1], which establishes requirements for handling, tracking and reporting of WEEE.

NOTE 4 An example proforma for tracking the preparation of equipment for reuse is given in Annex A.

4.2 Segregation and storage

4.2.1 Equipment and components shall be segregated and stored in accordance with a documented segregation and storage process.

4.2.2 The segregation and storage process shall cover how to identify, segregate and store equipment and components under the following categories:

a) UEEE, WEEE and REEE;

NOTE Equipment may be identified as waste at any stage of the preparing for reuse process.

b) untested and tested;

c) for reuse, recycling/other recovery and disposal;

d) equipment type (e.g. refrigerators, computers, mobile telephones);

e) non-hazardous and hazardous waste.

NOTE 1 Attention is drawn to waste regulations that specify requirements for the storage of equipment for material reclamation by recycling/other recovery. For example, storage in sealable containers, on impermeable paving or under cover.

NOTE 2 The weight of equipment and components should be considered in storing. Heavy equipment or components should be stored in such ways as to prevent them crushing or falling upon and damaging other items.

NOTE 3 Care should be taken when handling equipment and components that could contain materials and chemicals hazardous to the natural environment and/or health and safety, such as asbestos, brominated flame retardants, electrolytic capacitors, heavy metals and polychlorinated biphenyls (PCBs).

4.3 Protection

NOTE 1 Where possible, any equipment and component packaging should be reused or recycled.

NOTE 2 The protection of equipment and components prior and subsequent to preparing for reuse process is for the purpose of preventing damage to them and so optimizing their potential for reuse and also for preventing the pollution of the environment from hazardous materials and chemicals.

Equipment and components can be protected by the use of packaging and packing to prevent vibration, electrical contact and risk of shorting and collision between loose equipment, or damage to insulation or the refrigerant circuits in refrigerators, freezers and air conditioners.

Protection against water should be considered. Water can damage internal electrical and electronic circuitry making equipment liable to short circuit and unsafe to connect to power; it can also cause cosmetic damage to product external surfaces.

4.3.1 Equipment and components shall be protected in transit and during the preparing for reuse process.

4.3.2 Components that can be damaged by static electricity shall be protected from electrostatic discharge.

NOTE Components that can be damaged by static electricity include, for example, computer memory and electronic circuitry.

5 Preparing for reuse

5.1 Visual inspection

Each piece of equipment shall be visually inspected in accordance with a documented visual inspection test to determine whether the piece of equipment is to be assigned for preparation for reuse, recycling/other recovery or disposal.

NOTE The documented visual inspection test may include, for example, criteria for assigning for recycling/other recovery/disposal:

a) missing or damaged covers;

b) chaffed, crushed or otherwise damaged electrical insulation;

c) overheating;

d) marking indicating the ingress or seepage of liquids (e.g. water);

e) leakage of electrolyte from batteries;

f) repair or modification of the product using non-standard or suspect parts;

g) cracked casing or sharp edges that could cut or scratch;

h) exposed wiring/components that could lead to electric shock, injury and risk of fire;

i) water or battery damaged equipment, as it is dangerous to connect such equipment to an electrical power source;

j) missing accessories, peripherals and internal furniture that will impair its function and are not easily replaceable;

k) cosmetic damage (blemishes might be acceptable depending upon equipment type and intended market);

l) hygiene factors on equipment of a personal/medical nature;

*m) certainty of use (i.e. whether there is a market for the equipment, see **0.6**).*

5.2 Safety

5.2.1 The reuse organization shall ensure that any equipment that is prepared for reuse is safe for use as originally intended and free from defects or conditions that could cause harm to users.

NOTE 1 Attention is drawn to the Low Voltage Directive (LVD) (2006/95/EC) [6], the General Product Safety Directive (GPSD) (92/59/EEC) [7] and other sector safety directives. Their purpose is to ensure that all products intended for or likely to be used by consumers under normal or reasonable foreseeable conditions are safe.

NOTE 2 Harmonized standards[2)] *on safety are issued for particular products. New and revised harmonized standards may be issued after the equipment was originally placed on the market, which could affect the electrical and product safety tests for reuse of the equipment.*

5.2.2 Test apparatus used for assessing equipment for reuse shall be calibrated in accordance with either the national reference standards or, where these do not exist, the manufacturers' instructions.

5.2.3 Equipment where safety is not verified shall either be repaired (see **5.7**) or assigned for recycling/other recovery or disposal (see Clause **7**).

5.3 Function

NOTE 1 Equipment that is incomplete may be transferred from one organization to another for continuance of repair but transboundary movement may be restricted where non-functional equipment might be considered waste.

NOTE 2 Components can be prepared for reuse either as an individual component or as part of a piece of equipment.

5.3.1 The equipment's function shall meet the ordinary use for which the product was originally placed on the market.

NOTE The function specified in the manufacturer's user manual or technical manuals should be used to determine ordinary use and if these are not available with the equipment, then online manuals may be consulted.

5.3.2 Each piece of equipment shall be tested for function in accordance with a documented function test.

NOTE Product specific protocols may be developed detailing function tests for specific equipment types. These may exist or need to be developed for products such as mobile telephones, computers, refrigerators, freezers and ovens.

5.3.3 Where product specific protocols are used, they shall be referred to in the documented function test.

5.3.4 Test apparatus shall be operated in accordance with the manufacturers' instructions.

5.3.5 Where a piece of equipment fails the function test, it shall be either repaired (see **5.7**) or assigned for recycling/other recovery or disposal (see Clause **7**).

[2)] Harmonized standards are available from your national standards body. In the UK, the national standards body is BSI and the harmonized standards can be purchased from www.bsigroup.com/shop.

Further information on harmonized standards is available here: ec.europa.eu/enterprise/policies/european-standards/documents/harmonised-standards-legislation/list-references/index_en.htm.

In addition, in the UK, further information on harmonized standards and product regulation is available here: www.bis.gov.uk/policies/business-sectors/environmental-and-product-regulations/product-regulation.

5.4 Data

NOTE 1 The function test and data eradication may be conducted as one combined part of the process.

NOTE 2 Attention is drawn to the Data Protection Directive (95/46/EC) [8].

5.4.1 Data stored within data-bearing equipment or components shall be eradicated in accordance with a documented data eradication procedure.

5.4.2 The data eradication procedure shall document which data eradication tools are to be used.

5.4.3 For ICT equipment, data eradication tools and processes shall conform to the UK HMG IA Standard No. 5 or an equivalent standard approved by a national government. For other data bearing equipment, data shall be eradicated in accordance with the manufacturer's guidance.

NOTE Attention is drawn to the Data Protection Directive (95/46/EC) [8], which prohibits the transfer of personal data to a country which does not ensure an adequate level of protection.

5.4.4 Where a data bearing equipment or component is found to be faulty or where data eradication cannot be verified to have been carried out, the data-bearing component shall be destroyed to prevent unauthorized access to confidential data.

5.4.5 Where a data-bearing component is destroyed, the equipment shall either be repaired (see **5.7**) through the use of replacement components (see **5.7.2**) or assigned for recycling/other recovery or disposal (see Clause **7**).

5.5 Software

*NOTE PAS 141 requires that the software supplied (including version and any appropriate licences) in the preparation of equipment for reuse is recorded in the user information (see **6.3**).*

5.5.1 Software may be transferred if licensing permits; non-transferable copyrighted software on equipment or a component shall be removed in accordance with either a documented software removal procedure or the software's own removal command.

5.5.2 For operating systems of ICT, software shall as a minimum have the same operational rating as provided with the original product.

5.5.3 For all equipment, where software is integral to the function of the equipment and requires replacement (e.g. because of corruption), the software to be uploaded shall be as recommended by the OEM.

NOTE The addition or updating of a piece of equipment software could affect its compliance with the OEM's equipment specification.

5.5.4 Where new licensable software is loaded, the licence pertaining to the software shall be provided with the equipment and any previous licences and stickers shall be removed.

5.6 Disassembly

Where a piece of equipment or a component is disassembled, it shall be disassembled in accordance with a documented disassembly process that identifies any associated hazards, risks and controls to reduce risk.

NOTE 1 Equipment and components could require disassembly for testing, repair or recycling activities to proceed. Disassembly should be carried out with due regard for the removal of components in such a way as to minimize the risk of damage to the components where such components are to be considered for reuse.

NOTE 2 Risks associated with disassembly can include:

a) residual electrical charge stored in equipment that could lead to electric shock;

b) sharp edges in internal components that could cut or puncture;

c) the weight of equipment with risks in lifting and handling and risk of harm from falling/dropped equipment;

d) chemicals and materials that could be hazardous from occasional or long-term exposure;

e) bio-hazards from food, chemicals or medical equipment that were previously stored in the piece of equipment.

5.7 Repair

*NOTE 1 Repair is encouraged to try to divert and/or recover equipment from the waste stream. Equipment may be identified as in need of repair by visual inspection (**5.1**) and/or the safety and function tests (**5.2** and **5.3** respectively).*

NOTE 2 Equipment could be repairable technically but might be deemed "beyond economic repair" where the costs of the repair are greater than the potential revenue from the resale value of the equipment. Any attempt to transfer such equipment across national boundaries is likely to require agreement of the environmental regulatory authority in both countries as non-working equipment is regulated as WEEE. In such instances, written agreement of the regulatory authorities is required before the waste is transferred and could be subject to the Waste Shipments Regulation (1013/2006/EC) [2]. These regulations set out the control framework for shipments of waste to, from and within the EC and implements the EC's obligations under the UN Basel Convention and the Organisation for Economic Co-Operation and Development (OECD) decision on transboundary movements of waste.

NOTE 3 Attention is drawn to the differing regulatory requirements operating in different international markets into which the equipment or component might be resold.

NOTE 4 Attention is drawn to the regulations pertaining to wastes management and environmental permits [3].

5.7.1 OEM product warranty

NOTE OEM's warranties could be invalidated where some, or all, of the following conditions occur:

a) the work is carried out by unauthorized persons or service facilities;

b) where components or software is used other than that approved by the OEM;

c) equipment type or serial numbers have been removed, altered or damaged;

d) equipment has been damaged by unapproved ancillary equipment.

5.7.2 Replacement components

*NOTE PAS 141 requires that the use of replacement components in the preparation of equipment for reuse is recorded in the REEE documentation (see **6.4**).*

5.7.2.1 Where replacement components are required to replace a missing or faulty component to enable the equipment to be reused, the reuse organization shall ensure that the use of such replacement components does not impair product safety.

5.7.2.2 Replacement components used shall be one of the following:

a) OEM replacement components or OEM approved pattern components; or

b) reclaimed identical components; or

c) aftermarket components appropriate for the intended application and purpose.

5.7.2.3 Replacement components shall:

a) not impair or reduce the function of the equipment (verifiable by function testing as specified in **5.3**); and

b) not modify the equipment such that retesting is required to verify compliance with requirements for electromagnetic compatibility (EMC).

NOTE What constitutes a "modification" to EEE is not clearly defined in existing regulations. Reuse organizations are advised to seek advice from the regulatory authority or organization responsible for such activities within the geographical area in which the reuse organization facility operates. Equipment will need to be assessed by the person carrying out the modifications to determine whether the modification could have introduced hazards or risks which were not covered by the original design solution. If this assessment determines that the original manufacturer's design has been modified to such an extent that the original risk assessment no longer covers the equipment then it is likely that the equipment would be considered as new equipment rather than second-hand equipment. This will require the person carrying out the modification to carry out all of those exercises required of an original manufacturer, for example, preparation of a technical file, drawing up a declaration of conformity and placing the CE marking on the product.

5.7.2.4 Where equipment is compliant with the EC Restriction of Hazardous Substances Directive (RoHS) (2002/95/EC) [9], RoHS compliant replacement components shall be used in the repair of such equipment.

NOTE 1 The RoHS Directive [9] applies to equipment and components that have been placed on the market in the EU after 1 July 2006.

*NOTE 2 RoHS compliant replacement components may be used in non-RoHS compliant equipment so long as they meet the safety and function requirements given in **5.2** and **5.3** respectively.*

NOTE 3 Using a non-RoHS compliant replacement component in the repair of a piece of equipment that, when originally sold, was RoHS-compliant could invalidate that original compliance (see www.rohs.gov.uk).

5.7.3 Retesting

Following repair, equipment shall be (re)tested for safety in accordance with **5.2** and for function in accordance with **5.3**.

5.8 Cleaning

NOTE REEE may be cleaned cosmetically or it may be left to the new user to undertake this.

5.8.1 All former user identification (e.g. asset tags, company logos, user portable appliance test and other site specific safety labels) shall be removed.

5.8.2 Manufacturers' brand labels and rating plates shall not be removed.

NOTE 1 Such information could be of use to new users.

NOTE 2 Care should be taken to avoid accidental removal of brand labels and rating plates whilst cleaning the equipment.

5.8.3 Bio-hazard residues shall be cleaned from equipment in accordance with a documented cleaning process.

NOTE Equipment likely to be affected by bio-hazard residues includes, for example, refrigerators, cookers, microwaves and dishwashers (due to food residues) and medical, personal hygiene and sterilizing equipment.

5.8.4 The cleaning process shall cover how to identify bio-hazard residues and how to select the proprietary cleaning product according to type of bio-hazard, material and equipment.

5.9 Classification of prepared equipment as REEE or WEEE

5.9.1 Where equipment has been prepared and verified for reuse in accordance with this PAS, it shall be classified as REEE (see Clause **6**).

NOTE Further advice on the classification, handling, tracking and reporting of WEEE as required by the WEEE Directive (2002/96/EC) [1], can be sought from the environmental regulatory authorities.

5.9.2 Where equipment fails to be verified for reuse, it shall be classified as WEEE (see Clause **7**).

6 Reuse

6.1 General

*NOTE Any piece of equipment that has been prepared for reuse in accordance with Clause **5** and identified as REEE, may be offered for sale or donation.*

The reuse organization shall maintain records of the organization(s) or person(s) to which it sells or donates each piece of REEE.

6.2 Reuse label

6.2.1 Where a piece of REEE has been prepared in accordance with Clause **5** and identified as REEE, either:

a) a reuse label shall be applied to the piece of REEE; or

b) where the piece of REEE is demonstrably too small for a reuse label, the information that would be on the reuse label (see **6.2.3**) shall be supplied with the piece of REEE, e.g. on the packaging or in the user information (see **6.3**).

6.2.2 The label shall be securely fixed, visible, legible and durable.

NOTE The visibility, legibility and durability of the labels can be shown by rubbing a sample label by hand for 15 seconds with a piece of cloth soaked with water and again for 15 seconds with a piece of cloth soaked with petroleum spirit (aliphatic solvent hexane).

6.2.3 The label shall contain the following minimum information:

a) reference to this PAS, i.e. "PAS 141:2011" [3)];

b) name and contact details of the reuse organization;

c) unique equipment identification number (see **4.1**).

6.3 User information

For each piece of REEE, information shall be made available on:

a) safe installation and use;

b) function;

c) software supplied (including version and any appropriate licences).

NOTE Information may be made available through the provision of the original user information (e.g. user manual), documentation developed by the reuse organization or user information integral to the software.

6.4 REEE documentation

6.4.1 The reuse organization shall retain the documentation (electronic and/or paper) for each piece of equipment that has been prepared and identified as REEE for a minimum of 4 years.

6.4.2 Documentation shall contain the following minimum information:

a) information provided on the reuse label (see **6.2**);

b) reference to the preparing for reuse process carried out in accordance with PAS 141:2011:

   1) visual inspection test (see **5.1**);

   2) safety test (see **5.2** and **5.7.3**);

   3) function test (see **5.3** and **5.7.3**);

   4) data eradication, where relevant (see **5.4**);

   5) software removal/uploading, where relevant (see **5.5**);

   6) repair, where relevant (see **5.7**) including:

      i) replacement component(s) used (see **5.7.2**) including;

         - identification of any replacement component that has been used;

         - source of replacement component (see **5.7.2.2**);

[3)] Marking PAS 141:2011 on or in relation to a product represents an organization's declaration of conformity, i.e. a claim by or on behalf of the organization that the product has been prepared in accordance with a process that meets the requirements of the PAS. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity.

- replacement component supplier;
- replacement component model/part identification name or number.

NOTE Records should be retained by the reuse organization in case of market intervention/product recall.

ii) retesting, where relevant (see **5.7.3**);

7) cleaning, where relevant (see **5.8**).

c) date(s) of the test(s); or if conducted over more than one day, the date of the final test;

d) location where each test was carried out (site address and country);

e) user information provided (see **6.3**);

f) product warranty provided (see **6.6**);

g) where authorized, the conformity mark and certificate number of a third party certification body.

6.4.3 The supporting documentation shall be made available to customers of the reuse organization upon their request.

NOTE The reuse organization may charge to cover costs of administration.

6.5 Description of REEE

Any REEE that is offered for sale or donation shall be referred to as "reuse equipment" or "REEE".

NOTE 1 This applies to any sales literature and promotions, including websites and direct mailing.

NOTE 2 "Reuse" is presently also known as "refurbished", "used" and "second hand". For the purposes of PAS 141, only the term "reuse" should be used for clarity and for alignment with the terminology used in the Waste Framework Directive 2008/98/EC [3].

6.6 Product warranty

The sale of each piece of REEE shall be covered by a product warranty with a defined timeframe of at least 28 days from the date of supply to the new user.

NOTE 1 The product warranty may be open to negotiation to cover longer defined periods as the purchaser could be a reseller or retailer who chooses to offer their own product warranty to supplement the sale warranty. The provision of a product warranty can provide the customer with confidence in the product, indicating that the equipment has been verified as fit for reuse.

NOTE 2 The product warranty should include that if the REEE fails to perform as specified during the warranty period, either:

a) the REEE will be repaired, replaced or any purchase cost refunded, whichever is agreed in the warranty provision at the time of sale; or

b) if the REEE is destined for export, an oversupply is provided, at a percentage of purchase agreed at time of sale, of like-for-like equipment, to pre-compensate for any transit losses and/or equipment failures.

The aim is to assure new end users that REEE is covered by a warranty and so their purchase is protected. Warranties will also apply to exported

REEE, so providing an extant warranty should differentiate REEE intended for reuse from illegal exports.

NOTE 3 Attention is drawn to the warranty regulations affecting REEE, which may be country specific.

6.7 Export for reuse

NOTE 1 REEE and WEEE destined for a particular market or region will need to be compliant with standards and regulations relevant to that market or region. These standards include electrical power supply (for example equipment could be compatible with 110 or 240 volts or switchable between either).

NOTE 2 Attention is drawn to legislation covering the export of WEEE, especially hazardous WEEE such as the European Waste Shipment Regulations (1013/2006/EC) [2] and the Basel Convention Guidance document on transboundary movements of hazardous wastes destined for recovery operations *[10]. The Basel Convention specifies requirements for the preparation for shipment of WEEE and components of WEEE destined for recycling/other recovery. The Basel Convention Partnership for Action on Computing Equipment (PACE) is drawing up guidelines on the refurbishment, reuse, recycling/other recovery and transboundary movement of used and end of life computing equipment (see: www.basel.int/industry/compartnership).*

NOTE 3 Correspondents' Guidelines No. 1 [11] on shipments of WEEE represents the common understanding of most EU member states on how the European Waste Shipment Regulations (1013/2006/EC) [2] should be interpreted. Correspondents' Guidelines No. 1 refers to testing equipment but does not provide any guidance as to which tests should be conducted on equipment.

NOTE 4 Attention is drawn to Ozone Depleting Substances Regulation 1005/2009/EC [12] on substances that deplete the ozone layer, which prohibits the export of appliances for reuse containing CFCs, HCFCs, HFCs.

NOTE 5 Certain products, in particular TVs, should be able to work with the broadcast encoding system used in the country to which they are being sent (e.g. PAL I, PAL B/G, Secam, NTSC).

*NOTE 6 For export, REEE should be protected in transit (see **4.3**).*

7 Recycling/other recovery and disposal

NOTE 1 The sorting, handling, storage and preparing of equipment or components by reuse organizations might generate WEEE for recycling/other recovery or disposal.

*NOTE 2 Requirements for handling equipment for recycling/other recovery and disposal is given in Clause **4**.*

7.1 Any piece of equipment that has been prepared in accordance with Clause **5** and identified as WEEE shall be assigned for recycling/other recovery or disposal.

7.2 The reuse organization shall maintain records of the organization(s) to which it transfers its waste and shall hold copies of any waste transfer notes recording all waste transferred to other organizations for processing and/or disposal.

NOTE Attention is drawn to the WEEE Directive (2002/96/EC) [1] and other legislation on waste, which establish requirements for the handling, tracking and reporting of WEEE.

8 Operational management

8.1 Legal and other requirements

The reuse organization shall document how it evaluates and achieves compliance with its legal and other requirements.

8.2 Permits, licences and other authorizations

NOTE Attention is drawn to requirements for permits, licences, exemptions and other authorizations required by the regulatory authorities in regards to waste management, the environment and human health and safety.

The reuse organization shall identify, hold and demonstrate compliance with all permits, licences and exemptions required by them to operate, and make details available to interested parties.

8.3 Competence

8.3.1 The reuse organization shall identify the required competences in terms of the experience, expertise, training, tools, equipment and information required to carry out the defined tasks.

8.3.2 The competence of employees and contractors shall be assessed and recorded. Records shall include the identification of any qualifications, training and experience of employees and contractors held.

8.3.3 The management of the reuse organization shall monitor, validate and record performance and verify that employees, volunteers and contractors are capable of carrying out the defined tasks.

8.4 Health and safety

8.4.1 Reuse organizations shall ensure that all persons engaged in preparing for reuse operations are provided with training on health and safety at work based on risk assessment of the hazards involved.

NOTE 1 These can include, for example, training in the use of test apparatus, materials handling equipment, handling of hazardous materials and how to deal with foreseeable emergencies.

NOTE 2 Written instructions, photographs and diagrams can be used to train people engaged in the preparing for reuse process to prevent injury.

8.4.2 Material safety data sheets shall be obtained for all cleaning materials used in the preparing for reuse process and a copy shall be made available at the place of use.

NOTE 1 BS OHSAS 18001 provides requirements for an occupational health and safety management system.

NOTE 2 Attention is drawn to Health and Safety At Work Directive [13].

NOTE 3 Cleaning materials should be used that are not harmful to persons involved in preparing for reuse activities, the potential new user or the environment.

8.5 Records and record keeping

NOTE Attention is drawn to regulatory requirements for record keeping, including record keeping of handling and disposal of hazardous waste.

8.5.1 The preparing for reuse process shall be documented in paper or electronic format with acceptance/rejection criteria recorded and shall be retained for a minimum of 4 years. Records shall document:

a) handling arrangements including:
   1) tracking system (see **4.1**);
   2) segregation and storage system (see **4.2**);
   3) protection system (see **4.3**);

b) details of the preparing for reuse process procedures for:
   1) visual inspection test (see **5.1**);
   2) safety test (see **5.2** and **5.7.3**);
   3) function test (see **5.3** and **5.7.3**);
   4) data eradication (see **5.4**);
   5) software removal/uploading (see **5.5**);
   6) disassembly (see **5.5.4**);
   7) repair (see **5.7**) including replacement components (see **5.7.2**);
   8) cleaning (see **5.8**);

c) supporting documentation for each piece of REEE (see **6.4**);

d) documentation on waste and its transfer to other organizations (see **7.2**);

e) legal and other requirements (see **8.1**);

f) permits, licences and other authorizations (see **8.2**);

g) competence of employees and contractors (see **8.3**);

h) health and safety (see **8.4**).

8.5.2 Records of the inspections, testing and assessment of equipment and components prepared by the reuse organization (including those assigned for recycling/other recovery or disposal) shall be maintained for a minimum of 4 years (see **4.1** and **6.4**) and shall be made available to customers of the reuse organization.

NOTE 1 The reuse organization may charge to cover costs of administration.

NOTE 2 An example proforma for tracking the preparation of equipment for reuse is given in Annex A.

Annex A (informative) Example proforma for tracking the preparation of equipment for reuse

Unique identification number																								
Visual inspection	Pass / Fail																							
Safety test	Pass / Fail																							
Function test	Pass / Fail																							
Data eradication	Pass / Fail / N/A																							
Software removal	Pass / Fail / N/A																							
Software upload	Pass / Fail / N/A																							
Repair	Pass / Fail / N/A																							
For repair: Replacement component(s)	(please list)																							
For repair: Safety test	Pass / Fail																							
For repair: Function test	Pass / Fail																							
Cleaned	Yes / No / N/A																							
Date test completed																								
User information provided	(please specify format)																							
Warranty provided	(days or oversupply)																							
Organization transferred to																								

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Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 45011, *General requirements for bodies operating product certification systems*

BS EN ISO 14001, *Environmental management systems – Requirements with guidance for use*

BS OHSAS 18001, *Occupational health and safety management systems – Requirements*

Other publications

[1] EUROPEAN COMMUNITIES. Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) – Joint declaration of the European Parliament, the Council and the Commission relating to Article 9. (The WEEE Directive). Luxembourg: Office for Official Publications of the European Communities.

[2] EUROPEAN COMMUNITIES. Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste. Luxembourg: Office for Official Publications of the European Communities.

[3] EUROPEAN COMMUNITIES. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. (The Waste Framework Directive). Luxembourg: Office for Official Publications of the European Communities.

[4] EUROPEAN COMMUNITIES. Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. Luxembourg: Office for Official Publications of the European Communities.

[5] WASTE & RESOURCES ACTION PROGRAMME. *Good practice collection and treatment – Good practice guidance and examples for the collection and treatment of broken and unwanted electricals*. (Online guide: www.wrap.org.uk/recycling_industry/information_by_material/electrical_and_electronic_products/good_practice_collection_and_treatment/index.html)

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[7] EUROPEAN COMMUNITIES. Council Directive 92/59/EEC of 29 June 1992 on general product safety. The General Product Safety Directive (GPSD). (As revised 2001/95/EC). Luxembourg: Office for Official Publications of the European Communities.

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[9] EUROPEAN COMMUNITIES. Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Luxembourg: Office for Official Publications of the European Communities.

[10] BASEL CONVENTION. *Guidance document on transboundary movements of hazardous wastes destined for recovery operations*. Switzerland: Secretariat of the Basel Convention, 2002. (www.basel.int/meetings/sbc/workdoc/techdocs.html)

[11] EUROPEAN COMMUNITIES. Revised Correspondents' Guidelines No 1 on shipments of waste electrical and electronic equipment (WEEE). Luxembourg: Office for Official Publications of the European Communities. (ec.europa.eu/environment/waste/shipments/pdf/correspondents_guidelines_en.pdf)

[12] EUROPEAN COMMUNITIES. Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer. Luxembourg: Office for Official Publications of the European Communities.

[13] EUROPEAN COMMUNITIES. Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work. Luxembourg: Office for Official Publications of the European Communities.

Further reading

BASEL CONVENTION. *Guidance document on the preparation of technical guidelines for the environmentally sound management of wastes subject to the Basel Convention*. Switzerland: Secretariat of the Basel Convention, (www.basel.int/meetings/sbc/workdoc/techdocs.html)

BASEL CONVENTION. *Technical guidelines for the identification and environmentally sound management of plastic wastes and for their disposal*. Switzerland: Secretariat of the Basel Convention, 2002. (www.basel.int/meetings/sbc/workdoc/techdocs.html)

BASEL CONVENTION. *Technical guidelines on the environmentally sound recycling/reclamation of metals and metal compounds (R4)*. Switzerland: Secretariat of the Basel Convention, 2004. (www.basel.int/meetings/sbc/workdoc/techdocs.html)

ISO/IEC 24700, *Quality and performance of office equipment that contains reused components*

US DEPARTMENT OF DEFENSE. *National industrial security program operating manual*. NISPOM. d522022m. Washington D.C.: US Department of Defense, 2006.

Useful websites

Department for Environment, Food and Rural Affairs	www.defra.gov.uk
Department for Business, Innovation and Skills	www.bis.gov.uk
Electrical Product Environmental Attributes Tool (EPEAT)	www.epeat.net
Environment Agency	www.environment-agency.gov.uk
European Union	eur-lex.europa.eu
NetRegs (UK waste regulations advice)	www.netregs.gov.uk
Northern Ireland Environment Agency	www.ni-environment.gov.uk
Scottish Environment Protection Agency	www.sepa.org.uk

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