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Introduction

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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



111/699/CD

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SECRETARIAT:

Italy

SECRETARY:

Mr Alfonso Sturchio

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:

☐

Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

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☒ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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TITLE:

Sustainable management of waste electrical and electronic equipment (e-waste).

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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EQUIPMENT (E-WASTE)****FOREWORD**

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This edition includes the following significant technical changes with respect to the previous edition:

- a) ...;
- b)

153 The text of this [...International Standard, Technical Specification: specify document type...] is
154 based on the following documents:

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

155
156 Full information on the voting for its approval can be found in the report on voting indicated in
157 the above table.

158 The language used for the development of this [...International Standard, Technical
159 Specification: specify document type...] is English [change language if necessary].

160 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in
161 accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available
162 at https://www.iec.ch/members_experts/refdocs. The main document types developed by IEC
163 are described in greater detail at <https://www.iec.ch/standardsdev/publications>.

164 The committee has decided that the contents of this document will remain unchanged until the
165 stability date indicated on the IEC website under [webstore.iec.ch](https://wwwstore.iec.ch) in the data related to the
166 specific document. At this date, the document will be

- 167 • reconfirmed,
- 168 • withdrawn,
- 169 • replaced by a revised edition, or
- 170 • amended.

171

INTRODUCTION

Electrical and electronic equipment has become a defining and ubiquitous feature of modern life which has raised living standards in the majority of the world.

Globally, the slow adoption of sustainable practices for the management of waste electrical and electronic equipment (e-waste means that environmental impacts such as the consumption of resources, the emission of greenhouse gases and the release of ~~toxic~~ hazardous substances continue unabated.

As a result, many countries ~~are~~ face the challenge of ~~by~~ the considerable environmental and human health risks ~~of~~ posed by inadequately managed e-waste.

This is all the more critical as collection and recovery activities are failing to keep up with total e-waste generation. In 2019, the world generated 53.6 million metric tons (Mt), of which only 17.4% were officially documented as having been collected and recycled. This represents a growth in recycling of 1.8 Mt since 2014, but the total e-waste generation increased by 9.2 Mt in the same timeframe. (Source: Global E-waste Monitor 2020)

This standard sets out requirements for the sustainable management of e-waste, thereby contributing to the following objectives:

- protecting ~~of~~ human health and safety and ~~of~~ the environment;
- maximising resource circularity through the recovery of e-waste products, components and materials
- optimising the quality of recovered products, components and materials
- minimizing the quantity of e-waste being disposed of
- preventing unsustainable e-waste recovery and disposal practices ~~of~~;
- preventing and/or minimizing pollution and emissions;
- providing a framework for assuring the environmental sustainability of ~~high-quality~~ output of product, component and material recovery operations;
- preventing shipments of e-waste to operators whose operations fail to comply with this normative document or a comparable set of requirements.

1 Scope

This document specifies the requirements and provides guidance for the sustainable management of waste electrical and electronic equipment (e-waste) from collection to returning recovered products, components or materials to the value chain.

The document is intended for use by an organization involved in e-waste management seeking to manage its responsibilities in a systematic manner.

The requirements set by this international standard will help an organization to achieve sustainability outcomes within the context of e-waste management, including

- enhancement of sustainability performance and achievement of sustainability objectives;
- fulfilment of compliance obligations.

The document is applicable to any organization, regardless of size, type and nature.

The document applies to the environmental and human health and safety aspects of e-waste management activities, that the organization determines it can either control or influence, considering a lifecycle perspective.

Note: Social aspects e.g. employment creation, conflict minerals, employment conditions are not addressed directly but indirectly through the benefits of sustainable management of e-waste.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 9001, Quality management systems - Requirements

ISO 14001, Environmental management systems - Requirements with guidance for use

ISO 45001, Occupational health and safety management systems - Requirements with guidance for use

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

e-waste

electrical or electronic equipment which the holder discards, or intends to discard, or is required to discard, including components, sub-assemblies and consumables which are part of the equipment at the time the equipment is discarded

237

238 **3.2**239 **hazardous material**

240 material containing a hazardous substance(s)

241

242 **3.3**243 **hazardous mixture**

244 mixture containing a hazardous substance(s)

245

246 **3.4**247 **hazardous substance**

248 substance which can adversely affect human health or the environment with immediate or retarded effect, either
249 by itself or through interaction with other factors

250 Note 1 to entry: Hazardous substances are typically identified by international or national regulations

251 **3.5**252 **organization**

253 person or group of people that has its own functions with responsibilities, authorities and relationships to achieve
254 its objectives

255 Note 1 to entry: The concept of organization includes, but is not limited to sole trader, company, corporation, firm, enterprise,
256 authority, partnership, charity, or institution, or part or combination thereof, whether incorporated or not, public or private.

257 [SOURCE ISO 9000:2015, 3.2.1]

258

259 **3.6**260 **compliance obligations**

261 legal requirements that an organization (3.5) has to comply with and other requirements that an organization has
262 to or chooses to comply with

263 Note 1 to entry: Compliance obligations can arise from mandatory requirements, such as applicable laws and regulations, or
264 voluntary commitments, such as organizational and industry standards, contractual relationships, codes of practice and
265 agreements with community groups or non-governmental organizations.

266 [SOURCE: ISO 14001:2015, 3.2.9]

267 **3.7**268 **record**

269 document stating results achieved or providing evidence of activities performed

270 Note 1 to entry: Records can be used, for example, to formalize traceability and to provide evidence of verification, preventive
271 action, and corrective action.

272 Note 2 to entry: Generally records need not be under revision control.

273 [SOURCE: ISO 9000:2015, 3.8.10]

274 **3.8**275 **documented information**

276 information required to be controlled and maintained by an organization (3.5) and the medium on which it is
277 contained

278 Note 1 to entry: Documented information can be in any format and media, and from any source.

279 Note 2 to entry: Documented information can refer to: the management system, including related *processes*, information
280 created in order for the organization to operate (can be referred to as documentation) and evidence of results achieved (can
281 be referred to as records).

282 [SOURCE: ISO 14001:2015, 3.3.2]

283 **3.9**

284 **traceability**

285 ability to trace the history, application or location of a product.

286 [SOURCE: ISO 22095:2020(E) Annex A]

287 Note 1 to entry: When considering a product, traceability can be related to: the origin of materials and parts; the history of the processing,
288 and the distribution and localization of products, including their recovery routes and final disposal of non-recoverable fractions.

289 **3.10**

290 **transboundary movement**

291 movement or intended movement of e-waste across a national border from one country to another

292

293 **3.11**

294 **recovery pathway**

295 type and sequence of processes applied to recover products, components and materials from e-waste collected

296

297 Note1 to entry: Examples see 3.17, 3.18 and 3.19

298 **3.12**

299 **recovery potential**

300 potential of e-waste to be recovered as products, components or materials

301

302 Note 1 to entry: Criteria used to determine the recovery potential include environmental, social and economic benefit;
303 functionality/usability/repairability of the e-waste; legal compliance; available recovery technologies; available downstream recovery
304 organizations or end markets

305 **3.13**

306 **product recovery**

307 application of processes with the aim of recovering functional products from e-waste for their subsequent re-use

308

309 Note 1 to entry: Processes for product recovery can include repair, remanufacturing, refurbishment, cleaning and testing

310 **3.14**

311 **component recovery**

312 application of processes with the aim of recovering functional components from e-waste for their subsequent re-
313 use

314

315 Note 1 to entry: Processes for component recovery can include disassembly, testing and cleaning

316

317 Note 2 to entry: Recovery of components for subsequent recovery of the materials contained in the components is considered material
318 recovery

3.15**material recovery**

application of processes with the aim of recovering materials from e-waste

Note to entry: Processes for material recovery can include dismantling, depollution, grinding, shredding, milling, concentration, homogenization, refining, etc

3.16**input**

product, material or energy flow that enters a unit process

Note to entry: Products and materials include raw materials, intermediate products and co-products.

[SOURCE: ISO 14044:2006(en), 3.21]

3.17**output**

product, material or energy flow that leaves a unit process

Note to entry: Products and materials include raw materials, intermediate products, co-products, and releases.

[SOURCE: ISO 14044:2006(en), 3.25]

3.18**throughput**

total quantity of a product, material or energy flow that passes through a unit process

Note to entry: Products and materials include raw materials, intermediate products and

[SOURCE: ISO 14044:2006(en), 3.21 modified]

3.19**identification**

process of recognizing the attributes that identify the object

[SOURCE: ISO 16678:2014(en), 2.1.7]

3.20**classification**

attribute-based differentiation

Note to entry: An attribute is defined by a list of enumerators.

[SOURCE: ISO 23150:2021(en), 3.3.3]

3.21

pollutant

substance which either alone or in combination with other substances or through its products of degradation or emissions can have a harmful effect on human health or the environment

[SOURCE: ISO 16000-32:2014(en), 3.7]

3.22

disposal

treatment that do not lead to the recovery of product, components or materials

3.23

treatment

any process step that occurs after collection

3.24

life cycle perspective

consideration of the environmental, health and safety aspects relating to a product during its entire life cycle

Note 1 to entry: The life cycle is considered to include the return of recovered products, components or materials to use or production

[SOURCE: ISO 14050:2020(en), 3.6.3]

3.25

repair

process of returning a faulty product to a condition where it can fulfil its intended use

[SOURCE: EN 45554:2020 General methods for the assessment of the ability to repair, reuse and upgrade energy-related products]

3.26

refurbishment

...

[SOURCE: Currently drafted in IEC TC1 JWG2 Joint Working Group to undertake the development of an IEC part on terminology relating to the circular economy (in particular material efficiency)]

3.27

remanufacturing

...

[SOURCE: Currently drafted in IEC TC1 JWG2 Joint Working Group to undertake the development of an IEC part on terminology relating to the circular economy (in particular material efficiency)]

4 Principles for sustainable e-waste management

4.1 Best environmental outcome

Organizations develop and implement measures to deliver the best environmental outcome from a lifecycle perspective, generally prioritising waste prevention and extending product life over material recovery (recycling), energy and other forms of recovery and disposal.

4.2 Pollution prevention

Use of processes, practices, techniques, materials, products, services or energy to avoid, reduce or control (separately or in combination) the creation, emission or discharge of any type of pollutant or waste, in order to reduce adverse environmental impacts.

4.3 Systems approach

Organizations take a holistic approach to understand how individual decisions and activities interact within the wider systems they are part of.

4.4 Precautionary principle

Organizations take preventive action against a potentially harmful practice or substance in the absence of scientific certainty, rather than continuing the suspect practice while it is under study, or without study.

4.5 Lifecycle perspective

Organizations systematically consider the environmental impacts of products over their lifecycle to inform decisions about the sustainable management of e-waste.

4.6 Creative collaboration

Organisations develop and implement networks and mechanisms for creative collaboration that facilitate innovative technologies and practices for recovery of resources contained in e-waste.

4.7 Continual improvement

Organisations undertake recurring activities to enhance their sustainability performance.

5 Overview e-waste management process chain

Figure 1 illustrates the e-waste management process chain as conceptualized in this document.