BS EN 50625-2-2:2015

BSI Standards Publication

Collection, logistics & Treatment requirements for WEEE

Part 2-2: Treatment requirements for WEEE containing CRTs and flat panel displays

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee GEL/111, Electrotechnical environment committee.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Collection, logistics & Treatment requirements for WEEE - Part 2-2: Treatment requirements for WEEE containing CRTs and flat panel displays

Exigences de collecte, logistique et traitement pour les déchets d'équipements électriques et électroniques (DEEE) - Partie 2-2: Exigences de traitement pour les DEEE

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Contents

Foreword

This document (EN 50625-2-2:2015) has been prepared by CLC/TC 111X “Environment”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-04-13
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-04-13

This part 2 is to be used in conjunction with EN 50625-1:2014.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to EN 50625–1:2014.

This Part 2 supplements or modifies the corresponding clauses in EN 50625-1, so as to convert that publication into the European Standard: *Treatment requirements for WEEE containing CRTs and Flat Panel Displays*

When a particular subclause of Part 1 is not mentioned in this Part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:

– subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;

– additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

– requirements: in roman type;

– *changes compared to part 1: in italic type*

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under mandate M/518 given to CENELEC by the European Commission and the European Free Trade Association, and supports requirements of Directive 2012/19/EU (WEEE).

For the relationship with the EU Directive see informative Annex ZZ, which is an integral part of this document.

Introduction

This clause of Part 1 is replaced by the following:

This European Standard aims to assist organisations in:

− achieving effective and efficient treatment and disposal of WEEE containing CRTs and flat panel displays in order to prevent pollution and minimize emissions;

− promoting increased material recycling;

− promoting high quality recovery operations;

− preventing inappropriate disposal of Waste Electrical and Electronic Equipment (WEEE) containing CRTs and Flat Panel Displays and fractions thereof;

− assuring protection of human health and safety, and the environment;

− preventing shipments and, or consignments of WEEE containing CRTs and flat panel displays to operators whose operations fail to comply with this normative document or a comparable set of requirements.

This European Standard supports the objectives of the Community's environment policy.

This aims to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally. That policy is based on the precautionary principle and the maxims that preventive action to minimize environmental damage should, where possible, be rectified at source and the polluter should pay.

This European Standard contains requirements applicable to the treatment of WEEE containg CRTs and flat panel displays and is a Part 2 of EN 50625-1, *Collection, logistics and Treatment requirements for WEEE - Part 1:General treatment requirements*. Additionally, this standard will be supported by a technical report that will provide a more detailed comparison between normative treatment requirements derived directly from the legal text of Directive 2012/19/EC, especially Annex VII, and between informative treatment requirements going beyond the strict requirements of Directive 2012/19/EC.

This European Standard has been prepared in order to support European legislation and so uses some of the terms defined in European law. In order to ensure that the definitions used in this standard are identical to those defined by law these terms are identified as 'void', indicating that this standard does not contain a definition, and a 'Note to entry' that identifies which law contains the legal definition and the term as defined in that law.

1 Scope

This clause of Part 1 is replaced by the following:

This European standard is applicable to the treatments of WEEE containing CRTs and flat panel displays.

This European standard applies to the treatment of WEEE containing CRTs and flat panel displays until end-of-waste status is fulfilled, or fractions are recycled, recovered, or disposed of.

This European standard addresses all operators involved in the treatment including related handling, sorting, and storage.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable with the following addition.

3.101
fluorescent coatings
coatings laid on the inner side of the panel glass of a CRT which may contain a wide range of metals, rare-metals (e.g. europium and yttrium), and heavy metals (e.g cadmium)

3.102
CRT glass
all types of glass originating from the treatment of CRTs, either as a separate fraction or a mixed fraction, as illustrated in Figure 1:

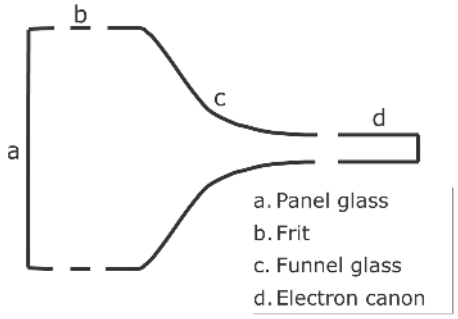

Figure 1 - Types of glass in a CRT

3.102.1
panel glass
glass from front part of a CRT

Note 1 to entry: See Figure 1 symbol a

Note 2 to entry: Panel glass contains high content of barium oxide and strontium oxide

Note 3 to entry: Panel Glass does not include frit glass

Note 4 to entry: Panel glass and funnel glass are glued toghther by frit glass

3.102.2
funnel glass
glass from back part of a CRT

Note 1 to entry: See Figure 1 symbol c

Note 2 to entry: Funnel glass contains high content of lead oxide

3.102.3
frit
Lead containing material that is used to solder the funnel and panel glass together and forms the intersection between the back and the front of the CRT

Note 1 to entry: See Figure 1 symbol b

Note 2 to entry: Frit glass contains very high content of lead

4 Administrative and organisational requirements

Add to 4.3 of EN 50625-1:2014 the following:

4.3 Training

4.3.1 CRT equipment

Employees shall be trained to identify other equipment than televisions and monitors that could also contain a CRT.

NOTE For example hospital monitors, oscilloscope, gaming machines, photo-printers and other kiosk equipment..

4.3.2 Flat Panel Display equipment

Employees shall be trained to correctly carry out sorting operations if the organizer uses a technology that requires separation of different types of flat panel display, or flat panel display equipment (e.g. those that can contain mercury in backlights and those that do not).

Employees shall be trained to identify other equipment than televisions and monitors that could contain backlights

NOTE For example laptops, scanners, photocopiers and photo-printers and other kiosk equipment.

5 Technical requirements

This clause of Part 1 is applicable except as follows

5.1 General

Sub-clause 5.1 is replaced with the following:

5.1.1 CRT equipment

During all treatment operations, special care shall be taken to prevent uncontrolled emissions of fluorescent and other coatings and glass dust to air so as to avoid health and environmental damage.

In case of dry treatment processes entailing the breakage of the CRT (this includes e.g manual removing of the electron gun), they shall be carried out in an environment with effective dust exhausting connected to an effective air filtration system. The filtration class of the air filtration system shall ensure that emission limits are complied with at all times.

NOTE Emission limits are typically contained in national laws and regulations.

In the case of wet treatmentof CRTs, the water used shall not be released to the environment before proper environmentally safe treatment.

5.1.2 Flat panel display equipment

During all treatment operations special care shall be taken to remove mercury in a reliable and traceable manner and prevent uncontrolled emissions of mercury to air or water.

The operator shall implement appropriate measures to control its employees' exposure to mercury.

Processes shall be carried out in an environment with effective dust extraction connected to an efficient air filtration system. The filtration class of the air filtration system shall ensure that emission limits are complied with at all times. In the case of wet treatment of flat panel display equipment, the water used shall not be released to the environment before proper environmentally safe treatment.

NOTE Limits are typically contained in national laws and regulations.

5.2 Receiving of WEEE at treatment facility

Sub-clause 5.2 of part 1 is applicable.

5.3 Handling of WEEE

The following is added to sub-clause 5.3:

5.3.1 CRT equipment and flat panel display equipment

Crushing or compacting of any kind of CRT equipment shall not occur prior to treatment.

Crushing or compacting of any kind of flat panel display equipment shall not occur prior to treatment. If it cannot be determined that flat panel display equipment is free from backlights containing mercury the such flat panel display equipment shall be treated as if it contains mercury.

Appropriate measures shall exist and be documented to ensure that:

- the risk of implosion of the CRT glass or rupture of the backlights containing mercury is reduced by preventing the accidental dropping or jolting of the CRT and flat panel display equipment during unloading, stacking and storage.

- flat panel display equipment is transported and stored such that undue pressure on the flat panel display equipment is reduced .

The crushing, compacting or tampering of WEEE containing CRTs or backlights prior to de-pollution shall not be permitted.

5.4 Storage of WEEE prior to treatment

The following is added to sub-clause 5.4:

The storage for CRT equipment and flat panel display equipment shall comply with Sub-clause 4.2 and 5.4 of Part 1 irrespective of whether or not the CRTs and/or flat panel displays are damaged..

NOTE 1 Technical requirements of storage of WEEE are described in Annex VIII of Directive 2012/19/EC

The maximum mass of CRT equipment and/or flat panel display equipment stored by the treatment operator shall not exceed the mass of such items that can be treated at their treatment facility within six months.

NOTE 2 The quantity of CRT equipment and/or flat panel display equipment that can be treated is calculated based on the normal applied production conditions (number of shifts, working hours per shift, throughput per hour).

5.5 De-pollution

The following is added to sub-clause 5.5:

5.5.1 CRT equipment

During de-pollution operations, CRTs and CRT glass shall be separated from the rest of the CRT equipment in a controlled way. This is to avoid the contamination of other components and fractions with fluorescent coatings and lead containing glass. In order to determine that this activity has been carried out correctly the limits given in the associated technical specification shall be reached.

NOTE 1 The limits concerning the content of glass in fractions and lead oxide in panel glass and the residual content of fluorence coating in CRT glass without fluorescent coatings will be described in future technical specification TS 50625–3-3 Collection, logistics and treatment requirements for WEEE – Part 3–3: Specification for de-pollution - WEEE containing CRTs and flat panel displays.

CRTs, CRT glass with fluorescent coatings, and CRT glass contaminated with fluorescent materials shall be considered as hazardous waste and handled in accordance with hazardous waste requirements set up by national legislation and treatment plant licence.

Fluorescent coatings shall be removed from CRTs. Unless determined otherwise, removed fluorescent coatings shall be considered as a hazardous waste and handled accordingly.

NOTE 2 There is a risk that fluorescent coatings have H6 and H13 and H14 hazardous properties in accordance with Annex 3 of Directive 91/689/EEC on hazardous waste.

5.5.2 Flat panel display equipment

Treatment of flat panel displays shall be carried out in a dedicated treatment process to avoid uncontrolled release of hazardous substances into environment.

The treatment of flat panel displays shall consider the different types of displays, the fractions and components thereof, and the specific requirements for mercury.

NOTE 1 The requirements for mercury are described in the future TS 50625–3-3 “Collection, logistics & treatment requirements for WEEE – Part 3-3: Specification for de-pollution - WEEE containing CRTs and flat panel displays”.

NOTE 2 Plasma screens have a fluorescent layer, but not the one addressed in the Directive 2012/19/EU Annex VII. Backlight gas discharge lamps can have a fluorescent layer.

5.6 De-pollution monitoring

The following is added to sub-clause 5.6:

5.6.1 CRT equipment

For the treatment of CRT equipment, evidence shall be provided showing the removal and monitoring of fluorescent materials and lead glass to prove environmentally safe treatment has been performed.

NOTE 1 The requirements for fluorescent materials and lead glass will be described in future TS TS 50625–3-3 Collection, logistics and treatment requirements for WEEE – Part 3–3: Specification for de-pollution - WEEE containing CRTs and flat panel displays

NOTE 2 During mechanical treatment when whole CRT equipment are crushed, there is a risk that fractions other than glass can be polluted by fluorescent coatings.

5.6.2 Flat panel display equipment

For treatment of flat panel display equipment with backlights containing mercury, evidence shall be provided showing the removal and monitoring of mercury to prove environmentally safe treatment has been performed.

NOTE The requirements for mercury will be described in future TS TS 50625–3-3 Collection, logistics and treatment requirements for WEEE – Part 3–3: Specification for de-pollution - WEEE containing CRTs and flat panel displays

5.7 Treatment of non de-polluted WEEE and fractions

Sub-clause 5.7 part 1 is applicable:

5.8 Storage of fractions

Sub-clause 5.8 part 1 is applicable:

5.9 Recycling and recovery targets

Sub-clause 5.9 is applicable:

5.10 Recovery and disposal of fractions

The following is added to sub-clause 5.10:

5.10.1 CRT equipment

Only CRT glass that has had the fluorescent material removed (cleaned CRT glass) shall be accepted to recycling or recovery processes.

NOTE 1 The requirements for the proportion of fluorescent material to be removed will be defined as a target value in TS 50625–3-3 Collection, logistics and treatment requirements for WEEE – Part 3–3: Specification for de-pollution - WEEE containing CRTs and flat panel displays.

NOTE 2 According to the waste treatment hierarchy, recycling or recovery of fluorescent coatings or their compounds (e.g. europium and yttrium) is preferred to disposal methods.

NOTE 3 Funnel glass or mixtures of CRT glass has a high lead content and so its subsequent use will need to consider the relevant legislation.

When lead related limits in applications are not set up by national legislation, then governmental approval or environmental product declaration (EDP) in accordance with ISO 14025 shall be applied.

5.10.2 Flat display panel equipment

All backlights containing mercury arising from manual dismantling, whether broken or not broken, shall be treated in special treatment plants for lamps or sent for appropriate disposal in accordance with national legislation. For fractions that could be contaminated with mercury from backlights (i.e. associated printed circuit boards or enclosures) it shall be demonstrated that mercury is removed from such fractions prior to their being sent for recycling. Where a treatment process has concentrated the mecury in a particular fraction, such fractions shall be sent to the correct downstream acceptor.

NOTE The requirements for mercury will be described in the future TS TS 50625–3-3 Collection, logistics and treatment requirements for WEEE – Part 3–3: Specification for de-pollution - WEEE containing CRTs and flat panel displays.

5.11 Occupational health monitoring *(Additional clause)*

Add the following subclause:

Regular monitoring (see Annex E) shall prove the effectiveness of the measures undertakenby the risk assessment(s) documented by the operator. The mercury concentration in the air of all working areas (including storage areas) identified by the risk assessment(s) shall be regularly monitored in accordance with Annex E. Medical checks of employees shall be performed in accordance with Annex E.

NOTE Commission Directive 2009/161/EU establishes a Threshold Limit Value (TLV) for certain substances, including mercury. It is suggested that the relevant national authority be consulted to determine what occupational limit value should be applied.

The occupational health monitoring shall be documented by the treatment operator in accordance with Clause 6.

6 Documentation

This clause of Part 1 is applicable

Annex A
(normative)

De-pollution

This annex of Part 1 is applicable.

Annex B
(normative)

De-pollution monitoring

This annex of Part 1 is applicable.

Annex C
(normative)

Determination of recycling and recovery rates

This annex of Part 1 is applicable.

Annex D
(normative)

Requirements concerning processing of a batch

This annex of Part 1 is applicable.

Annex E
(informative)

This annex of Part 1 is applicable.

Annex F
(informative)
Documentation for downstream monitoring and establishment of recycling and recovery rates

This annex of Part 1 is applicable.

Annex AA
(normative)
Frequency table of residual mercury concentration checks at flat panel display treatment

Table AA.1 provides an overview of the minimal frequency to monitor mercury concentrations in the facility of then operator.

Table AA.1 - monitoring frequency of mercury

Element	Location	Frequency
Plant workers (excl. administrative staff)		
Urine or blood	N/A	According to risks assessment of workplace exposure, at least once a year.
Medical check (mercury relevant checks)	N/A	According to risks assessment of workplace exposure, at least once a year.
Emissions		
Ambient Air (occupational health monitoring)	Storage areas (flat panel display and fractions)	In accordance with the risk assessment
	All entry points of treatment	
	Around the treatment machine	
	All exit points of treatment machine	
Air	Emission points to the environment (e.g. stack)	In accordance with the risk assessment
Water	Waste water output	

Annex ZZ
(informative)
Coverage of Requirements of Commission Directive (EU) 2012/19/EU

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers Article 8. In particular it covers:

- proper treatment, other than preparing for re-use,
- recovery or recycling operations include the removal of all fluids and
- selective treatment in accordance with Annex VII.

WARNING: Other requirements and other EU Directives or Commission Regulations may be applicable to waste falling within the scope of this standard.

Bibliography

The Bibliography of part 1 is applicable.

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