
Zahteve za zbiranje, logistiko in obdelavo odpadne električne in elektronske opreme (WEEE) - 3-3. del: Specifikacija za preprečevanje onesnaženja - WEEE, ki vsebuje CRT in ravne ekrane

Collection, logistics & treatment requirements for WEEE - Part 3-3: Specification for de-pollution - WEEE containing CRTs and flat panel displays

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Exigences de collecte, logistique et traitement pour les déchets d'équipements électriques et électroniques (DEEE) - Partie 3-3: Spécifications relatives à la dépollution - DEEE contenant des tubes cathodiques et des écrans plats

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Ta slovenski standard je istoveten z: CLC/TS 50625-3-3:2017

ICS:

13.030.99	Drugi standardi v zvezi z odpadki	Other standards related to wastes
31.120	Elektronske prikazovalne naprave	Electronic display devices

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CLC/TS 50625-3-3

August 2017

ICS 13.030.99; 31.120

English Version

Collection, logistics & treatment requirements for WEEE - Part 3-3: Specification for de-pollution - WEEE containing CRTs and flat panel displays

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Sammlung, Logistik und Behandlung von Elektro- und Elektronik-Altgeräten (WEEE) - Teil 3-3: Spezifikation der Schadstoffentfrachtung - WEEE mit CRT und Flachbildschirmgeräten

This Technical Specification was approved by CENELEC on 2017-06-19.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (CLC/TS 50625-3-3:2017) has been prepared by CLC/TC 111X “Environmental aspects for electrical and electronic products and systems”.

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

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

EN 50625 is currently composed of the following parts:

- EN 50625-1, *Collection, logistics and Treatment requirements for WEEE — Part 1: General treatment requirements*;
- EN 50625-2-1, *Collection, logistics and Treatment requirements for WEEE — Part 2-1: Treatment requirements for lamps*;
- CLC/TS 50625-3-1, *Collection, logistics and treatment requirements for WEEE — Part 3-1: Specification for de-pollution — General*;
- CLC/TS 50625-3-3, *Collection, logistics and treatment requirements for WEEE — Part 3-3: WEEE containing CRTs and flat panel displays* [the present document].

This document has been prepared under mandate M/518 given to CENELEC by the European Commission and the European Free Trade Association.

This CLC/TS 50625-3-3 is to be used in conjunction with CLC/TS 50625-3-1.

This CLC/TS 50625-3-3 supplements or modifies the corresponding clauses in CLC/TS 50625-3-1, so as to convert that publication into the TS: Treatment specification for de-pollution - WEEE containing CRTs and flat panel displays.

When a particular subclause of CLC/TS 50625-3-1 is not mentioned in this CLC/TS 50625-3-3, that subclause applies as far as it is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in CLC/TS 50625-3-1 is to be adapted accordingly.

NOTE The following numbering system is used:

— subclauses, tables and figures that are numbered starting from 101 are additional to those in CLC/TS 50625-3-1;

— unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;

— additional annexes are lettered AA, BB, etc.

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Introduction

In order to support EN 50625-2-2 *Treatment requirements for WEEE containing CRTs and flat panel displays* and thereby fulfil the requirement of the European Commission's Mandate M/518, it is necessary to include normative requirements (such as target and limit values for the analysis) into a document, which is able to be revised in the future, to take into account both practical experiences and changes in treatment technologies.

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1 Scope

Clause 1 of CLC/TS 50625-3-1:2015 is replaced with the following:

This European Technical Specification is intended to be used in conjunction with *Collection, logistics and treatment requirements for WEEE — Part 1: General treatment requirements*, EN 50625-1, *Collection, logistics and Treatment requirements for WEEE — Part 2-2: Treatment requirements for WEEE containing CRTs and flat panel displays*, EN 50625-2-2 and *Collection, logistics and treatment requirements for WEEE — Part 3-1: Specification for de-pollution — General*, CLC/TS 50625-3-1.

2 Normative references

Clause 2 of CLC/TS 50625-3-1:2015 is replaced with the following:

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

ISO 11885, *Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)*

EN ISO 12846, *Water quality - Determination of mercury - Method using atomic absorption spectrometry (AAS) with and without enrichment (ISO 12846)*

EN 13657, *Characterization of waste - Digestion for subsequent determination of aqua regia soluble portion of elements*

EN 13656, *Characterization of waste - Microwave assisted digestion with hydrofluoric (HF), nitric (HNO₃) and hydrochloric (HCl) acid mixture for subsequent determination of elements*

EN 14899, *Characterization of waste - Sampling of waste materials - Framework for the preparation and application of a Sampling Plan*

EN 15002, *Characterization of waste - Preparation of test portions from the laboratory sample*

EN 15309, *Characterization of waste and soil - Determination of elemental composition by X-ray fluorescence*

ISO 16772, *Soil quality — Determination of mercury in aqua regia soil extracts with cold-vapour atomic spectrometry or cold-vapour atomic fluorescence spectrometry*

EN ISO 17294-2, *Water quality - Application of inductively coupled plasma mass spectrometry (ICP-MS) - Part 2: Determination of selected elements including uranium isotopes (ISO 17294-2)*

ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories*

ISO 17852, *Water quality — Determination of mercury — Method using atomic fluorescence spectrometry*

EN 50625-1, *Collection, logistics & Treatment requirements for WEEE - Part 1: General treatment requirements*

CLC/TS 50625-3-1, *Collection, logistics & treatment requirements for WEEE - Part 3-1: Specification for de-pollution - General*

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EN 50625-2-2, *Collection, logistics & Treatment requirements for WEEE - Part 2-2: Treatment requirements for WEEE containing CRTs and flat panel displays*

3 Terms and definitions

Clause 3 of EN 50625-1, EN 50625-2-2 and CLC/TS 50625-3-1:2015 is applicable, with the following additions:

3.101**deflection coil**

copper coil located on the CRT funnel that deflects electron beams emitted by electron canon

NOTE to entry: The electron canon may be otherwise known as an electron gun.

3.102**Flat Panel Display (FPD)**

assembly of components that use technologies that produce and display an image without the use of cathode ray tubes

[Source EN 50625-1:2014, 3.16, modified with the abbreviation FPD]

NOTE to entry: FPDs may contain a various number of mercury containing lamps as backlight.

3.103**manual treatment of FPD**

manual treatment of FPDs is a process for which mercury (Hg) containing lamps are removed in order to save their integrity to avoid mercury pollution. However, it is acknowledged that during this process some lamps may be accidentally broken resulting in the release of mercury

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NOTE to entry: It is recognized that some mercury-containing lamps may be broken prior to arriving at the treatment facility.

3.104**mechanical treatment of FPD**

mechanical treatment of FPDs (e.g. a shredding process) is a procedure that intentionally breaks the mercury containing lamps within a contained atmosphere, and to de-pollute the mix of materials of mercury resulting from the treatment

NOTE to entry: Treatment processes where the lamps are mechanically treated together with other fractions (e.g. shredding of the 'sandwich' of laminated materials and glue), are considered to be mechanical treatment operations.

4 De-pollution monitoring**4.1 Introduction**

4.1 of CLC/TS 50625-3-1:2015 is applicable.

4.2 Target value methodology

4.2 of CLC/TS 50625-3-1:2015 is applicable.

4.3 Mass Balance methodology

4.3 of CLC/TS 50625-3-1:2015 is applicable.

4.4 Analysis methodology

4.4 of CLC/TS 50625-3-1:2015 applies with the following additions:

Basic principles of processing heterogeneous samples from CRT and FPD treatment fractions are given in 'Annex BB (normative) – CRT: Analysis protocol for residual CRT glass in CRT fractions', 'Annex CC (normative) – CRT: Analysis protocol for fluorescent coating remaining on cleaned CRT glass', 'Annex DD (normative) – CRT: Analysis protocol for the lead oxide in separated panel glass' and 'Annex FF (normative) – FPD: Analysis of the de-polluted physically smallest shredded mix fraction of flat panel displays'.

The above mentioned annexes list examples of proven procedures to be used for sample preparation and for analytical methods. These methods shall be used in the first instance. However, if an alternative method of sample preparation or analytical method is to be used other than one of the applicable methods given in these annexes, the laboratory shall validate the alternative method in accordance with EN ISO/IEC 17025, 5.4.5.

The laboratory shall document a full description of the procedure, together with a full report on the validation process.

As a minimum, the validation process shall comprise of:

- the calibration details using reference standards or reference materials;
- a comparison of the results achieved against the results achieved with the methods given in the annexes mentioned above;
- an assessment of the uncertainty of the results;
- an assessment of the influence of the specific character of the material to be analysed, including size distribution and heterogeneously. Specifically, for the analysis of fluorescent coating on cleaned CRT glass, the laboratory shall take into account the informative *Annex GG (Informative) – CRT: Background on analysis protocol for fluorescent coating remaining on cleaned CRT glass* and the studies it refers to. Specifically, for the analysis of mercury in shredded FPD fractions, the laboratory shall take into account the fact that the mercury is expected to be metallic and on the surface of the material and thus not dispersed in the matrix. The influence of the volatility of mercury on the results shall be reported.

4.101 Monitoring methodology

4.101.1 Introduction

The treatment operator shall monitor the de-pollution activities at the treatment facility, in accordance with the requirements of this TS.

The treatment operator shall also monitor the information provided by downstream treatment operators as set out in 4.4 and Annex C of EN 50625-1:2014 (summarized in Table G.1) for all fractions that leave the treatment facility until end of waste status is reached or until the WEEE or fractions thereof are recycled, recovered, or disposed of.

4.101.2 CRT equipment

The treatment operator shall have a documented procedure showing the methodology of the CRT glass removal process from deflection coils; electron guns; crushed or shredded mixed fraction; anti-implosive metal frame and shadow masks (ferrous metal fraction); the removal of fluorescent coating from the CRT glass and the limitation of lead oxide in panel glass fractions. This shall include at least:

- the methodology describing the removal processes;

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- the parameters of these processes that indicate the effectiveness of the operations;
- the range of acceptable parameters used by the treatment operator;
- the frequency and method of the monitoring of these parameters;
- the reporting and analysis records shall be stored in accordance with Clause 6 of EN 50625-1:2014.

The procedures for the treatment activities performed by the treatment operator at the treatment facility need to be included in this document. Also the treatment operator shall include measures to avoid loss of fluorescent powder during compacting the CRT, storing, handling and (if applicable) shipping.

Diffuse emissions to the air and within or out of containers of fluorescent powders are a risk to health and environment and should be avoided.

4.101.3 Flat Panel Display (FPD)

The treatment operator shall have a documented procedure showing how they remove mercury or mercury containing lamps from the FPD equipment. This shall include at least:

- the description of the mercury removal process (for mechanical treatment operations) and/or capturing process (for manual and mechanical treatment operations);
- the parameters of these processes that indicate the effectiveness of the operation;
- the range of acceptable parameters used by the treatment operator;
- the frequency and method of the monitoring of these parameters;
- the reporting and analysis records shall be stored in accordance with Clause 6 of EN 50625-1:2014.

Only the procedures for the treatment activities performed by the treatment operator at the treatment facility need to be included in this document.

5 Overview of the applicable methodologies - Applicable methodologies

Clause 5 of CLC/TS 50625-3-1:2015 is applicable.

6 Large appliances

Clause 6 of CLC/TS 50625-3-1:2015 is not applicable.

7 Cooling and freezing appliances

Clause 7 of CLC/TS 50625-3-1:2015 is not applicable.