SLOVENSKI STANDARD
SIST-TS CLC/TS 50625-3-1:2015

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Zahteve za zbiranje, logistiko in obdelavo odpadne električne in elektronske opreme (WEEE) - 3-1. del: Specifikacija za preprečevanje onesnaženja - Splošno

Collection, logistics & treatment requirements for WEEE - Part 3-1: Specification for de-pollution - General

Anforderungen an die Behandlung von Elektro- und Elektronik-Altgeräten (WEEE) - Teil 3-1: Spezifikation zur Schadstoffentfrachtung - Allgemeines

Exigences de collecte, logistique et traitement pour les DEEE - Partie 3-1: Spécifications relatives à la dépollution - Généralités

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13.030.99	Drugi standardi v zvezi z odpadki	Other standards related to wastes
29.020	Elektrotehnika na splošno	Electrical engineering in general
31.020	Elektronske komponente na splošno	Electronic components in general

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This Technical Specification was approved by CENELEC on 2014-10-20.

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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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Foreword

This document (CLC/TS 50625-3-1:2015) has been prepared by CLC/TC 111X "Environmental aspects for electrical and electronic products and systems".

EN 50625 is currently composed of the following parts:

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

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

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Introduction

In order to support the European Standard EN 50625-1 which covers treatment of WEEE and thereby fulfils the requirement of the European Commission's Mandate, it is necessary to include normative requirements, such as target and limit values for the analysis, into a document that may be revised to take into account both practical experience and changes in treatment technologies.

1 Scope

This Technical Specification is intended to be used in conjunction with the WEEE Treatment Standard EN 50625-1 for most types of WEEE (other documents will be developed to define requirements for specific WEEE requiring more specialised treatment).

2 Normative references

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.

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

EN 14582, *Characterization of waste — Halogen and sulphur content — Oxygen combustion in closed systems and determination methods*

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

EN 15308, *Characterization of waste — Determination of selected polychlorinated biphenyls (PCB) in solid waste by using capillary gas chromatography with electron capture or mass spectrometric detection*

EN 50574, *Collection, logistics & treatment requirements for end-of-life household appliances containing volatile fluorocarbons or volatile hydrocarbons*

EN 50625-1:2014, *Collection, logistics & Treatment requirements for WEEE — Part 1: General treatment requirements*

EN 62321-5, *Determination of certain substances in electrotechnical products — Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP-OES and ICP-MS (IEC 62321-5)*

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

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

EN ISO 17294 (all parts), *Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 2: Determination of 62 elements (ISO 17294, all parts)*

US EPA 8082A/2007, *Polychlorinated biphenyls (PCBs) by gas chromatography*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50625-1 and the following apply.

3.1
limit value
maximum allowable value for a parameter

Note 1 to entry: A measured or calculated value which exceeds the limit value is considered to be non-compliant.

3.2
population
totality of items under consideration

[SOURCE: ISO 3534-1:2006, 1.1, modified — Original Notes have not been kept.]

3.3
sample
portion of material selected from a larger quantity of material

[SOURCE: ISO 11074:2005]

3.4
sampling procedure (sampling protocol)
predetermined procedure for the selection, withdrawal, preservation, transportation and preparation of the portions to be removed from a population as a sample

[SOURCE: ISO 11074:2005]

3.5
target value
minimum value of a parameter to be attained

Note 1 to entry: A measured or calculated value that does not reach the target value is considered to be non-compliant.

4 De-pollution monitoring

4.1 Introduction

The following paragraphs cover de-pollution monitoring and refer to 5.6 of EN 50625-1:2014. The target values and limit values defined in this Technical Specification apply to the three methodologies stated in 5.6 of EN 50625-1:2014:

- 'Target value methodology' - compare a measurement of the mass of de-polluted fractions in the outgoing stream with the corresponding target value;

- 'Mass balance methodology' - establish a mass balance between incoming and outgoing streams;

- 'Analysis methodology' - analyse representative samples from relevant fractions that result from the treatment of WEEE.

NOTE In order to ensure that the target values and limit values remain 'state of the art' it is planned to review, and where necessary revise, them with a frequency of approximately 3 years.

When applying the methodologies to assess the de-pollution monitoring the sampling protocols shall be used (normative annex).

4.2 Target value methodology

This methodology uses the following approach:

- establish targets: these masses per unit of input mass are obtained either by using the formula given in 6.2, 7.2, 8.2 and 10.2 or by using the values given in Table C.1 and Table C.2 of Annex C (which are based on the background of comparable studies developed in Europe (see Bibliography));

- perform a batch process: determine the mass of the specified components removed by performing a batch process according to the methodology of Annex D of EN 50625-1:2014;

- evaluate the de-pollution performances: compare the results of the batch process with the specified target values.

As stated in B.2 of EN 50625-1:2014, to verify the efficiency of de-pollution during the performing of a batch process, corresponding target value(s) shall be reached.

4.3 Mass Balance methodology

This methodology uses the following approach:

- establish target values in terms of share of a pollutant in the output compared to the input of this pollutant (100 %);
- assess the quantity of a defined pollutant in the input of a batch and measure the quantity of that pollutant in the output fraction(s);
- evaluate the de-pollution performances by comparing the results of the batch process with the specified target values.

As stated in 5.6 and B.1 of EN 50625-1:2014, to verify the efficiency of de-pollution for specific type of WEEE, e.g. temperature exchange equipment, a mass balance shall be performed and the corresponding target values shall be achieved.

4.4 Analysis methodology

This methodology uses the following approach:

- establish the limits: these values are defined in this Technical Specification and are based on the background of comparable studies and legislation;
- sample the output fractions: the sample for the analysis shall be prepared according to the sampling procedure defined in this Technical Specification;
- evaluate the analysis' results: the concentration of substances shall be determined according to the analysis procedure defined in this Technical Specification;
- evaluate the de-pollution performance: compare the results of the analysis with the defined limit values.

If the results of the analysis are below the limit values then the performance of de-pollution fulfils the requirements.

As required by B.3 and B.4 of EN 50625-1:2014, the quality of de-pollution shall be measured by comparing the results of the analysis with the corresponding limit values.

The analysis establishes the amount of substances or substances that indicate the presence of items included in Annex F of EN 50625-1:2014 in the output fractions (if applicable to the treatment process).

A laboratory shall perform the analysis on the samples for the residual amount of PCB, cadmium and bromine.

Depending on the treatment process used, one of the techniques below, as used in Annexes A and B, shall be used to obtain a representative mixed sample:

- sampling during a treatment process;
- post process sampling.

NOTE 1 All the sampling protocols are based on EN 14899.

Analysis protocols will be implemented by laboratories. There are many types of physical-chemical analysis and this Technical Specification describes the suitable method for each type of sample.

NOTE 2 In related standards and in chemical analysis processing a sample is often called digestion of a sample.

Chemical analysis including processing of the samples should be performed by a laboratory that complies with EN ISO/IEC 17025. If the laboratory does not comply with EN ISO/IEC 17025 then duplicate samples

shall be sent for checking to laboratory that does meet EN ISO/IEC 17025 on a regular basis, according to a defined process.

NOTE 3 The laboratory can be internal to the treatment operator or a third party laboratory.

The preparation of the test portion of the sample to be analyzed shall be carried out according to EN 15002 and then:

- for cadmium, the digestion of the sample and the subsequent analysis shall be carried out by ICP-OES or ICP-MS according to EN 62321-5. As an alternative the digestion shall be carried out according to EN 13656 and the subsequent analysis performed according to EN ISO 11885 or the EN ISO 17294 series;

- for bromine, the digestion of the sample and the subsequent analysis shall be carried out in accordance with EN 14582;

- for PCB, the digestion (e.g. homogenization) of the sample and the subsequent analysis shall be carried out in accordance with EN 15308 or US EPA 8082A/2007, quantification of PCBs as congeners.

NOTE 4 ICP-OES is an abbreviation for Inductively Coupled Plasma/Optical Emission Spectrometry and ICP-MS is an abbreviation for Inductively Coupled Plasma Mass Spectrometry, which are the two methods of chemical analysis to be used when analyzing cadmium.