SLOVENSKI STANDARD
SIST EN 50625-2-4:2018

01-januar-2018

Zahteve za zbiranje, logistiko in obdelavo odpadne električne in elektronske opreme (WEEE) - 2-4. del: Obravnava zahtev za fotonapetostne plošče

Collection, logistics & treatment requirements for WEEE - Part 2-4: Treatment requirements for photovoltaic panels

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Exigences de collecte, logistique et traitement pour les déchets d'équipements électriques et électroniques (DEEE) - Partie 2-4: Exigences de traitement des panneaux photovoltaïques

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Ta slovenski standard je istoveten z: **EN 50625-2-4:2017**

ICS:

13.030.99	Drugi standardi v zvezi z odpadki	Other standards related to wastes
27.160	Sončna energija	Solar energy engineering

SIST EN 50625-2-4:2018 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50625-2-4

November 2017

ICS 13.030.99; 27.160

English Version

Collection, logistics & treatment requirements for WEEE - Part 2-4: Treatment requirements for photovoltaic panels

Exigences de collecte, logistique et traitement pour les déchets d'équipements électriques et électroniques (DEEE) - Partie 2-4: Exigences de traitement des panneaux photovoltaïques

Sammlung, Logistik und Behandlung von Elektro- und Elektronik-Altgeräten (WEEE) - Teil 2-4: Anforderungen an die Behandlung von Photovoltaikmodulen

This European Standard was approved by CENELEC on 2017-09-18. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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SIST EN 50625-2-4:2018
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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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SIST EN 50625-2-4:2018

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-81e531a3668f/sist-en-50625-2-4-2018

SIST EN 50625-2-4:2018

European foreword

This document (EN 50625-2-4:2017) 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) 2018-06-18
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2020-09-18

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 mandate M/518 given to CENELEC by the European Commission and the European Free Trade Association.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

This part 2 is to be used in conjunction with the latest edition of EN 50625-1.

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

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 photovoltaic panels.*

SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-81e381e266b8/sist-en-50625-2-4-2018

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:

— 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*

SIST EN 50625-2-4:2018

Introduction

This clause of Part 1 is replaced with the following:

This European Standard aims to assist organisations in:

— achieving effective and efficient treatment of waste photovoltaic panels in order to prevent pollution and minimize emissions;

— promoting increased material recycling;

— promoting high quality recovery operations;

— preventing inappropriate disposal of photovoltaic panels and fractions thereof;

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

— preventing shipments of waste photovoltaic panels 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. These aim 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.

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This European Standard contains requirements applicable to the treatment of photovoltaic panels and is a Part 2 of EN 50625-1, *Collection, logistics and Treatment requirements for WEEE - Part 1: General treatment requirements*.

SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37cf-4b51-a2e0-81e531e2668f/sist-en-50625-2-4-2018

This European Standard has been prepared in order to support European legislation under European Commission mandate M/518 and so uses some of the terms defined in European law.

SIST EN 50625-2-4:2018

1 Scope

This clause of part 1 is replaced with the following:

This European Standard is applicable to the treatment of photovoltaic panels as mentioned in the WEEE Directive under Annex 4.

The scope of this document is limited to photovoltaic panels with a minimum surface area of 0,2 m^2.

This European Standard applies to the treatment of photovoltaic panels until end-of-waste status is fulfilled, or photovoltaic panel fractions are recycled, recovered or disposed.

This European Standard addresses all operators involved in the treatment including related handling, sorting and storage of photovoltaic panels. This European Standard applies to all facilities including those whose treatment operations using mobile treatment installation.

2 Normative references

This clause of Part 1 is applicable.

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

Clause 3.26 of part 1 is replaced with the following:

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3.26
photovoltaic panel
(PV panel)
electrical equipment or component with the sole purpose to generate electricity from solar light for public, commercial, industrial, rural and residential applications

SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-[illegible]-50625-2-4-2018

The following additions are made to this clause of part 1:

3.41
silicon based photovoltaic panel
(Si PV panel)
PV panel utilizing different forms of silicon as semiconductor material

Note 1 to entry: Semiconductor material of Si PV panels may consist of electrically interconnected mono- or multi-crystalline silicon cells or microcrystalline or amorphous silicon. Silicon can be P-type or N-type silicon.

Note 2 to entry: The Si based PV panel can consist of a framed or un-framed glass-glass laminate or a framed or unframed glass-polymer laminate. Electrical connection of the photovoltaic panel is established through a junction box.

Note 3 to entry: The Si based PV panel may contain hazardous substances, e.g. lead, lead-oxide, fluor.

3.42
non-silicon based photovoltaic panel
(non-Si based PV panel)
PV panel utilizing a micron scale layer of a compound semiconductor

Note 1 to entry: The semiconductor material may be composed of various materials, e.g. copper-indium-(gallium)-selenide (CI(G)S) or cadmium telluride (CdTe).

Note 2 to entry: The non-Si PV panel can consist of a framed or unframed glass-glass laminate or a framed or unframed glass-polymer laminate or a flexible substrate-superstrate laminate. Electrical connection of the photovoltaic panel is established through a junction box.

SIST EN 50625-2-4:2018

Note 3 to entry: The non-Si based PV panel may contain hazardous substances, e.g. lead, cadmium, cadmium sulfide, selenium, fluor.

4 Administrative and organizational requirements

This clause of Part 1 is applicable except as follows:

4.1 Technical and infrastructural pre-conditions

The photovoltaic panel treatment operator shall possess infrastructure, in terms of size, technologies installed and characteristics of the operations, that is suitable for the activities performed on site. A risk management process shall be in operation at the site. This shall monitor and control all tasks performed on site and include the identification of hazards, the assessment of risk and, where appropriate, the elimination or reduction of the risk and documentation of the process.

The risk assessment shall include the identification of those locations and activities that require the use of personal protective equipment and procedures to be followed.

NOTE 1 Directive 89/391/EEC provides requirements for the safety and health for the protection of workers at work.

NOTE 2 Occupational risks specific to photovoltaic panel treatment may include hazards arising from broken glass, dust emission, electrocution risks from exposed connectors etc.

NOTE 3 Examples of personal protective equipment are: gloves, glasses, masks, safety shoes and a protective suit.

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Treatment facilities and associated storage areas shall be designed, organized and maintained:

— to provide safe access to, and egress from, the site for authorized persons, and

— to prevent damage to and theft of photovoltaic panels and fractions thereof.

SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-81e531a3668f/sist-en-50625-2-4-2018

Impermeable surfaces shall be provided for all areas where photovoltaic panels and fractions thereof, are stored and/or treated.

Requirements for the storage of photovoltaic panels prior to treatment are given in 5.4.

5 Technical requirements

This clause of Part 1 is applicable except as follows:

5.1 General

Subclause 5.1 is replaced with the following:

During handling and storage attention shall be given but not limited to prevent injury from broken glass and electrocution caused through contact with hazardous voltage generated when the PV panels are exposed to light.

The treatment operator shall ensure a separation and preparation of the fractions in a way that facilitates their recycling, whether the treatment operator performs the separation activity using its own treatment facilities or uses authorized contractors.

NOTE 1 Examples of fractions generated from the separation process of photovoltaic panels are the separated glass fractions, the separated metallic fractions, the separated plastics fractions, the separated semiconductor fractions, etc.

The operator shall establish and maintain a system of identification non-silicon based PV panels with all persons involved in the related sorting processes in order to avoid mixed treatment. If a mixed treatment of silicon based and non-silicon based PV panels is applied, the treatment operator shall perform a batch-test

SIST EN 50625-2-4:2018

according to Annex D, Table D.1 on small appliances of Part 1 with only non-silicon based PV panels yearly to prove that depollution limits have been achieved in all output fractions (see 5.6).

NOTE 2 Identification may be based on the typical construction of non-Si based PV panels or based on the type of product and related documents.

NOTE 3 Information on distinction attributes of silicon and non-silicon based PV panels are given in Annex AA.

5.2 Receiving of WEEE at treatment facility

Subclause 5.2 is applicable.

5.3 Handling of WEEE

Subclause 5.3 is applicable.

5.4 Storage of WEEE prior to treatment

Subclause 5.4 is applicable.

5.5 De-pollution

Subclause 5.5 is replaced with the following:

Treatment of all PV panels, shall use technologies that allow to remove metallic lead or lead solder to achieve specified de-pollution requirements.

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NOTE 1 Examples of metallic lead or lead solder separation technologies are eddy current devices, induction sorter, opt-electrical sorters.

Treatment of non-silicon based photovoltaic panels, shall use technologies that allow to remove the hazardous substances in the semiconductor layer, including contacts to achieve specified de-pollution requirements.

SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-81e531a3668f/sist-en-50625-2-4-2018

NOTE 2 The requirements for de-pollution will be described in CLC/FprTS 50625-3-5:2017.

NOTE 3 Examples of technologies removing lead, selenium, indium and cadmium from non-silicon based PV panels are chemical or physical treatment of materials.

If it is uncertain whether PV panels are silicon or non-silicon based, they shall be treated as non-silicon based PV panels.

Fractions containing hazardous substances, shall not be diluted or mixed with other fractions or materials for the purpose of reducing their concentrations.

5.6 De-pollution monitoring

Subclause 5.6 is replaced with the following:

The content of hazardous substances in output glass fractions intended to be recycled or recovered shall be monitored on a regular and representative basis and shall not exceed defined limit values. The limit values shall be measured in output glass fractions after the de-pollution process step.

The monitoring shall include both a description of the de-pollution process step and the measurement of the hazardous substances of the output glass fractions intended to be recycled.

NOTE The limit values and the monitoring process, including the frequency and the way to take representative samples, will be contained in CLC/TS 50625-3-5:2017.

SIST EN 50625-2-4:2018

5.7 Treatment of non-de-polluted WEEE and fractions

Subclause 5.7 is not applicable.

NOTE 1 The term “non-de-polluted WEEE” in this paragraph refers mostly to WEEE components and substances identified in the Directive 2012/19/EU Annex VII, e.g. capacitors, asbestos, batteries have not yet been removed.

NOTE 2 Whereas the treatment of silicon based PV modules could happen in treatment facilities treating other WEEE fractions, a joint treatment with other fractions is prohibited and therefore 5.7 is not applicable.

5.8 Storage of fractions

Subclause 5.8 is applicable.

5.9 Recycling and recovery targets

Subclause 5.9 is applicable.

5.10 Recovery and disposal of fractions

Subclause 5.10 is applicable.

6 Documentation

This clause of Part 1 is applicable.

iTeh STANDARD PREVIEW
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SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-81e531a3668f/sist-en-50625-2-4-2018

SIST EN 50625-2-4:2018

Annex A
(normative)

De-pollution

This annex of Part 1 is not applicable.

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(standards.iteh.ai)
SIST EN 50625-2-4:2018
https://standards.iteh.ai/catalog/standards/sist/af10245c-37af-4b5d-a2c0-81e531a3668f/sist-en-50625-2-4-2018