



SLOVENSKI STANDARD
SIST EN 62321-7-2:2017

01-september-2017

Nadomešča:
SIST EN 62321:2009

**Določevanje posameznih substanc v elektrotehniških izdelkih - 7-2. del:
Šestvalentni krom - Določevanje šestvalentnega kroma (Cr(VI)) v polimerih in
elektroniki s kolorimetrično metodo**

Determination of certain substances in electrotechnical products - Part 7-2: Hexavalent chromium - Determination of hexavalent chromium (Cr(VI)) in polymers and electronics by the colorimetric method

Itch STANDARD PREVIEW
(standards.itech.ai)

[SIST EN 62321-7-2:2017](https://standards.itech.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017)
<https://standards.itech.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017>

Ta slovenski standard je istoveten z: EN 62321-7-2:2017

ICS:

29.020	Elektrotehnika na splošno	Electrical engineering in general
31.020	Elektronske komponente na splošno	Electronic components in general
71.040.50	Fizikalnokemijske analitske metode	Physicochemical methods of analysis

SIST EN 62321-7-2:2017 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 62321-7-2:2017](https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017>

EUROPEAN STANDARD

EN 62321-7-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2017

ICS 31.020; 71.040.50

Supersedes EN 62321:2009 (partially)

English Version

Determination of certain substances in electrotechnical products
- Part 7-2: Hexavalent chromium - Determination of hexavalent
chromium (Cr(VI)) in polymers and electronics by the
colorimetric method
(IEC 62321-7-2:2017)

Détermination de certaines substances dans les produits
électrotechniques - Partie 7-2: Chrome hexavalent -
Détermination du chrome hexavalent (Cr(VI)) dans les
polymères et les produits électroniques par méthode
colorimétrique
(IEC 62321-7-2:2017)

Verfahren zur Bestimmung von bestimmten Substanzen in
Produkten der Elektrotechnik - Teil 7-2: Bestimmung von
sechswertigem Chrom (Cr(VI)) in Polymeren und Elektronik
durch kolorimetrische Verfahren
(IEC 62321-7-2:2017)

This European Standard was approved by CENELEC on 2017-05-02. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

<https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec->

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

EN 62321-7-2:2017**European foreword**

The text of document 111/408/CDV, future edition 1 of IEC 62321-7-2, prepared by IEC/TC 111 "Environmental standardization for electrical and electronic products and systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62321-7-2:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-02-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-05-02

This document supersedes EN 62321:2009 (partially).

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.

Endorsement notice

The text of the International Standard IEC 62321-7-2:2017 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 62321:2008	NOTE Harmonized as EN 62321:2009. SIST EN 62321-7-2:2017
IEC 62321-2	NOTE Harmonized as EN 62321-2. https://standards.iteh.ai/catalog/standards/sist/en-62321-7-2-2017
ISO 648	NOTE Harmonized as EN ISO 648.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62321-1	-	Determination of certain substances in electrotechnical products -- Part 1: Introduction and overview	EN 62321-1	-
ISO 3696	-	Water for analytical laboratory use - Specification and test methods	EN ISO 3696	-

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 62321-7-2:2017](https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 62321-7-2:2017](https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017>



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Determination of certain substances in electrotechnical products –
Part 7-2: Hexavalent chromium – Determination of hexavalent chromium (Cr(VI))
in polymers and electronics by the colorimetric method**

**Détermination de certaines substances dans les produits électrotechniques –
Partie 7-2: Chrome hexavalent – Détermination du chrome hexavalent (Cr(VI))
dans les polymères et les produits électroniques par méthode colorimétrique**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.020; 71.040.50

ISBN 978-2-8322-4085-4

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms, definitions and abbreviated terms	6
3.1 Terms and definitions.....	6
3.2 Abbreviated terms.....	7
4 Reagents.....	7
4.1 General.....	7
4.2 Reagents	7
5 Apparatus.....	8
5.1 General.....	8
5.2 Apparatus	8
6 Sampling	9
7 Test procedure	9
7.1 Extraction of Cr(VI) in soluble polymers – ABS, PC and PVC matrixes.....	9
7.2 Extraction of Cr(VI) in insoluble/unknown polymers and electronics – without Sb.....	10
8 Calibration.....	11
8.1 Permanent calibration instruments.....	11
8.2 Traditional calibration instruments.....	11
8.2.1 General.....	11
9 Calculation	12
10 Precision	13
11 Quality assurance and control	14
11.1 General method	14
11.2 Matrix spike recovery correction method	14
12 Limits of detection (LOD) and limits of quantification (LOQ).....	14
12.1 General.....	14
12.2 Determination of LOD and LOQ	15
13 Test report.....	16
Bibliography.....	17
Table 1 – Statistical data of all IIS trails.....	13
Table 2 – Method detection limit = $t \times s_{n-1}$	16

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DETERMINATION OF CERTAIN SUBSTANCES
IN ELECTROTECHNICAL PRODUCTS –****Part 7-2: Hexavalent chromium – Determination of hexavalent chromium
(Cr(VI)) in polymers and electronics by the colorimetric method**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62321-7-2 has been prepared by IEC technical committee 111: Environmental standardization for electrical and electronic products and systems.

The first edition of IEC 62321:2008 was a 'stand-alone' standard that included an introduction, an overview of test methods, a mechanical sample preparation as well as various test method clauses.

This first edition of IEC 62321-7-2 is a partial replacement of IEC 62321:2008, forming a structural revision and generally replacing Annex C. IEC 62321-7-2 is the final replacement part of the corresponding clauses in IEC 62321:2008.

The text of this standard is based on the following documents:

CDV	Report on voting
111/408/CDV	111/432/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62321 series, published under the general title *Determination of certain substances in electrotechnical products*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 62321-7-2:2017](#)

<https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017>

INTRODUCTION

The widespread use of electrotechnical products has drawn increased attention to their impact on the environment. In many countries all over the world this has resulted in the adaptation of regulations affecting wastes, substances and energy use of electrotechnical products.

The use of hexavalent chromium in electrotechnical products is of concern in many regions of the world.

The purpose of this document is therefore to provide test methods that will allow the electrotechnical industry to determine the levels of hexavalent chromium in electrotechnical products on a consistent global basis.

WARNING – Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 62321-7-2:2017](https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017)

<https://standards.iteh.ai/catalog/standards/sist/62fb91cd-098c-4bf4-a5ec-0b63ca10bf50/sist-en-62321-7-2-2017>