

STN	Stanovenie obsahu určených látok v elektrotechnických výrobkoch. Časť 7-1: Stanovenie prítomnosti šesťmocného chrómu (Cr(VI)) kolorimetrickou metódou vo farebných a bezfarebných protikorózných povlakoch na kovoch.	STN EN 62321-7-1 34 6705
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Determination of certain substances in electrotechnical products - Part 7-1: Determination of the presence of hexavalent chromium (Cr(VI)) in colorless and colored corrosion-protected coatings on metals by the colorimetric method

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/16

Obsahuje: EN 62321-7-1:2015, IEC 62321-7-1:2015

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Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, 2016
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ICS 13.020; 43.040.10

English Version

Determination of certain substances in electrotechnical products
- Part 7-1: Determination of the presence of hexavalent
chromium (Cr(VI)) in colorless and colored corrosion-protected
coatings on metals by the colorimetric method
(IEC 62321-7-1:2015)

Détermination de certaines substances dans les produits
électrotechniques - Partie 7-1: Chrome hexavalent -
Présence de chrome hexavalent (Cr(VI)) dans les
revêtements incolores et colorés de protection anticorrosion
appliqués sur les métaux à l'aide de la méthode
colorimétrique
(IEC 62321-7-1:2015)

Verfahren zur Bestimmung von bestimmten Substanzen in
Produkten der Elektrotechnik - Teil 7-1: Bestimmung des
Vorliegens von sechswertigem Chrom (Cr(VI)) in farblosen
und farbigen Korrosionsschutzüberzügen auf Metallen
durch das kolorimetrische Verfahren
(IEC 62321-7-1:2015)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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European foreword

The text of document 111/380/FDIS, future edition 1 of IEC 62321-7-1, 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 62321-7-1:2015.

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) 2016-07-21
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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

ISO 3613	NOTE	Harmonized as EN ISO 3613.
ISO 648	NOTE	Harmonized as EN ISO 648.
DIN EN 15205:2007	NOTE	Harmonized as EN 15205:2006..

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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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	-
IEC 62321-2	-	Determination of certain substances in electrotechnical products -- Part 2: Disassembly, disjunction and mechanical sample preparation	EN 62321-2	-
ISO 78-2	-	Chemistry_ - Layouts for standards_ - Part_2: Methods of chemical analysis	-	-
ISO 3696	-	Water for analytical laboratory use - Specification and test methods	EN ISO 3696	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Determination of certain substances in electrotechnical products –
Part 7-1: Hexavalent chromium – Presence of hexavalent chromium (Cr(VI)) in
colourless and coloured corrosion-protected coatings on metals by the
colorimetric method**

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les revêtements incolores et colorés de protection anticorrosion appliqués sur
les métaux à l'aide de la méthode colorimétrique**



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CONTENTS

FOREWORD	3
INTRODUCTION	5
1 Scope	6
2 Normative references	6
3 Terms, definitions and abbreviations	7
3.1 Terms and definitions	7
3.2 Abbreviations	7
4 Reagents	7
4.1 General	7
4.2 Reagents	7
5 Apparatus	7
5.1 General	7
5.2 Apparatus	7
6 Sampling	8
7 Boiling water extraction procedure	8
8 Calibration	11
8.1 Permanent calibration instruments	11
8.2 Traditional calibration instruments	11
9 Calculation	11
10 Precision	12
11 Quality assurance and control	12
11.1 Colorimetric instrument performance verification	12
11.2 Limits of detection (LOD) and limits of quantification (LOQ)	12
12 Test report	13
Annex A (informative) International inter-laboratory study on corrosion-protected coatings – Data overview	16
Bibliography	18
Figure 1 – Screw body and screw head measurements	9
Figure A.1 – Concentration of chromium VI based on surface area for all samples	16
Figure A.2 – Concentration of chromium VI based on surface area – Expanded view between 0 µg/cm ² to 1 µg/cm ²	17
Table 1 – Comparison to standard solution and interpretation of results	11
Table 2 – Student's <i>t</i> values used for calculation of method detection limit (LOD or MDL = <i>t</i> -statistic × standard deviation (sn-1))	13
Table 3 – Reporting table	14
Table 4 – Example of a completed reporting table	15

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DETERMINATION OF CERTAIN SUBSTANCES
IN ELECTROTECHNICAL PRODUCTS –****Part 7-1: Hexavalent chromium – Presence of hexavalent chromium (Cr(VI))
in colourless and coloured corrosion-protected coatings
on metals by the colorimetric method**

FOREWORD

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International Standard IEC 62321-7-1 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 62321-7-1 is a partial replacement of IEC 62321:2008, forming a structural revision and generally replacing informative Annex B.

Future parts in the IEC 62321 series will gradually replace the corresponding clauses in IEC 62321:2008. Until such time as all parts are published, however, IEC 62321:2008 remains valid for those clauses not yet re-published as a separate part.

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

FDIS	Report on voting
111/380/FDIS	111/393/RVD

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

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

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

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INTRODUCTION

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

The use of certain substances (e.g. lead (Pb), cadmium (Cd) and polybrominated diphenylethers (PBDE's)) in electrotechnical products is a source of concern in current and proposed regional legislation.

The purpose of the IEC 62321 series is therefore to provide test methods that will allow the electrotechnical industry to determine the levels of certain substances of concern in electrotechnical products on a consistent global basis.

WARNING – Persons using this International Standard should be familiar with normal laboratory practice. This standard 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.

DETERMINATION OF CERTAIN SUBSTANCES IN ELECTROTECHNICAL PRODUCTS –

Part 7-1: Hexavalent chromium – Presence of hexavalent chromium (Cr(VI)) in colourless and coloured corrosion-protected coatings on metals by the colorimetric method

1 Scope

This part of IEC 62321 describes a boiling water extraction procedure intended to provide a qualitative determination of the presence of hexavalent chromium (Cr(VI)) in colourless and coloured corrosion-protection coatings on metallic samples.

Due to its highly reactive nature, the concentration of Cr(VI) in a corrosion-protection coating can change drastically with time and storage conditions. Since storage conditions prior to sample submission are not often known or provided with the samples, this procedure determines the presence of Cr(VI) based on the levels detected in the coatings at the time of testing. For testing of freshly coated samples, a minimum waiting period of 5 days (after the coating process) is necessary to ensure the coatings have stabilized. This waiting period allows potential post-process oxidation of Cr(III) to Cr(VI) to occur prior to testing.

The presence of Cr(VI) is determined by the mass of Cr(VI) per surface area of the coating, in $\mu\text{g}/\text{cm}^2$. This approach is preferred since corrosion-protection coating weights are often difficult to measure accurately after production. From a coating technology perspective, the industry as a whole has transitioned to either using the non-Cr(VI) based chemistries – where little to no Cr(VI) should be present – or using the traditional Cr(VI) based chemistries – where significant levels of Cr(VI) are present and can be detected reliably. Given this industry shift, the presence or absence of Cr(VI) is often sufficient for compliance testing purposes.

In this procedure, when Cr(VI) in a sample is detected below the $0,10 \mu\text{g}/\text{cm}^2$ LOQ (limit of quantification), the sample is considered to be negative for Cr(VI). Since Cr(VI) may not be uniformly distributed in the coating even within the same sample batch, a “grey zone” between $0,10 \mu\text{g}/\text{cm}^2$ and $0,13 \mu\text{g}/\text{cm}^2$ has been established as “inconclusive” to reduce inconsistent results due to unavoidable coating variations. In this case, additional testing may be necessary to confirm the presence of Cr(VI). When Cr(VI) is detected above $0,13 \mu\text{g}/\text{cm}^2$, the sample is considered to be positive for the presence of Cr(VI) in the coating layer.

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.

IEC 62321-1, *Determination of certain substances in electrotechnical products – Part 1: Introduction and overview*

IEC 62321-2, *Determination of certain substances in electrotechnical products – Part 2: Disassembly, disjointment and mechanical sample preparation*

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