



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 15192:2021

Soil and waste - Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection (ISO 15192:2021)

**I.S. EN ISO 15192:2021**

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## National Foreword

I.S. EN ISO 15192:2021 is the adopted Irish version of the European Document EN ISO 15192:2021, Soil and waste - Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection (ISO 15192:2021)

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**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
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**EN ISO 15192**

July 2021

ICS 13.080.10

Supersedes EN 15192:2006

English Version

**Soil and waste - Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection (ISO 15192:2021)**

Déchets et sols - Dosage du chrome(VI) dans les matériaux solides par digestion alcaline et chromatographie ionique avec détection spectrophotométrique (ISO 15192:2021)

Charakterisierung von Abfällen und Boden - Bestimmung von sechswertigem Chrom in Feststoffen durch alkalischen Aufschluss und Ionenchromatographie mit photometrischer Detektion (ISO 15192:2021)

This European Standard was approved by CEN on 26 June 2021.

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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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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**EN ISO 15192:2021 (E)**

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## **European foreword**

This document (EN ISO 15192:2021) has been prepared by Technical Committee ISO/TC 190 "Soil quality" in collaboration with Technical Committee CEN/TC 444 "Environmental characterization of solid matrices" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2022, and conflicting national standards shall be withdrawn at the latest by January 2022.

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

This document supersedes EN 15192:2006.

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According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## **Endorsement notice**

The text of ISO 15192:2021 has been approved by CEN as EN ISO 15192:2021 without any modification.

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# **INTERNATIONAL STANDARD**

**ISO  
15192**

Second edition  
2021-06

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## **Soil and waste — Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection**

*Déchets et sols — Dosage du chrome(VI) dans les matériaux solides  
par digestion alcaline et chromatographie ionique avec détection  
spectrophotométrique*



Reference number  
ISO 15192:2021(E)

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## ISO 15192:2021(E)

### Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 190, *Soil quality*, Subcommittee SC 3, *Chemical and physical characterization*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 444, *Environmental Characterization*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 15192:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the text has been editorially revised, including updating of references.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## **Introduction**

Under environmental conditions chromium in compounds exists in the trivalent, Cr(III), or the hexavalent, Cr(VI) state. Chromium is an essential trace element for mammals, including man, whereas it is presumed that Cr(VI) compounds are genotoxic and potentially carcinogenic in humans. Interconversion of trivalent and hexavalent chromium species can occur during sample preparation and analysis, but these processes are minimised, to the extent possible, by the sample preparation methods prescribed by this document.



# Soil and waste — Determination of Chromium(VI) in solid material by alkaline digestion and ion chromatography with spectrophotometric detection

## 1 Scope

This document specifies the determination of Cr(VI) in solid waste material and soil by alkaline digestion and ion chromatography with spectrophotometric detection. This method can be used to determine Cr(VI)-mass fractions in solids higher than 0,1 mg/kg.

NOTE In case of reducing or oxidising waste matrix no valid Cr(VI) content can be reported.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8466-1, *Water quality - Calibration and evaluation of analytical methods and estimation of performance characteristics - Part 1: Statistical evaluation of the linear calibration function*

ISO 11464, *Soil quality — Pretreatment of samples for physico-chemical analysis*

ISO 11465, *Soil quality — Determination of dry matter and water content on a mass basis — Gravimetric method*

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

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

EN 15934, *Sludge, treated biowaste, soil and waste — Calculation of dry matter fraction after determination of dry residue or water content*

## 3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Safety remarks

Anyone dealing with waste and soil analysis shall be aware of the typical risks of the material irrespective of the parameters determined. Waste and soil samples may contain hazardous (e.g. toxic, reactive, flammable, infectious) substances, which can be liable to biological and/or chemical reaction. Consequently, these samples should be handled with special care. The gases which may be produced by microbiological or chemical activity are potentially flammable and can pressurise sealed bottles. Bursting bottles are likely to result in hazardous shrapnel, dust and/or aerosol. It is presupposed that national regulations are followed with respect to all hazards associated with this method.

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