
Irish Standard Recommendation
S.R. CEN/TS 17775:2022

# Organic and organo-mineral fertilizers - Determination of the inorganic arsenic content

**S.R. CEN/TS 17775:2022**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

| *This document is based on:* | *Published:* |
|---|---|
| CEN/TS 17775:2022 | 2022-04-06 |

| *This document was published* under the authority of the NSAI and comes into effect on: | ICS number: |
|---|---|
| 2022-04-24 | 65.080 |
| | NOTE: If blank see CEN/CENELEC cover page |


| | | |
|---|---|---|
| NSAI | T +353 1 807 3800 | Sales: |
| 1 Swift Square, | F +353 1 807 3838 | T +353 1 857 6730 |
| Northwood, Santry | E standards@nsai.ie | F +353 1 857 6729 |
| Dublin 9 | W NSAI.ie | W standards.ie |

Údarás um Chaighdeáin Náisiúnta na hÉireann

## National Foreword

S.R. CEN/TS 17775:2022 is the adopted Irish version of the European Document CEN/TS 17775:2022, Organic and organo-mineral fertilizers - Determination of the inorganic arsenic content

This document does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

For relationships with other publications refer to the NSAI web store.

**Compliance with this document does not of itself confer immunity from legal obligations.**

*In line with international standards practice the decimal point is shown as a comma (,) throughout this document.*

This page is intentionally left blank

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

# CEN/TS 17775

April 2022

ICS 65.080

English Version

# Organic and organo-mineral fertilizers - Determination of the inorganic arsenic content

Engrais organiques et organo-minéraux - Détermination de la teneur en arsenic inorganique

Organische und organisch-mineralische Düngemittel - Bestimmung des Gehalts an anorganischem Arsen

This Technical Specification (CEN/TS) was approved by CEN on 13 March 2022 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of 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 United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**



Ref. No. CEN/TS 17775:2022 E

# Contents

Page

# European foreword

This document (CEN/TS 17775:2022) has been prepared by Technical Committee CEN/TC 260 “Fertilizers and liming materials”, the secretariat of which is held by DIN.

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 has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: 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.

# Introduction

This document describes a procedure of extraction and measurement for the determination of inorganic arsenic in organic or organo-mineral fertilizers. This Technical Specification is based on a mild acid oxidative extraction of the arsenic species followed by liquid chromatography (High Performance Liquid Chromatography [HPLC] or ion chromatography [IC]) coupled to the element-specific detector ICP-MS (Inductively Coupled Plasma Mass Spectrometer) for the determination of the mass fraction of inorganic arsenic (iAs).

# 1 Scope

This document specifies a method for extraction, separation, and determination of inorganic arsenic (iAs) in organic or organo-mineral fertilizers using anion-exchange HPLC or IC coupled to ICP-MS.

# 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.

EN 1482-2:2007, *Fertilizers and liming materials — Sampling and sample preparation — Part 2: Sample preparation*

# 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 https://www.electropedia.org/

# 4 Principle

This document describes a method for the determination of inorganic arsenic in organic or organo-mineral fertilizers. Inorganic arsenic consists of arsenite As(III) and arsenate, As(V). A representative test portion of the sample is treated with a diluted nitric acid and hydrogen peroxide solution in a heated water bath. By this means the sample is solubilised, arsenic species are extracted into solution and As(III) is oxidised to As(V). The inorganic arsenic is selectively separated from other arsenic compounds using anion exchange HPLC (High Performance Liquid Chromatography) coupled on-line to the element-specific detector ICP-MS (Inductively Coupled Plasma Mass Spectrometer) for the determination of the mass fraction of the inorganic arsenic. External calibration with solvent matrix-matched standards is used for the quantification of the amount of the inorganic arsenic. Alternatively, IC (ion chromatography) coupled to ICP-MS can be used.

A preliminary determination of the total arsenic in aqua regia extracts by inductively coupled plasma atomic emission spectrometry [ICP-AES] (CEN/TS 17770) could reduce the number of the samples where the determination of iAs is necessary because if the content of aqua regia (total) extractable arsenic is lower than the legislative limit for iAs then the determination of iAs is not necessary.

# 5 Sampling

Sampling should be performed carefully, following principle described in EN 1482 (all parts) with appropriate adaptations required account for specificities of organic and organo-mineral fertilizers.