

**Plastics - Polyamides - Determination of  $\epsilon$ -caprolactam  
and  $\omega$ -laurolactam by gas chromatography (ISO  
11337:2023)**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 11337:2023 sisaldab Euroopa standardi EN ISO 11337:2023 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 11337:2023 consists of the English text of the European standard EN ISO 11337:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.02.2023.	Date of Availability of the European standard is 01.02.2023.
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English Version

Plastics - Polyamides - Determination of  $\epsilon$ -caprolactam  
and  $\gamma$ -lauro lactam by gas chromatography (ISO  
11337:2023)

Plastiques - Polyamides - Détermination du  $\epsilon$ -  
caprolactame et du  $\gamma$ -lauro lactame par  
chromatographie en phase gazeuse (ISO 11337:2023)

Kunststoffe - Polyamide - Gaschromatographische  
Bestimmung von  $\epsilon$ -Caprolactam und  $\gamma$ -Lauro lactam  
(ISO 11337:2023)

This European Standard was approved by CEN on 6 January 2023.

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

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

## European foreword

This document (EN ISO 11337:2023) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 "Plastics" the secretariat of which is held by NBN.

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of an identical text or by endorsement, at the latest by August 2023, and conflicting national standards shall be withdrawn at the latest by August 2023.

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 ISO 11337:2010.

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

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## Endorsement notice

The text of ISO 11337:2023 has been approved by CEN as EN ISO 11337:2023 without any modification.

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## 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)).

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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 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 11337:2010), which has been technically revised.

The main changes are as follows:

- isopropanol has been added as suitable internal standard for method A;
- the use of packed and capillary columns has been indicated specifically;
- the specification of suitable detectors has been opened.

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).

# Plastics — Polyamides — Determination of $\epsilon$ -caprolactam and $\omega$ -lauro lactam by gas chromatography

**SAFETY STATEMENT** — Persons using this document should be familiar with normal laboratory practice, if applicable. This document does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

## 1 Scope

This document specifies a method for determining  $\epsilon$ -caprolactam and  $\omega$ -lauro lactam in polyamides by gas chromatography. It is applicable particularly to the determination of  $\epsilon$ -caprolactam in polyamide 6 and  $\omega$ -lauro lactam in polyamide 12.

Two variants of the basic method are specified.

- Method A is an extraction method with boiling methanol, and the extract is injected into a gas chromatograph.
- Method B is a method using a solvent, and the solution is injected into a gas chromatograph.

## 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 amendment) applies.

ISO 472, *Plastics — Vocabulary*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 apply.

ISO and IEC maintain terminology 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 Method A: Extraction method

### 4.1 Principle

A test portion is extracted with boiling methanol and a small volume of the extract is injected into a gas chromatograph equipped with a suitable detector to separate and detect the volatile components. The extract contains 1-dodecanol as an internal standard.

### 4.2 Reagents

During the analysis, use only reagents of recognized analytical grade.