

KIVISÜSI JA KOKS
Üldväävli määramine
Eschka meetod

Coal and coke
Determination of total sulfur
Eschka method
(ISO 334:2020, modified)

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-ISO 334-MOD:2020 „Kivisüsi ja koks. Üldväävli määramine. Eschka meetod“ sisaldab rahvusvahelise standardi ISO 334:2020 „Coal and coke. Determination of total sulfur. Eschka method“ modifitseeritud ingliskeelset teksti.	This Estonian Standard EVS-ISO 334-MOD:2020 consists of the modified English text of the International Standard ISO 334:2020 „Coal and coke. Determination of total sulfur. Eschka method“.
Ettepaneku rahvusvahelise standardi ümbertrüki meetodil ülevõtuks on esitanud EVS/TK 57, standardi avaldamist on korraldanud Eesti Standardikeskus.	Proposal to adopt the International Standard by reprint method has been presented by EVS/TK 57, the Estonian Standard has been published by the Estonian Centre for Standardisation.
Standard EVS-ISO 334-MOD:2020 on jõustunud sellekohase teate avaldamisega EVS Teatajas.	Standard EVS-ISO 334-MOD:2020 has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available at the Estonian Centre for Standardisation.

Käsitlusala

See dokument käsitleb üldväävli määramist kivisöes, pruunsöes ja ligniidis, koksis, **[MOD]** põlevkivis ja selle termilise töötlemise ja põletamise tahketes jääkides **[MOD]**, kasutades Eschka meetodit referentsmeetodina.

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Sellesse standardisse on sisse viidud täiendused, mis võimaldavad standardi alusel määrata üldväävli sisaldust põlevkivis ja selle termilise töötlemise ja põletamise tahketes jääkides, kasutades Eschka meetodit. Täiendused, mille algus ja lõpp on tähistatud märgisega **[MOD]**, on sisse viidud järgmistesse jaotistesse:

- Foreword;
- Introduction;
- peatükk 1;
- peatükk 2;
- peatükk 4;
- jaotis 5.5;
- peatükk 7;
- jaotised 8.1.1, 8.3.1, 8.4, 8.5, 8.7;
- Bibliography.

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ICS 73.040; 75.160.10

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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).

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).

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.

This document was prepared by Technical Committee ISO/TC 27, *Coal and coke*, Subcommittee SC 5, *Methods of analysis*.

This fourth edition cancels and replaces the third edition (ISO 334:2013), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- updating of referenced documents;
- amending of Introduction;
- adding of the provision of terms and definitions.

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.

[MOD] In Estonian modifications to this standard, the scope of the standard has been extended to oil shale and solid residues of its thermal processing and combustion, taking into account their specific properties. According to these differences, an alternative extraction method with water (8.5.a) was added. Additionally, some insignificant specifications have been added to the analysis conditions. **[MOD]**

Introduction

The objective of this document is to provide a reference method for determining the total sulfur content in coal and coke with Eschka method.

Instrumental methods for a more rapid determination of total sulfur are now available. If such a method is to be used, it is important to demonstrate that the method is free from bias, when compared to this reference method, and will give levels of repeatability and reproducibility which are the same as, or better than, those quoted for the reference method (see Clause 10).

[MOD] Estonian modifications are based on GOST 8606:2015, because this standard includes directly the determination of total sulfur content in oil shale by Eschka method. The Estonian standard EVS 668 describes the preparation of oil shale samples and moisture determination. **[MOD]**

1 Scope

This document specifies a reference method for determining the total sulfur content of hard coal, brown coals and lignites, coke, [MOD] oil shale, and solid residues of its thermal processing and combustion [MOD] by the Eschka method.

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 687. Solid mineral fuels — Coke — Determination of moisture in the general analysis test sample

ISO 1170. Coal and coke — Calculation of analyses to different bases

ISO 5068-2. Brown coals and lignites — Determination of moisture content — Part 2: Indirect gravimetric method for moisture in the analysis sample

ISO 11722. Solid mineral fuels — Hard coal — Determination of moisture in the general analysis test sample by drying in nitrogen

ISO 13909-4. Hard coal and coke — Mechanical sampling — Part 4: Coal — Preparation of test samples

ISO 18283. Hard coal and coke — Manual sampling

[MOD] EVS 668. Oil shale. Determination of moisture [MOD]

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 Principle

A test portion is ignited in intimate contact with the Eschka mixture in an oxidizing atmosphere at 800 °C to remove combustible matter and to convert the sulfur to sulfate. This is then extracted with hydrochloric acid solution [MOD] or water [MOD] and determined gravimetrically by precipitation with barium chloride.

5 Reagents

WARNING — Care should be exercised when handling the reagents, many of which are toxic and corrosive.