

OIL SHALE
Determination of moisture

Põlevkivi
Niiskuse määramine

NATIONAL FOREWORD

This Estonian standard is

- is the identical English version of the Estonian Standard EVS 668:2018 and it has the same status as the original Estonian version. In case of interpretation disputes the original version applies;
- endorsed with a notification published in the April 2019 issue of the official bulletin of the Estonian Centre for Standardisation.

The proposition to prepare this standard has been presented by Technical Committee EVS/TC 57 „Processing of Oil Shale and Oil Shale Products“, it has been coordinated by the Estonian Centre for Standardisation.

The standard has been prepared by the working group of Oil Shale Competency Center of Virumaa College in the Tallinn University of Technology, including the following members: Olga Pihl, head of the Research and Testing Laboratory of Fuel Technology; Hella Riisalu, senior researcher; Maria Tšepelevitš, chemical engineer, and Dmitri Suštšik, chemical engineer of the laboratory. The expert assessment of the standard draft was performed by Maaris Nuutre, chemical engineer of the Department of Energy Technology of the School of Engineering in the Tallinn University of Technology; Matti Laan, associate professor in optics and spectroscopy of the Plasma Physics Laboratory of the Institute of Physics in the University of Tartu; Märt Aints, senior researcher in optics and gas solutions in the Tartu University. The standard has been approved by EVS/TC 57.

Significant changes with respect to the previous version are as follows:

- amendment of the title of the standard in connection with the extension of the scope to the analysis of oil shale from other deposits worldwide;
- addition of options to use a moisture analyser also for determining the moisture content in the analysis test sample;
- changes concerning the precision of the determination of moisture content;
- changing and updating the structure of the standard according to the EVS Guides.

This document is a revision of the standard EVS 668:1996.

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Introduction

The previous version of this standard was prepared twenty years ago, taking account only of the needs for determining the moisture content in Estonian *kukersite* oil shale. By now, a need has arisen for the determination of properties also in oil shale from other deposits worldwide, as Estonian researchers and companies are involved in relevant research activities. In the course of developing the standard, the methods for determining moisture covered in the standard were checked for oil shale from eleven deposits. The results enable giving the title of the standard a more generic name, "Oil shale. Determination of moisture".

Instrumental methods for determining moisture in an analysis test sample which were not covered in the previous version of the standard have been added. Furthermore, terms and normative references used in the standard needed verification and updating.

In the case of oil shale analyses, the determination of moisture is required for the calculation of the results of most of analysis to different bases; therefore, it is relevant to cover the sampling and determination of moisture in the same standard. In the new version, the part concerning the taking of oil shale samples and the determination of moisture has been structured and described significantly more thoroughly than in the previous version of the standard.

Various moisture types characterise the samples of oil shale. This new version covers the same moisture types as in the previous version of the standard.

Relevant international and national standards were used for the preparation of the new version. Their list is provided in the "Bibliography".

1 Scope

This Estonian standard describes two- and single-stage methods for the determination of total moisture of oil shale, a method for the determination of moisture in an analysis sample, and the procedure for preparing the samples. The standard is valid for oil shale irrespective of the location of the deposit of origin.

Based on the standard, moisture is determined in a sample of trade oil shale as well as in samples taken for geological and technological research from layers, cores, tailings and other oil shale samples taken and prepared in accordance with a valid standard.

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 18283. Hard coal and coke – Manual sampling

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Sampling and preparation of samples

3.1.1

oil shale (*põlevkivi*)

solid mineral fuel consisting of organic matter (kerogen), carbonate and terrigenous constituents

3.1.2

kukersite oil shale (*kukersiitpõlevkivi*)

a carbonate oil shale located in the territory of Baltic oil shale basin

3.1.3

nominal size fraction (*klassi nominaalmõõde*)

nominal size fraction corresponds to the square-mesh aperture sizes of sieves provided that while sieving of oil shale, not more than 5% of the sample mass remain on a sieve with larger holes and not more than 5% of the sample mass pass through a sieve with smaller holes (for example, in a fraction of 25 mm to 125 mm, 25 mm is the lower and 125 mm is the upper nominal size, provided that the pieces smaller than 25 mm in the fraction would not exceed 5% of the initial mass of the sample, and the pieces larger than 125 mm in the fraction would not exceed 5% of the initial mass of the sample)

3.1.4

increment (*punktproov*)

an oil shale portion taken from an oil shale flow in a single operation of a sampling device or from a specific point of a stationary oil shale lot, and which characterises the properties of relevant flow or lot at the moment of sampling and at the point of sampling

3.1.5

common sample (*koondproov*)

a common sample is a amount of increments which is used in the operations specified in the standard for ensuring the precision of determination of moisture