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Hard coal — Determination of the crucible swelling number

Houille — Détermination de l'indice de gonflement au creuset

~~Copyright notice~~

~~This~~FDIS stage

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Contents

Foreword

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

This fifth edition cancels and replaces the fourth edition (ISO 501:2012), which has been technically revised.

The main changes are as follows:

— ~~—~~replaced the word ~~'should'~~"should" with ~~'shall'~~"shall" throughout the document;

— ~~Corrected~~corrected dimension expressions e.g. 26~~ ±~~ ± 1,0 mm to 26 mm~~ ±~~ ± 1 mm;

— ~~Standardised~~standardised the reporting of ½ as 0,5

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~~www.iso.org/members.html.

Hard coal — Determination of the crucible swelling number

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1 Scope

This document specifies a method for determining the swelling properties of hard coal when heated in a covered crucible.

NOTE The "crucible swelling number" (CSN) is also known as the "free swelling index" (FSI).

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 13909-‑4, *Coal and coke — Mechanical sampling — Part 4: Coal — Preparation of test samples*

ISO 18283, *Coal and coke — Manual sampling*

3 Terms and definitions

No terms and definitions are listed in this document.

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

— ——ISO Online browsing platform: available at https://www.iso.org/obphttps://www.iso.org/obp

— ——IEC Electropedia: available at https://www.electropedia.org/https://www.electropedia.org/

4 Principle

A sample of coal is heated in a covered crucible under standard conditions of time and temperature. The shape of the coke button obtained is classified by comparison with the outlines of a set of standard profiles.

5 Preparation of the test sample

The test sample shall be the general analysis test sample prepared in accordance with ISO 13909-4 and ISO 18283. Ensure that the moisture in the sample is in equilibrium with the laboratory atmosphere, exposing it, if necessary, in a thin layer for the minimum time required to achieve equilibrium.

The sample used for the crucible swelling number (CSN) test shall be ground to pass a 212 µm sieve. A small swing hammer crusher with rotary hammers is suitable for grinding samples, a mortar and pestle can be used to grind samples of low mass, e.g. less than 60 g. Avoid very fine grinding, as CSN can be adversely affected with pulverization level. Avoid the use of ring mills as the heat generated during very fine grinding can potentially oxidise the sample and adversely affect the CSN result. Once the sample is prepared to this size specification, the test shall be performed within 24 h in order to avoid oxidation and a potentially misleading CSN result.

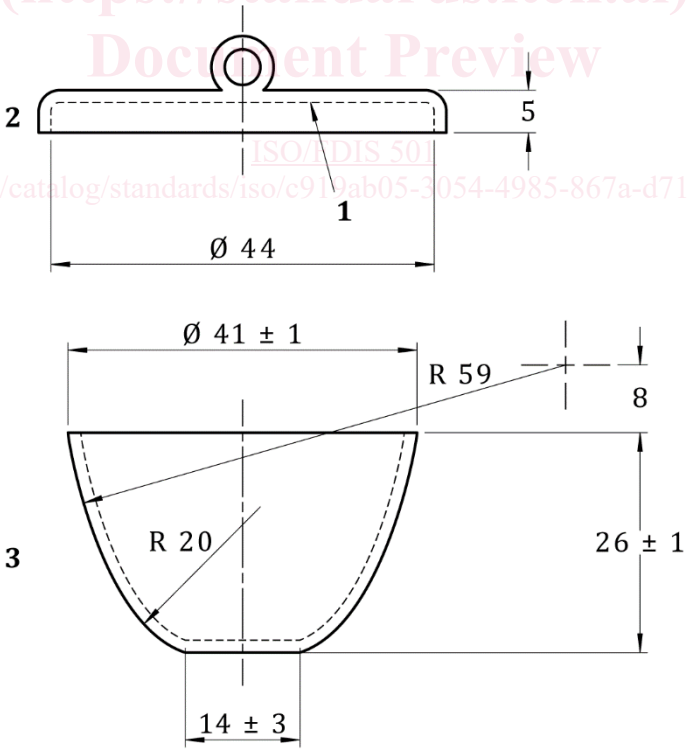
6 Apparatus

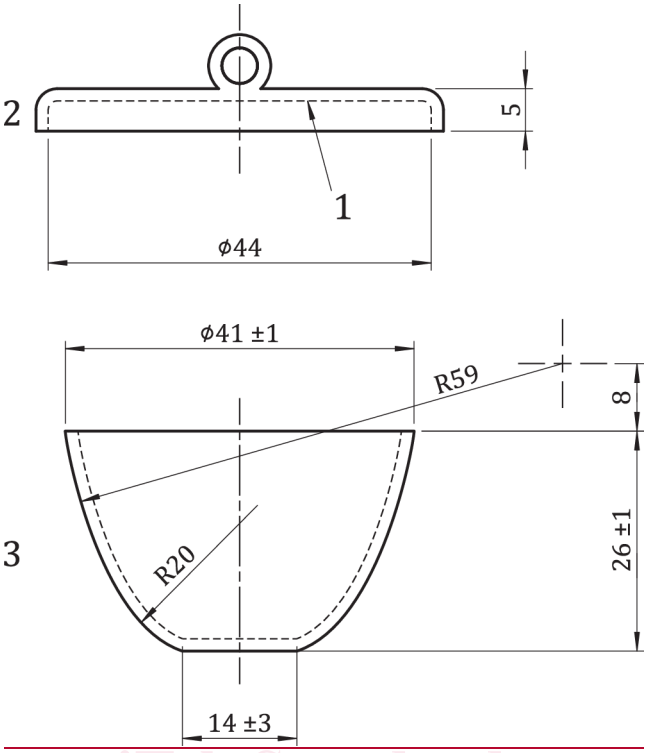
6.1 ~~**6.1**~~ **Crucible and lid** (see ~~**Figure 1)**~~:Figure 1): silica crucible, squat form, and silica lid with ring handle.

The crucible shall conform to the following specifications:

External height:	26 mm ± 1 mm
External diameter at top:	41 mm ± 1 mm
Internal diameter at base:	14 mm ± 3 mm
Mass:	12 g ± 1 g
Capacity:	16 ml to 17,5 ml

Dimensions in millimetres





Key

1 flat surface required
2 lid
3 crucible

Figure 1 — Crucible with lid for swelling test