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Coke —

Part 2: Determination of true relative density

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Foreword

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This document was prepared by Technical Committee ISO/TC 27, *Coal and coke*, Subcommittee SC 3, *Coke*.

This first edition of ISO 1014-2, together with ISO 1014-1 and ISO 1014-3, cancels and replaces ISO 1014:2021.

A list of all parts in the ISO 1014 series can be found on the ISO website.

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.

Coke —

Part 2:
Determination of true relative density

1 Scope

This document specifies the method for determining the true relative density of coke, in relation to water.

NOTE "True relative density" varies according to the displacement liquid used.

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 13909-6, *Coal and coke — Mechanical sampling — Part 6: Preparation of test samples of coke*

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/obp

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

4 Principle

The mass of water displaced by a known mass of dry coke, ground to pass through a 212 µm sieve, is determined using a pycnometer. Air is displaced by boiling during the determination. Distilled water is specified. Thermostatic control of the temperature is essential since a difference of 1 °C can cause an error of about 0,012 in the result.

5 Apparatus

5.1 Pycnometer, 50 ml capacity (see Figure 1).

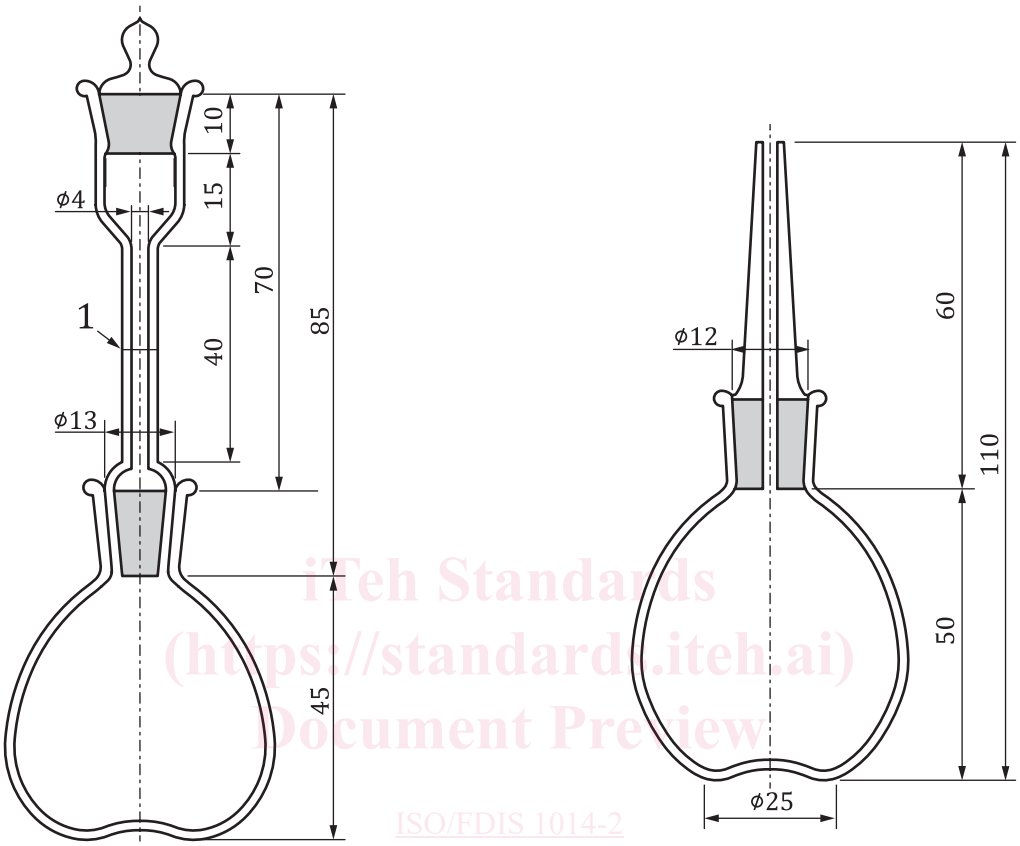
5.2 Water bath, with stirrer, thermostatically controlled to maintain a desired temperature θ °C to within ±1 °C.

5.3 Two wash bottles, each containing about 50 ml of distilled water. One wash bottle is kept hot (80 °C to 90 °C) and the other is left in the water bath (5.2).

5.4 Reflux air condenser: a glass tube about 1 m long, of the same external diameter as the neck of the pycnometer (5.1) with a short length of rubber tubing for attaching it to the latter.

5.5 Glycerol bath: a suitable vessel in which sufficient glycerol can be heated for the lower two-thirds of the pycnometer (5.1) to be immersed.

5.6 Analytical balance, with a resolution of at least 0,1 % relative of the test portion mass.



Key

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Figure 1 — Examples of pycnometers

6 Preparation of sample

The coke used for the determination is the general analysis sample, prepared to a nominal top size of 212 µm in accordance with ISO 13909-6 and ISO 18283. Before commencing the determination, mix the sample thoroughly for at least 1 min, preferably by mechanical means.

7 Procedure

7.1 Clean the pycnometer (5.1) using suitable reagents like a mixture of hydrogen peroxide and sulfuric acid or commercially available surfactant mixtures. If necessary, the cleaning can be enhanced by using an ultrasonic bath. After the cleaning step rinse thoroughly and fill with distilled water.

Fill the clean pycnometer (5.1), fill with distilled water. Insert the stopper and immerse the pycnometer up to the neck in the water bath (5.2) at θ °C for 1 h. The value of θ should be about 5 °C above the ambient temperature. At the end of 1 h, remove the blob of water from the top of the stopper with a piece of filter paper, remove the pycnometer from the water bath, rapidly cool to approximately ambient temperature