INTERNATIONAL STANDARD

ISO 540

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Solid mineral fuels — Determination of fusibility of ash — High-temperature tube method

Combustibles minéraux solides — Détermination de la fusibilité des cendres — Méthode du tube à haute température

Reference number
ISO 540:1995(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 540 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 5, *Methods of analysis*.

This third edition cancels and replaces the second edition (ISO 540:1981), which has been technically revised.

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Solid mineral fuels — Determination of fusibility of ash — High-temperature tube method

1 Scope

This International Standard specifies a method of determining the characteristic fusion temperatures of ash from solid mineral fuels.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1171:1981, *Solid mineral fuels — Determination of ash.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 deformation temperature (abbreviation: DT): The temperature at which the first signs of rounding, due to melting, of the tip or edges of the test piece occur.

NOTE 1 Shrinkage or distortion of the test piece, or rounding of cracks and fins, are not criteria for deformation, and should be ignored if the tip and edges remain sharp. However, for some solid mineral fuels, the temperature at which the test piece shrinkage begins could be of interest and should be reported as a feature noted during the determination.

3.2 sphere temperature (abbreviation: ST): In the case of pyramidal and truncated-cone test pieces, the temperature at which the height is equal to the width of the base, and in the case of cubical or cylindrical test pieces, the temperature at which the edges of the test pieces become completely round with the height remaining unchanged.

3.3 hemisphere temperature (abbreviation: HT): The temperature at which the test piece forms approximately a hemisphere, i.e. when the height becomes equal to half the base diameter.

3.4 flow temperature (abbreviation: FT): The temperature at which the ash is spread out over the supporting tile in a layer, the height of which is one-third of the height of the test piece at the hemisphere temperature.

4 Principle

A test piece made from the ash is heated under standard conditions and continuously observed. The temperatures at which characteristic changes of shape occur are recorded. The characteristic temperatures are defined in clause 3 (see also figures 1 to 3).

Although the determination is usually carried out in a reducing atmosphere, additional information can sometimes be obtained by carrying out a further determination in an oxidizing atmosphere. In general, the reducing atmospheres recommended give the lowest characteristic temperatures.

5 Reagents

5.1 Dextrin, 100 g/l solution.

Dissolve 10 g of dextrin in 100 ml of water.

5.2 Petroleum jelly.