
**Solid mineral fuels — Determination of
nitrogen — Semi-micro gasification method**

*Combustibles minéraux solides — Détermination de la teneur en azote —
Méthode semi-micrométrique par gazéification*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2002

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

Foreword.....	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Principle	1
4 Reagents	2
5 Apparatus	2
6 Preparation of the test sample	6
7 Procedure	6
8 Blank test	7
9 Expression of results	8
10 Precision	8
11 Test report	8
Annex A (informative) Derivation of factors used in calculations in this Technical Specification	9
Bibliography	10

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. 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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

- an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;
- an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years with a view to deciding whether it should be confirmed for a further three years, revised to become an International Standard, or withdrawn. In the case of a confirmed ISO/PAS or ISO/TS, it is reviewed again after six years at which time it has to be either transposed into an International Standard or withdrawn.

Attention is drawn to the possibility that some of the elements of this Technical Specification may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 11725 was prepared by Technical Committee ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 5, *Methods of analysis*.

Annex A of this Technical Specification is for information only.

Introduction

A method for the determination of nitrogen in coals, ISO 333, has been in use for many years, but experience has shown that it is unsuitable for cokes and some high carbon content coals and chars which require long reaction times with the potential loss of nitrogen from the system before completion of the test. The method described in this Technical Specification, based on JIS M 8813, addresses that shortcoming and is applicable to all solid fuels.

It has been prepared as a Technical Specification since there is at present little experience with the method outside Japan, where it was developed and tested.

Solid mineral fuels — Determination of nitrogen — Semi-micro gasification method

1 Scope

This Technical Specification specifies a method of determining the nitrogen content of hard coals, brown coals and lignites, cokes and chars by a semi-micro gasification method.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Technical Specification. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this Technical Specification are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 331, *Coal — Determination of moisture in the analysis sample — Direct gravimetric method*

ISO 687, *Coke — Determination of moisture in the general analysis test sample*

ISO 1015, *Brown coals and lignites — Determination of moisture content — Direct volumetric method*

ISO 1988, *Hard coal — Sampling*

ISO 2309, *Coke — Sampling*

ISO 5068, *Brown coals and lignites — Determination of moisture content — Indirect gravimetric method*

ISO 5069-2, *Brown coals and lignites — Principles of sampling — Part 2: Sample preparation for determination of moisture content and for general analysis*

ISO 9411-1, *Solid mineral fuels — Mechanical sampling from moving streams — Part 1: Coal*

ISO 9411-2, *Solid mineral fuels — Mechanical sampling from moving streams — Part 2: Coke*

3 Principle

A known mass of the sample is mixed with a flux and pyrolyzed at temperatures up to 1 000 °C in a silica tube through which steam is passing. Ammonia, which is formed from the nitrogen present, is absorbed in boric acid solution and determined by titration with sulfuric acid.