AS 1038.10.5.2—2007
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Australian Standard®

Coal and coke—Analysis and testing

Part 10.5.2: Coal and fly-ash—Trace elements—Determination of mercury content—Acid extraction method

This Australian Standard® was prepared by Committee MN-001, Coal and Coke. It was approved on behalf of the Council of Standards Australia on 8 March 2007.
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The following are represented on Committee MN-001:

- Australasian Institute of Mining and Metallurgy
- Australian Building Codes Board
- Australian Coal Association
- Australian Coal Preparation Society
- Australian Institute of Energy
- CSIRO Energy Technology
- Coalfield Geology Council of NSW
- Department of Mines and Energy, Qld
- Minerals Council of Australia
- National Generators Forum
- The University of New South Wales
- The University of Queensland
- University of Newcastle

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1038.10.5.2—2007
Coal and coke—Analysis and testing
Part 10.5.2: Coal and fly-ash—Trace elements—Determination of mercury content—Acid extraction method

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National Association of Testing Authorities Australia
The University of New South Wales
The University of Queensland
University of Newcastle

NOTES

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke, as a new Standard.

The objective of this Standard is to provide those responsible for testing coal, coke and fly-ash with a standardized method for measuring the mercury content by the acid extraction method.

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FOREWORD

The determination of trace elements in coal, coke and fly-ash remains an important issue and considerable emphasis is being placed on the effect of certain elements on the environment. International buyers maintain their awareness of the need for more detailed knowledge of the coals that they are purchasing and may request trace element analysis.

Internationally, mercury emissions from combustion of coal are of particular concern.

STANDARDS AUSTRALIA

Australian Standard

Coal and coke—Analysis and testing

Part 10.5.2: Coal and fly-ash—Trace elements—Determination of mercury content—Acid extraction method

1 SCOPE

This Standard sets out a method for the determination of mercury in coal and coal ash by extraction of the sample with acids and subsequent cold vapour atomic absorption (or fluorescence) spectrometry.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1038	Coal and coke—Analysis and testing
1038.3	Part 3: Proximate analysis of higher rank coal
1038.16	Part 16: Assessment and reporting of results
2243	Safety in laboratories (series)
2706	Numerical values—Rounding and interpretation of limiting values
4264	Coal and coke—Sampling
4264.1	Part 1: Higher rank coal—Sampling procedures
4264.2	Part 2: Coke—Sampling procedures

3 PRINCIPLE

Coal or coal ash is digested in a closed vessel with a mixture of nitric and hydrochloric acids. Mercury in the extract is completely oxidized with potassium permanganate solution. This solution is decolorized with hydroxylamine hydrochloride. An aliquot is reacted with stannous chloride to reduce the ionic mercury species to the elemental state. Mercury vapour is carried into the optical path of an atomic absorption spectrometer (or atomic fluorescence spectrometer) by a controlled flow of gas.

4 SAFETY

For information on laboratory safety, reference should be made to the relevant parts of AS 2243.

5 REAGENTS

5.1 General

Unless otherwise specified, all reagents shall be of analytical reagent grade or better and only distilled water, or water of equivalent purity (deionized water of resistivity greater than 10 MΩ-cm) shall be used.

5.2 Reagents

The following reagents shall be used: