Australian Standard™

Coal and coke—Analysis and testing

Part 10.5.1: Coal, coke and fly-ash—Trace elements—Determination of mercury content—Tube combustion method

Standards Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-001, Coal and Coke, to supersede AS 1038.10.5 — 1993, *Coal and coke — Analysis and testing*, Part 10.5: *Coal, coke and fly-ash — Trace elements — Determination of mercury content*.

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 tube combustion method.

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FOREWORD

The determination of trace elements in coal, coke and fly-ash remains an important issue owing to the considerable emphasis 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.

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1 SCOPE

This Standard sets out a method for the determination of mercury in coal, coke and fly-ash by sample combustion and cold vapour atomic absorption 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
1038.4 Part 4: Coke—Proximate analysis
1038.16 Part 16: Assessment and reporting of results
2134 Recommended practice for chemical analysis by atomic absorption spectrometry
2134.1 Part 1: Flame atomic absorption spectrometry
2243 Safety in laboratories (series)
2508 Safe storage and handling information card (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, coke or fly-ash is combusted in an oxidizing atmosphere. Mercury in the combustion gas products is absorbed in an acidified potassium permanganate solution. This solution is decolourized with dilute hydrogen peroxide, and an aliquot treated with a reductant, to reduce mercury species to the elemental state. Mercury vapour is carried into the optical path of an atomic absorption 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 and AS 2508.

5 REAGENTS

5.1 General

Unless otherwise specified, all reagents shall be of analytical reagent grade and only distilled water, or water of equivalent purity, shall be used.