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# Australian Standard 1038, Part 8—1980

## METHODS FOR THE ANALYSIS AND TESTING OF COAL AND COKE

## Part 8—CHLORINE IN COAL AND COKE

STANDARDS ASSOCIATION OF AUSTRALIA
*Incorporated by Royal Charter*



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THE FOLLOWING INDUSTRIAL, SCIENTIFIC AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Coal Association

Australian Institute of Energy

Australasian Institute of Mining and Metallurgy

Bureau of Steel Manufacturers of Australia

Coal Preparation Societies of NSW and Queensland

Confederation of Australian Industry

Department of Minerals and Energy, Victoria

Department of Mineral Resources, N.S.W.

Department of National Development

Electricity Supply Association of Australia

Institution of Engineers, Australia

Joint Coal Board

Queensland Coal Board

Royal Australian Chemical Institute

Universities

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This standard, prepared under the direction of Committee CH/15, Coal and Coke, was approved by the Chemical Standards Board on behalf of the Council of the Standards Association of Australia on 19 May 1980, and was published on 1 September 1980.

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AUSTRALIAN STANDARD

# METHODS FOR THE ANALYSIS AND TESTING OF COAL AND COKE

# Part 8 CHLORINE IN COAL AND COKE

## AS 1038, Part 8—1980

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# PREFACE

This standard was prepared by the Association's Committee on Coal and Coke, under the direction of the Chemical Standards Board, as part of the process of revision and metrication of standards for the analysis and testing of coal and coke. It replaces AS K152, Part 8—1965 which was the endorsement of BS 1016: Part 8: 1959, but which was withdrawn when BS 1016: Part 8 was revised in 1977. The new British standard was not endorsed in line with the Association's amended policy which favoured the publication of Australian standards in their own right.

The responsible committee in its consideration of a replacement for AS K152, Part 8—1965 took account of BS 1016: Part 8: 1977 and also of two relevant International standards emanating from ISO/TC 27, viz ISO 352 and ISO 587. In the present standard the two methods described are technically equivalent to the ISO methods for determining chlorine in coal and coke.

This standard requires reference to the following standards:

| | |
|---|---|
| AS 1038 | Methods for the Analysis and Testing of Coal and Coke<br>Part 6—Ultimate Analysis of Coal<br>Part 7—Ultimate Analysis of Coke<br>Part 16—Reporting of Results |
| AS 1152 | Test Sieves |
| AS 1676 | Methods for the Sampling of Hard Coal |
| AS 1898 | Methods for the Sampling of Coke |
| ISO 352 | Hard Coal and Coke—Determination of Chlorine—High Temperature Combustion Method |
| ISO 587 | Coal and Coke—Determination of Chlorine Using Eschka Mixture |

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STANDARDS ASSOCIATION OF AUSTRALIA

# Australian Standard

# METHODS FOR THE ANALYSIS AND TESTING OF COAL AND COKE

## PART 8—CHLORINE IN COAL AND COKE

**1 SCOPE.** This standard sets out two procedures for the determination of the chlorine content of coal and coke, viz the Eschka method and the high temperature combustion method.

NOTE: The presence of residual halogen-containing organic float and sink liquids in coal samples will affect the determination of chlorine.

**2 SAMPLE.** The coal and coke used for the determination of chlorine shall be the analysis sample ground to pass a 212 $\mu$m test sieve complying with AS 1152, taken and prepared according to AS 1676 or AS 1898, as appropriate. Coal samples shall be brought into equilibrium with the laboratory atmosphere by exposure in a thin layer on a tray. All samples, whether coal or coke, shall be thoroughly mixed, preferably by mechanical means, immediately before analysis.

**3 ESCHKA METHOD.**

**3.1 Principle.** A known mass of the sample is ignited in intimate contact with Eschka mixture in an oxidizing atmosphere at 675° C, to remove the organic material and to convert all the chlorine to chloride. This is then extracted in nitric acid and determined by a modified Volhard method.

**3.2 Reagents.**

**3.2.1** *General.* Unless otherwise specified, all reagents shall be of analytical reagent quality. Distilled or deionized water shall be used throughout.

**3.2.2** *Special reagents.*

**3.2.2.1** Eschka mixture. A mixture composed of two parts by mass of light magnesium oxide and one part by mass of anhydrous sodium carbonate.

**3.2.2.2** Nitric acid, concentrated ($\rho_{20}$ 1420 kg/m$^3$).

**3.2.2.3** Silver nitrate solution (0.025 mol/L).

**3.2.2.4** Potassium thiocyanate solution (0.025 mol/L).

**3.2.2.5** *n*-hexanol.