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Australian Standard 2646.4—1984

SAMPLING OF SOLID MINERAL FUELS

Part 4—HARD COAL—SAMPLING FROM STATIONARY SITUATIONS

STANDARDS ASSOCIATION OF AUSTRALIA
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This Australian standard was prepared by Committee MN/1, Coal and Coke. It was approved on behalf of the Council of the Standards Association of Australia on 10 April 1984 and published on 4 June 1984.

The following interests are represented on Committee MN/1:

- Australasian Institute of Mining and Metallurgy
- Australian Coal Association
- Australian Coal Industry Research Laboratories Ltd
- Australian Institute of Energy
- Bureau of Steel Manufacturers of Australia
- Coal Preparation Societies of New South Wales and Queensland
- Confederation of Australian Industry
- CSIRO, Division of Fossil Fuels
- Department of Mineral Resources, N.S.W.
- Department of Mines, Qld
- Department of National Development
- Electricity Supply Association of Australia
- Institution of Engineers, Australia
- Joint Coal Board
- Queensland Coal Board
- Royal Australian Chemical Institute
- Standing Committee on Coalfield Geology, N.S.W.
- State Chemical Laboratory, Vic.
- Universities

Representatives of the following interests also participated in the drafting of this standard:

- Australian Iron and Steel Pty Ltd, Port Kembla
- The Broken Hill Proprietary Co. Ltd, Central Research Laboratories
- The Broken Hill Proprietary Co. Ltd, Newcastle
- Cargo Superintendents Co. (A/Asia) Pty Ltd
- Electricity Commission of New South Wales
- Level[illegible] Engineering
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AUSTRALIAN STANDARD

SAMPLING OF SOLID MINERAL FUELS

Part 4
HARD COAL—SAMPLING FROM STATIONARY SITUATIONS

AS 2646.4—1984

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PREFACE

This standard was prepared by the Association's Committee on Coal and Coke under the direction of the Minerals Standards Board as a replacement for part of AS 1676—1975, Methods for the Sampling of Hard Coal. It is one of a series of standards for the sampling of solid mineral fuels. The other standards in the series are as follows:

Part 1 Guide to the Use of Parts 2 to 8
Part 2 Hard Coal—Sampling from Moving Streams
Part 3 Coke—Sampling from Moving Streams*
Part 5 Coke—Sampling from Stationary Situations*
Part 6 Hard Coal—Preparation of Samples
Part 7 Coke—Preparation of Samples*
Part 8 Determination of Precision and Bias.

The revision became necessary because of changes in the techniques and apparatus used in the sampling of coal from stationary situations, e.g. stockpiles and wagons.

*In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
SAMPLING OF SOLID MINERAL FUELS

PART 4—HARD COAL—SAMPLING FROM STATIONARY SITUATIONS

1 SCOPE. This standard sets out methods for the sampling of hard coal from stationary situations for both routine and special purposes.

Stopped-belt sampling is specifically included but in situ sampling from coal seams is covered in AS 2617 and is excluded from this standard.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1152 Test Sieves

AS 2646 Sampling of Solid Mineral Fuels
- Part 2—Hard Coal—Sampling from Moving Streams
- Part 6—Hard Coal—Preparation of Samples
- Part 8—Determination of Precision and Bias

AS 2617 Guide for the Taking of Samples from Hard Coal Seams in Situ.

3 DEFINITIONS. For the purpose of this standard, the following definitions apply:

3.1 Coefficient of variation (v)—in mass-basis sampling, the percentage of the standard deviation(s) relative to the mean value ($\bar{x}$) of the mass of increments as shown below:

$$v\ (\%) = \frac{s}{\bar{x}} \times 100$$

3.2 Divided increment—the quantity of coal obtained by division of the increment in order to decrease its mass.

3.3 Division—the process of decreasing the sample mass (without modification of the particle size of the constituent pieces) where a representative part of the sample is retained while the remainder may be rejected.

3.4 Duplicate sampling—a particular case of replicate sampling (with only two replicate samples), for the purpose of estimating the average precision of sampling from a number of lots or sampling units.

3.5 Fixed rate division—a procedure for obtaining divided increments with masses proportional to the masses of the increments to be divided.

3.6 Gross sample—a sample formed when all the increments collected from a lot are combined for reduction to a laboratory sample; where two or more samples are formed from interleaved increments, these samples are designated duplicate samples or replicate samples as the case may be.

3.7 Increment—the quantity of coal taken by the operation of the sampling implement.

3.8 Lot—a quantity of coal delivered at one time. The lot may be composed of one or more sampling units.

3.9 Manual sampling—the operation of sampling when the increments forming subsamples and gross samples are taken by human effort using a hand-held implement.

3.10 Mass-basis sampling—the method of taking increments at uniform mass intervals throughout the sampling unit or lot.

3.11 Nominal top size—the size of aperture of the finest sieve (complying with AS 1152) through which a minimum of 95 percent of the mass of the material passes.

3.12 Random stratified sampling—the taking of increments at irregular intervals within constant intervals of time, mass or space.

3.13 Replicate sampling—the taking of increments from the lot or sampling unit at equal intervals of time, mass or space. The increments are placed in rotation into different containers to give several replicate samples of approximately equal mass. By the procedure of replicate sampling it is possible to estimate the precision of sampling.

3.14 Sampling unit—the discrete units (trains, sections of belt, daily production) which comprise the lot.

3.15 Standard deviation—the positive square root of the variance.

3.16 Strata—approximately equal parts of a lot or sampling unit based on intervals of time, mass or space.

3.17 Subsample—a quantity of coal, consisting of a number of increments taken from a part of the lot; also a composite of a number of increments each individually having been crushed and/or divided as necessary.

3.18 Systematic stratified sampling—the taking of increments within constant intervals of time, mass or space.

3.19 Time-basis sampling—the method of taking increments at uniform time intervals throughout the lot or sampling unit.

3.20 Variance—a measure of dispersion based on the mean squared deviation from the arithmetic mean.

Thus for a series of n observations $X_1, X_2, \ldots, n$ with mean $\bar{X} = \frac{1}{n} \Sigma X_i$, one of the expressions—

$$\frac{1}{n} \Sigma (X_i - \bar{X})^2 \text{ or } \frac{1}{n-1} \Sigma (X_i - \bar{X})^2$$

would be used.