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SAMPLING OF SOLID MINERAL FUELS Part 5—COKE—SAMPLING FROM STATIONARY SITUATIONS



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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
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AUSTRALIAN STANDARD

SAMPLING OF SOLID MINERAL FUELS
Part 5
COKE—SAMPLING FROM
STATIONARY SITUATIONS

AS 2646.5—1985

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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. It supersedes (in part) AS 1898—1976, Methods for the Sampling of Coke.

This standard is one of a series of standards dealing with 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 4—Hard Coal—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 standard has been produced in association with the preparation of standards on hard coal.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

SAMPLING OF SOLID MINERAL FUELS

PART 5—COKE—SAMPLING FROM STATIONARY SITUATIONS

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

Stopped-belt sampling is specifically included.

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

AS 1152 Test Sieves

AS 2646 Sampling of Solid Mineral Fuels,
Part 3—Coke—Sampling from Moving Streams
Part 7—Coke—Preparation of Samples
Part 8—Determination of Precision and Bias.

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 coke 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.

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

3.8 Lot—a quantity of coke 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 coke, 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 at regular 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, \dots, X_n with mean $\bar{X} = \frac{1}{n} \sum X_i$, the expression—

$$\frac{1}{n-1} \sum (X_i - \bar{X})^2$$

would be used.

4 ESTABLISHING A SAMPLING SCHEME.

4.1 General. The methods of sampling outlined in this standard, with the exception of stopped-belt sampling, should only be considered when the preferred method of sampling from a moving stream is not possible.