

ISO 18283:2022-03 (E)

Coal and coke - Manual sampling

Contents		Page
Foreword		v
Introduction		vii
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Establishing a sampling scheme	4
4.1	General	4
4.1.1	Sampling	4
4.1.2	Sampling scheme	5
4.1.3	Parameters	5
4.1.4	Sampling methods	5
4.2	Design of the sampling scheme	6
4.2.1	General	6
4.2.2	Coal or coke to be sampled and considerations for sampling	6
4.2.3	Division of lots	6
4.2.4	Precision of results	7
4.2.5	Bias of results	7
4.2.6	Requirements for test samples	7
4.3	Precision of sampling	8
4.3.1	General	8
4.3.2	Precision and total variance	8
4.3.3	Primary increment variance	9
4.3.4	Sub-lot variance	10
4.3.5	Preparation and testing variance	10
4.3.6	Number of sub-lots and number of increments per sub-lot	11
4.3.7	Minimum mass of samples for general analysis and determination of total moisture content	12
4.4	Checking the overall precision for the lot by calculation and selection of sampling scheme	15
4.5	Determination of acquired precision by replicate sampling	15
4.5.1	General	15
4.5.2	Method and calculation	15
4.5.3	Precision obtained using normal sampling scheme	16
4.6	Size analysis	16
5	Methods of sampling	17
5.1	General	17
5.2	Sampling by time interval (time-basis sampling)	17
5.3	Sampling by mass interval (mass-basis sampling)	18
5.4	Stratified random sampling	18
5.4.1	General	18
5.4.2	Stratified random sampling by time interval	18
5.4.3	Stratified random sampling by mass interval	18
5.5	Extracting the increment	18
5.6	Coal or coke in motion	19
5.6.1	General	19
5.6.2	Stopped belt	19
5.6.3	Falling stream	20

5.6.4	Moving belt.....	20
5.6.5	Stockpiles (building/reclaiming).....	21
5.6.6	Grabs/front-end loaders.....	21
5.6.7	Barges/trucks/railcars/wagons (loading/unloading).....	22
5.7	Moisture/common sample.....	22
5.8	Different coals or cokes.....	23
5.9	Random selection of increments.....	23
6	Sampling equipment.....	24
6.1	General.....	24
6.2	Examples.....	25
6.2.1	Ladles.....	25
6.2.2	Shovels.....	25
6.2.3	Scoops.....	25
6.2.4	Probes.....	25
6.2.5	Manual cutter.....	26
6.2.6	Stopped-belt sampling frame.....	26
7	Handling and storage of samples.....	28
7.1	Sample size.....	28
7.2	Time.....	28
7.3	Divided sample.....	29
7.4	Containers.....	29
7.5	Moisture loss/breakage or degradation.....	30
7.6	Identification/labelling.....	31
8	Sample preparation.....	31
8.1	General.....	31
8.2	Constitution of a sample.....	31
8.3	Division.....	32
8.3.1	General.....	32
8.3.2	Mechanical methods.....	33
8.3.3	Manual methods.....	36
8.4	Reduction.....	40
8.4.1	General.....	40
8.4.2	Reduction mills.....	40
8.5	Mixing.....	41
8.6	Air-drying of coal.....	41
8.7	Coal — Preparation of test samples.....	42
8.7.1	Types of test samples.....	42
8.7.2	Preparation of samples for determination of total moisture content.....	42
8.7.3	Preparation of samples for general analysis.....	43
8.7.4	Common samples.....	45
8.7.5	Preparation of size-analysis sample.....	47
8.7.6	Preparation of samples for other tests.....	48
8.7.7	Reserve sample.....	49
8.8	Coke — Preparation of test samples.....	49
8.8.1	Types of test samples.....	49
8.8.2	Preparation of coke samples for determination of total moisture content.....	50
8.8.3	Preparation of samples for general analysis.....	52
8.8.4	Storage.....	53
8.8.5	Physical test sample.....	53
8.8.6	Samples for special properties.....	53
8.8.7	Reserve sample.....	53
9	Packing and marking of samples.....	53
10	Sampling report.....	54
Annex A (informative) Example of calculation of precision, mass of increments, number of sub-lots and number of increments per sub-lot.....		55
Annex B (informative) Methods of sampling coal and coke from stationary lots.....		58
Bibliography.....		60