

ISO 10835:2007-02 (E)

Direct reduced iron and hot briquetted iron - Sampling and sample preparation

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	General considerations for sampling and sample preparation	3
4.1	Basic requirements	3
4.2	Establishing a sampling scheme	4
4.3	System verification	5
5	Fundamentals of sampling and sample preparation	5
5.1	Minimization of bias	5
5.1.1	General	5
5.1.2	Minimization of particle-size degradation	5
5.1.3	Extraction of increments	5
5.1.4	Increment mass	6
5.2	Overall precision	7
5.3	Quality variation	9
5.4	Sampling precision and number of primary increments	9
5.4.1	Mass-basis sampling	9
5.4.2	Time-basis sampling	9
5.5	Precision of sample preparation and overall precision	11
5.5.1	General	11
5.5.2	Preparation and measurement of gross sample	11
5.5.3	Preparation and measurement of partial samples	11
5.5.4	Preparation and measurement of each increment	11
6	Methods of sampling	12
6.1	Mass-basis sampling	12
6.1.1	Mass of increment	12
6.1.2	Quality variation	13
6.1.3	Number of primary increments	13
6.1.4	Sampling interval	13
6.1.5	Methods of taking increments	13
6.2	Time-basis sampling	14
6.2.1	Mass of increment	14
6.2.2	Quality variation	14
6.2.3	Number of increments	14
6.2.4	Sampling interval	14
6.2.5	Methods of taking increments	14
6.3	Stratified random sampling within fixed mass or time intervals	15
6.3.1	General	15
6.3.2	Fixed mass intervals	15
6.3.3	Fixed time intervals	15
7	Sampling from moving streams	15
7.1	General	15
7.2	Safety of operations	16
7.3	Robustness of sampling installation	16

7.4	Versatility of sampling system	16
7.5	Primary samplers	16
7.5.1	Location	16
7.5.2	Types of primary sampler	17
7.5.3	General design criteria for primary cutters	17
7.5.4	Cutter aperture of primary sampler	21
7.5.5	Cutter speed of primary sampler	21
7.6	Secondary and subsequent samplers	22
7.7	On-line sample preparation	22
7.7.1	Arrangement for sample preparation	22
7.7.2	Crushers	22
7.7.3	Dividers	22
7.7.4	Dryers	27
7.8	Checking precision and bias	27
7.9	Cleaning and maintenance	27
7.10	Example of a flowsheet	27
8	Sampling from stationary situations	29
9	Stopped-belt reference sampling	29
10	Sample preparation	30
10.1	Fundamentals	30
10.1.1	General	30
10.1.2	Crushing and grinding	30
10.1.3	Mixing	30
10.1.4	Sample division	30
10.1.5	Mass of divided sample	31
10.1.6	Split use and multiple use of sample	33
10.2	Method of constituting partial samples or a gross sample	33
10.2.1	General	33
10.2.2	Method of constitution for mass-basis sampling	33
10.2.3	Method of constitution for time-basis sampling	34
10.3	Mechanical methods of division	34
10.3.1	Mechanical increment division	34
10.3.2	Other mechanical-division methods	35
10.4	Manual methods of division	35
10.4.1	Manual increment division	35
10.4.2	Fractional shoveling	38
10.4.3	Manual riffle division method	39
10.5	Preparation of test sample for physical testing	40
10.6	Preparation of test sample for moisture determination	40
10.7	Preparation of test sample for chemical analysis	41
10.7.1	Mass and particle size	41
10.7.2	Preparation to - 250 μm	41
10.7.3	Final preparation to - 160 μm	42
10.7.4	Distribution of samples for chemical analysis	42
10.8	Example of sample-preparation process	43
11	Packing and marking of sample	43
	Annex A (informative) Inspection of mechanical sampling systems	45
	Annex B (normative) Equation for number of increments	49
	Annex C (normative) Riffle dividers	52