

ISO 11794:2010-10 (E)

Copper, lead, zinc and nickel concentrates - Sampling of slurries

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Principles of sampling slurries	2
4.1	General	2
4.2	Sampling errors	3
4.2.1	General	3
4.2.2	Preparation error, PE	4
4.2.3	Delimitation and extraction errors, DE and EE	4
4.2.4	Weighting error, WE	6
4.2.5	Periodic quality-fluctuation error, QE3	6
4.3	Sampling and total variance	6
4.3.1	Sampling variance	6
4.3.2	Total variance	6
4.3.3	Sampling-stage method of estimating sampling and total variance	8
4.3.4	Simplified method of estimating sampling and total variance	9
4.3.5	Interleaved sample method of measuring total variance	10
5	Establishing a sampling scheme	11
6	Minimization of bias and unbiased increment mass	16
6.1	Minimization of bias	16
6.2	Volume of increment for falling-stream samplers to avoid bias	17
7	Number of increments	17
7.1	General	17
7.2	Simplified method	18
8	Minimum mass of solids contained in lot and sub-lot samples	18
8.1	Minimum mass of solids in lot samples	18
8.2	Minimum mass of solids in sub-lot samples	18
8.3	Minimum mass of solids in lot and sub-lot samples after size reduction	18
9	Time-basis sampling	19
9.1	General	19
9.2	Sampling interval	19
9.3	Cutters	19
9.4	Taking of increments	19
9.5	Constitution of lot or sub-lot samples	20
9.6	Division of increments and sub-lot samples	20
9.7	Division of lot samples	20
9.8	Number of cuts for division	20
10	Stratified random sampling within fixed time intervals	20
11	Mechanical sampling from moving streams	21
11.1	General	21

11.2	Design of the sampling system	21
11.2.1	Safety of operators	21
11.2.2	Location of sample cutters	21
11.2.3	Provision for duplicate sampling	21
11.2.4	System for checking the precision and bias	21
11.2.5	Avoiding bias	22
11.3	Slurry sample cutters	22
11.3.1	General	22
11.3.2	Falling-stream cutters	23
11.3.3	Cutter velocities	23
11.4	Mass of solids in increments	23
11.5	Number of primary increments	23
11.6	Routine checking	23
12	Manual sampling from moving streams	24
12.1	General	24
12.2	Choosing the sampling location	24
12.3	Sampling implements	25
12.4	Mass of solids in increments	25
12.5	Number of primary increments	25
12.6	Sampling procedures	25
13	Sampling of stationary slurries	26
14	Sample preparation	26
14.1	General	26
14.2	Sample division	26
14.3	Sample grinding	26
14.4	Chemical analysis samples	26
14.5	Physical test samples	27
15	Packing and marking of samples	27
Annex A (normative) Sampling-stage method for estimating sampling and total variance		28
Annex B (informative) Examples of correct slurry sampling devices		34
Annex C (informative) Examples of incorrect slurry sampling devices		37
Annex D (normative) Manual sampling implements		41
Bibliography		42