



Certificate of Certified Reference Material

NCS DC 71307 — NCS DC 71310

Sulfide Minerals

Reissued in 2013

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

Certified Values and Standard Deviation

(µg/g)

No.		Ag	As	Bi	Cd	Co	Cu	Fe	Ga	Ge	In
NCS DC	Certified Value	0.59	(14.4)	2.9	0.71	(3.9)	431	46.08*	0.44	(0.2)	
71307	Standard Deviation	0.13		0.5	0.08		30	0.29*	0.14		
NCS DC	Certified Value	846	(3.1)	16.1	20.2	75.1	33.30*	30.30*	(0.3)		(66.6)
71308	Standard Deviation	40		2.4	1.0	4.2	0.17*	0.28*			4.8
NCS DC	Certified Value	0.97*	5.3	1.4	16.5	(0.4)	62.4	127	(0.3)	1.47	0.29
71309	Standard Deviation	0.02*	1.6	0.4	2.8		2.5	23		0.26	0.06
NCS DC	Certified Value	5.0	(3.3)	6.1	0.15*	491	0.10*	2.14*	251	6.0	21.0
71310	Standard Deviation	0.4		1.2	0.01*	23	0.01*	0.14*	18	0.7	1.4
No.		Mn	Ni	Pb	S*	Sb	Se	Sn	Te	Tl	Zn
NCS DC	Certified Value	28.9	34.0	(23.4)	52.72	1.1	5.8	(2.7)	0.95		219
71307	Standard Deviation	2.1	2.7		0.21	0.3	0.7		0.21		17
NCS DC	Certified Value	47.5	41.3	128	34.69	(2.7)	48.3	(5.8)	10.4		0.30*
71308	Standard Deviation	3.7	4.3	33	0.19		2.0		2.7		0.03*
NCS DC	Certified Value			84.26*	13.30	0.43*		0.11*	(0.07)	0.65	533
71309	Standard Deviation			0.36*	0.08	0.07*		0.01*		0.10	31
NCS DC	Certified Value	169	43.2	0.099*	32.33	249	(3.0)	(3.2)	(0.3)		62.51*
71310	Standard Deviation	8	4.0	0.013*	0.17	56					0.17*

Note:

- 1.The data in () is reference only. * means in percent.
- 2.Each certified value is the mean of analytical results of 7 independent laboratories.
- 3.The sample is powder packed in glass bottle. Each bottle contains 5 or 10 grams.
- 4.The sample should be stored in clean and drier.
- 5.The minimum weight for analysis is 100mg.
- 6.The valid time of the sample is 10 years, although we reserve the right to make change as issue revisions.

Analytical Methods

Element	Methods	Element	Methods
Ag	AAS;AAN;COL;ICP-MS;ICP-AFS;INAA;AES	In	AAN;COL;POL;AES;ICP-MS;ICP
As	AFS;COL;ICP-MS;INAA	Mn	AAS;COL;ICP;ICP-MS;ICP-AFS
Bi	AFS;COL;POL;ICP;ICP-MS;AES	Ni	AAS;COL;ICP;ICP-MS;AES
Cd	AAS;AAN;POL;ICP;ICP-MS;AES	Pb	VOL;AAS;POL;ICP-AFS;ICP;AES
Co	AAS;COL;ICP;AES;ICP-MS;INAA	S	GR;VOL
Cu	GR;VOL;AAS;COL;POL;ICP	Sb	AFS;COL;POL;ICP-MS;INAA
Fe	VOL;AAS;COL;ICP;ICP-AFS;INAA	Se	AFS;COL;POL;ICP-MS;ICP
Ga	AAN;COL;ICP-MS;AES	Sn	COL;POL;ICP-H;AES
Ge	COL;POL;ICP-H;ICP-MS;ICP;AES	Te	AFS;AAS;COL;POL
Ti	AAN;COL;ICP-MS;AES	Zn	VOL;AAS;POL;ICP;ICP-AFS;INAA

Note:

AAN: Non-flame Atomic Absorption Spectrometry

AAS: Atomic Absorption Spectrometry

AES: Atomic Emission Spectrography

AFS: Atomic Fluorescence Spectrophotometry

COL: Colorimetry

GR: Gravimetry

ICP-AFS: Inductively Coupled Plasma- Atomic Fluorescence Spectrophotometry

ICP-AES: Inductively Coupled Plasma- Atomic Emission Spectrography

ICP-MS: Inductively Coupled Plasma-Mass Spectrometry

ICP-H: Inductively Coupled Plasma-Hydride

INAA: Instrumental Neutron Activation Analysis

POL: Polarography

VOL: Volumetry



Professor Wang Haizhou, Chief

China National Analysis Center for Iron and Steel