Certificate of Certified Reference Materials

NCS DC 73347 — NCS DC 73351

DC73347	Hair
DC73348	Bush Branches and Leaves
DC73349	Bush Branches and Leaves
*DC73350	Leaves of Poplar *
DC73351	Tea

Issued in 2004

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

Element	analytical method	Element	analytical method
Ag	AAN ICP-MS INAA	Mo	AA COL ICP-MS POL
Al	COL ICP INAA XRF	N	COL VOL
As	AF ICP-MS INAA	Na	AA IC ICP INAA XRF
Au	AAN	Nb	ICP-MS
B	COL ES ICP ICP-MS	Nd	ICP ICP-MS INAA
Ba	AAN ICP ICP-MS INAA XRF	Ni	AA AAN ICP ICP-MS
Be	AAN ICP ICP-MS	P	COL ICP XRF
Bi	AF ICP-MS	Pb	AA AAN ES ICP ICP-MS POL XRF
Br	COL IC INAA XRF	Pr	ICP ICP-MS
Ca	AA ICP INAA XRF	Rb	AAN ICP-MS INAA XRF
Cd	AAN ICP-MS POL	Re	ICP-MS
Ce	AAN ICP-MS POL	S	COL IC ICP VOL XRF
Cl	COL IC INAA	Sb	AF INAA
Co	AA AAN ICP ICP-MS INAA	Sc	ICP ICP-MS INAA
Cr	AA ICP-MS INAA	Se	AF COL INAA
Cs	ICP-MS INAA	Si	COL GR XRF
Cu	AA ES ICP ICP-MS XRF	Sm	ICP ICP-MS INAA
Dy	ICP ICP-MS	Sn	ES ICP-MS POL
Er	ICP ICP-MS	Sr	AA ICP ICP-MS INAA XRF
Eu	ICP ICP-MS INAA	Ta	INAA
F	COL ISE	Tb	ICP ICP-MS INAA
Fe	AA ICP INAA XRF	Th	ICP-MS INAA
Ga	AAN ICP-MS	Ti	AA COL ICP XRF
Gd	ICP ICP-MS	Tl	ICP-MS
Hf	INAA	Tm	ICP ICP-MS
Hg	AA AF	U	ICP-MS INAA LF
Ho	ICP ICP-MS	V	ICP ICP-MS INAA POL XRF
K	AA IC ICP INAA XRF	W	COL POL
La	ICP ICP-MS INAA	Y	ICP ICP-MS
Li	AA AAN FP ICP ICP-MS	Yb	ICP ICP-MS INAA
Lu	ICP-MS INAA	Zn	AA ICP ICP-MS INAA XRF
Mg	AA ICP XRF	Zr	ICP-MS
Mn	AA ICP ICP-MS INAA XRF		

Note:

AA: Atomic Absorption Spectrometry
AAN: Non-Flame Atomic Absorption Spectrometry
AF: Atomic Fluorescence Spectrometry
COL: Colorimetry
ES: Emission Spectrography
FP: Flame Photometry
GR: Gravimetry
IC: Ion Chromatography
ICP: Inductively Coupled Plasma emission spectrometry
ICP-MS: ICP Mass Spectrometry
INAA: Instrument Neutron Activation Analysis method
ISE: Ion Selective Electrode method
LF: Laser Fluorescence Spectrometry
POL: Polarography
VOL: Volumetry
XRF: X-Ray Fluorescence Spectrometry

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China National Analysis Center for Iron and Steel

POPLAR LEAVES

CERTIFIED VALUES(Certification 1990, Revision 2003) OF REFERENCE MATERIAL FOR VEGETABLE AND HUMAN HAIR

μg/g	NCS DC 73347	NCS DC 73348	NCS DC 73349	NCS DC 73350	NCS DC 73351
Ag	0.029±0.008	0.027±0.006	0.049±0.007	(0.013)	(0.018)
Al%		0.214±0.022	0.20±0.03	0.104±0.006	(0.30)
As	0.28±0.05	0.95±0.12	1.25±0.15	0.37±0.09	0.28±0.04
Au ng / g	(2.5)				
B	(1.3)	34±7	38±6	53±5	15±4
Ba	17±2	19±3	18±2	26±4	58±6
Be	0.063±0.020	0.056±0.014	0.051±0.004	0.021±0.005	0.034±0.006
Bi	0.34±0.02	(0.022)	0.023±0.005	0.027±0.002	0.063±0.008
Br	(0.36)	2.4±0.4	3.0±0.4	7.2±1.4	3.4±0.5
Ca%	0.29±0.03	2.22±0.13	1.68±0.11	1.81±0.13	0.43±0.04
Cd	0.11±0.03	0.14±0.06	(0.38)	0.32±0.07	0.057±0.010
Ce	0.12±0.03	2.4±0.3	2.2±0.1	0.49±0.07	1.0±0.2
Cl%		(1.13)	(1.92)	(0.23)	
Co	0.071±0.012	0.39±0.05	0.41±0.05	0.42±0.03	0.18±0.02
Cr	0.37±0.06	2.3±0.3	2.6±0.2	0.55±0.07	0.80±0.03
Cs		0.27±0.03	0.27±0.02	0.053±0.003	0.29±0.02
Cu	10.6±1.2	5.2±0.5	6.6±0.8	9.3±1.0	17.3±1.8
Dy	(0.017)		(0.13)	(0.036)	(0.074)
Eu	(0.006)	0.037±0.002	0.039±0.003	0.009±0.003	0.018±0.002
F		24±3	23±4	22±4	320±31
Fe	54±10	1020±67	1070±57	274±17	264±15
Gd			(0.19)	(0.043)	(0.093)
Hf		0.14±0.02	(0.15)	(0.026)	(0.033)
Hg	0.36±0.08			0.026±0.003	(0.013)
Ho			(0.033)		(0.019)
K%	(0.002)	0.85±0.05	0.92±0.10	1.38±0.07	1.66±0.12
La	0.049±0.011	1.23±0.10	1.25±0.06	0.26±0.02	0.60±0.04
Li	2.0±0.1	2.4±0.4	2.6±0.4	0.84±0.15	(0.36)
Lu			(0.011)		(0.007)
Mg%	0.036±0.004	0.287±0.018	0.48±0.04	0.65±0.05	0.17±0.02
Mn	6.3±0.8	58±6	61±5	45±4	1240±70
Mo	0.073±0.014	0.26±0.04	0.28±0.05	0.18±0.01	0.038±0.007
N%	14.9±0.1	1.20±0.02	1.50±0.03	2.56±0.06	3.32±0.09
Na	152±17	1.[illegible]0±0.10%	1.96±0.18%	200±13	44±6
Nd		(1.1)	1.0±0.1	(0.22)	(0.44)
Ni	0.83±0.19	1.7±0.4	1.7±0.3	1.9±0.3	4.6±0.5
P	170±10	830±40	1000±40	1680±60	2840±90
Pb	8.8±1.1	7.1±1.1	47±3	1.5±0.3	4.4±0.3
Pr			(0.24)		(0.12)
Rb		4.2±0.2	4.5±0.6	7.6±0.8	74±5
S%	4.3±0.3	0.32±0.03	0.73±0.06	0.35±0.04	0.245±0.022
Sb	0.095±0.016	0.078±0.020	0.095±0.014	0.045±0.006	0.056±0.006
Sc	0.008±0.001	0.31±0.03	0.32±0.04	0.069±0.007	0.085±0.013
Se	0.60±0.04	0.184±0.013	0.12±0.02	0.14±0.02	(0.072)
Si%	0.087±0.008	0.58±0.04	0.60±0.07	0.71±0.08	(0.21)
Sm	(0.012)	0.19±0.01	0.19±0.02	0.038±0.006	0.085±0.023
Sn			(0.27)		
Sr	24±1	345±11	246±16	154±9	15.2±0.7
Tb		(0.026)	0.025±0.003		(0.011)
Th		0.37±0.02	0.36±0.04	0.070±0.010	0.061±0.009
Ti	2.7±0.6	95±18	95±20	20.4±2.2	24±4
U		(0.11)	(0.12)	(0.028)	
V		2.4±0.3	2.4±0.4	(0.64)	(0.86)
W		(0.06)	(0.06)		
Y	0.084±0.020	(0.63)	0.68±0.02	0.145±0.015	0.36±0.04
Yb		0.063±0.014	0.063±0.009	0.018±0.004	0.044±0.005
Zn	190±9	20.6±2.2	55±4	37±3	26.3±2.0

Note: Data behind "±" are standard deviation.

1. Data enclosed in brackets show these individual values are uncertified, for reference only.
2. The sample is packed in glass bottle with size less than 80 meshes.
   The package is: DC73348— 73351 35g/bottle; DC73347 10g/bottle and 20g/bottle
3. The sample should be stored in drier.
4. Minimum weight 0.5g sample should be taken for analysis.
5. The certification will expire in Dec.2010. although we reserve the right to make change as issue revisions.