

Certificate of Certified Reference Materials

NCS DC 73338 — NCS DC 73346

Synthetic Limestone

Reissued in 2014

Approved by China National Analysis Center for Iron and Steel

( Beijing China )

# CERTIFIED VALUES OF LIMESTONES SYNTHETIC REFERENCE MATERIAL FOR SPECTRAL ANALYSIS


ug/g	NCS DC 73338	NCS DC 73339	NCS DC 73340	NCS DC 73341	NCS DC 73342	NCS DC 73343	NCS DC 73344	NCS DC 73345	NCS DC 73346
Ag	(0.030)	0.060±0.010	0.11±0.02	0.21±0.03	0.51±0.04	1.0±0.1	2.0±0.2	5.0±0.4	10±1
Cd	(0.023)	0.053±0.010	0.10±0.02	0.20±0.03	0.5±0.10	1.0±0.2	2.0±0.3	5.0±0.6	10±1
Yb	0.22±0.03	0.52±0.04	1.0±0.1	2.0±0.1	5.0±0.2	10±1	20±1	50±2	100±4
Bi	0.23±0.03	0.53±0.04	1.0±0.1	2.0±0.2	5.0±0.3	10±1	20±1	50±2	100±4
Sb	0.21±0.03	0.51±0.04	1.0±0.1	2.0±0.1	5.0±0.2	10±1	20±1	50±2	100±4
Sn	0.28±0.06	0.58±0.07	1.1±0.1	2.1±0.2	5.1±0.3	10±1	20±1	50±3	100±5
Be	0.22±0.05	0.52±0.07	1.0±0.1	2.0±0.2	5.0±0.4	10±1	20±2	50±4	100±7
Mo	0.21±0.03	0.51±0.04	1.0±0.1	2.0±0.2	5.0±0.3	10±1	20±1	50±3	100±5
W	0.22±0.05	0.52±0.06	1.0±0.1	2.0±0.2	5.0±0.3	10±1	20±1	50±3	100±5
Y	2.1±0.2	5.1±0.3	10±1	20±2	50±3	100±5	200±10		
La	2.6±0.3	5.6±0.5	10.6±0.8	20.6±1.3	50.6±3.0	101±5	200±10		
Nb	2.5±0.3	5.5±0.5	10.5±0.7	20.5±1.2	50.5±3.0	100±5	200±10		
Ga	2.8±0.3	5.8±0.4	10.8±0.5	20.8±0.6	51±2	101±2	200±5		
Co	2.3±0.3	5.3±0.4	10.3±0.5	20.3±1.0	50±2	100±3	200±6		
Cr	2.3±0.2	5.3±0.3	10.3±0.4	20.3±1.0	50±2	100±3	200±6		
As	2.2±0.2	5.2±0.3	10.2±0.4	20±1	50±2	100±3	200±6	500±15	
Ni	2.1±0.2	5.1±0.3	10±1	20±1	50±1	100±2	200±4	500±10	
B	2.2±0.3	5.2±0.5	10±1	20±2	50±3	100±5	200±10	500±25	
Ce	2.8±0.4	5.8±0.5	11±1	21±2	51±3	101±5	200±10	500±20	
Li	3.2±0.3	6.2±0.4	11.2±0.5	21±1	51±1	101±2	200±4	500±10	
V	3.2±0.3	6.2±0.4	11.2±0.5	21±1	51±2	101±3	200±5	500±10	
Zr	4.0±0.3	7.0±0.4	12±1	22±1	52±2	102±3	202±5	500±10	
Cu	2.2±0.2	5.2±0.3	10.2±0.4	20±1	50±1	100±2	200±4	500±10	0.100±0.002%
Pb	2.4±0.5	5.4±0.6	10.4±0.7	20.4±1.0	50±2	100±3	200±4	500±10	0.100±0.002%
Zn	3.0±0.2	6.0±0.3	11±1	21±1	51±2	101±4	200±7	500±15	0.100±0.003%
Sr	170±16	200±17	250±18	350±20	650±30	0.115±0.005%	0.215±0.010%	0.515±0.020%	
Ba	24±4	54±5	104±7	204±12	504±25	0.100±0.005%	0.200±0.010%	0.500±0.020%	
Ti	31±3	61±4	111±7	210±10	510±20	0.101±0.003%	0.201±0.005%	0.500±0.010%	
Mn	37±2	67±3	117±4	217±5	517±10	0.102±0.002%	0.202±0.004%	0.500±0.010%	1.000±0.020%

- Note:
- 1. Data behind  $\pm$  are uncertainty. Data enclosed in brackets is for reference only.  
Each certified value is the mean of analytical results of 9 independent laboratories.
  - 2. The contents in bases of these samples is :  
CaCO<sub>3</sub> 85%, MgCO<sub>3</sub> 8%, SiO<sub>2</sub> 5.2%, Al<sub>2</sub>O<sub>3</sub> 1.1%, Fe<sub>2</sub>O<sub>3</sub> 0.3%, K<sub>2</sub>SO<sub>4</sub> 0.2%, Na<sub>2</sub>SO<sub>4</sub> 0.2%
  - 3. The minimum weight for analysis is 0.1g
  - 4. The sample is powder with size 200 meshes. The sample is packed in glass bottle.  
The minimum package is 70g.
  - 5. The sample should be stored in dry place.
  - 6. The certification will expire in Dec.2025. although we reserve the right to make change as issue revisions.

Analytical Methods

Element	Methods	Element	Methods
Ag	AAN,ES,INAA	Mo	COL,ES,POL
As	AF,INAA,XRF	Nb	COL,ICP,ICP-MS,POL
B	COL,ES,POL	Ni	AA,ES,ICP,ICP-MS,POL,XRF
Ba	ES,ICP,ICP-MS,INAA,XRF	Pb	AA,ES,ICP-MS,POL,XRF
Be	AAN,ES,ICP	Sb	AF,INAA
Bi	AF	Sn	ES,POL
Cd	AAN,POL	Sr	AA,AAN,EX,ICP,ICP-MS,INAA,XRF
Ce	ICP,ICP-MS,INAA	Ti	COL,ICP,ICP-MS,XRF
Co	AA,ES,ICP,ICP-MS,INAA,POL	V	ICP,ICP-MS,INAA,POL
Cr	AA,COL,ES,ICP,INAA,XRF	W	COL,POL
Cu	AA,ES,ICP,ICP-MS,XRF	Y	ES,ICP,ICP-MS,XRF
La	ICP,ICP-MS,INAA	Yb	ICP,ICP-MS,INAA
Li	AA,ICP,ICP-MS	Zn	AA,ICP,ICP-MS,INAA,POL,XRF
Mn	AA,ICP,ICP-MS,INAA,XRF	Zr	COL,ES,ICP,ICP-MS,XRF

Note:  
AA: Flame Atomic Absorption spectrometry  
AAN:Non-flame Atomic Absorption spectrometry  
AF:Atomic Fluorescence spectrophotometry  
COL:Colorimetry  
ES:Emission Spectrography  
ICP:Inductively Coupled Plasma spectrography  
ICP-MS:Inductively Coupled Plasma Mass Spectrometry  
INAA: Instrument Neutron Activation analysis  
POL:Polarography  
XRF:X-Ray Fluorescence spectrometry



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