



Certificate of Certified Reference Material

NCS FC 28023

Coke

Reissued in 2013

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

Certified Values and Uncertainty

(%)

No.		Qgr,d (MJ/kg)	St,d	Ad	Vd	SiO ₂	Al ₂ O ₃	CaO	MgO
NCS FC 28023	Certified Value	27.55	1.45	16.20	2.07	8.15	5.27	0.57	0.099
	Uncertainty	0.15	0.03	0.09	0.15	0.06	0.06	0.03	0.003
		Fe ₂ O ₃	TiO ₂	Na ₂ O	K ₂ O	MnO	SrO	P	Cr
NCS FC 28023	Certified Value	0.97	0.20	0.067	0.11	0.0044	0.0084	0.018	0.0021
	Uncertainty	0.05	0.02	0.004	0.01	0.0007	0.0007	0.002	0.0003
		Ni	Cu	V	Pb	As	Cl		
NCS FC 28023	Certified Value	0.0010	0.0018	0.0037	0.0008	0.00024	0.022		
	Uncertainty	0.0001	0.0002	0.0003	0.0002	0.00003	0.002		

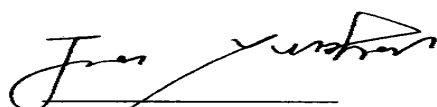
Note:

1. 8 independent laboratories take part in the analysis work.
The values are dry bases, calorific value is high value of dry bases.
Uncertainty is expanded uncertainty(k=3).
2. The sample is powder with size less 0.154 mm packed in glass bottle.
The minimum package is 50 grams.
3. The sample should be stored at dry, clean, cool and dark place.
4. The minimum weight for analysis sulfur is 50 mg, for SiO₂ is 0.2g, for other elements is 1.0g.
5. The certification will expire in Dec.2017, although we reserve the right to make change as issue revisions.

Analytical Methods

Item	Analytical method
St,d	Potassium iodate titrimetric method; Coulomb titrimetric method; High temperature combustion neutralization method;
Ad, Vd	GB2001-91 gravimetric method
Qgr,d	Oxygen bomb colorimetric method
SiO ₂	The perchloric acid dehydration-gravimetric method; Silicon-molybdenum blue photometric method; ICP-AES
Al ₂ O ₃	Chromazurol S photometric method; EDTA volumetric method; ICP-AES
CaO	Flame atomic absorption spectrophotometry; ICP-AES; EGTA volumetric method
MgO	Flame atomic absorption spectrophotometry; ICP-AES; EDTA volumetric method
Fe ₂ O ₃	Flame atomic absorption spectrophotometry; ICP-AES; Ferrotitanium reagents photometric method; 1,10-phenanthroline photometric method
TiO ₂	ICP-AES; Ferrotitanium reagents photometric method; Diantipyrylmethane photometric method
Na ₂ O	Flame atomic absorption spectrophotometry; ICP-AES
K ₂ O	Flame atomic absorption spectrophotometry; ICP-AES
MnO	Flame atomic absorption spectrophotometry; ICP-AES
SrO	Flame atomic absorption spectrophotometry
P	ICP-AES; Antimony-molybdenum blue photometric method; The butyl acetate phosphours-molybdenum blue extraction photometric method
Cr	Flame atomic absorption spectrophotometry; ICP-AES; Diphenylcarbazide photometric method; Graphite furnace - atomic absorption spectrophotometry

Ni	Flame atomic absorption spectrophotometry; ICP-AES; Graphite furnace - atomic absorption spectrophotometry; Dimethylglyoxime photometric method
Cu	Flame atomic absorption spectrophotometry; ICP-AES; Graphite furnace - atomic absorption spectrophotometry; The neocuprone-trichloromethane extraction photometric method
V	Br-PADAP photometric method; ICP-AES; N-benzoyl phenylhydroxylamine extraction photometric method
Pb	Flame atomic absorption spectrophotometry; ICP-AES; Graphite furnace - atomic absorption spectrophotometry; Atomic fluorescence spectrophotometry
As	Graphite furnace - atomic absorption spectrophotometry Atomic fluorescence spectrophotometry; Graphite furnace - atomic absorption spectrophotometry; IMBK extraction-photometric method; ICP-AES; Hydride generation – ICP method; Arsenic-molybdenum blue photometric method
Cl	Silver chloride turbidity method; Thiocyanate k titrimetric method



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