Certificate of Certified Reference Material

NCS NS11061 -- NS11068

O, N in steel

Issued in 2019

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

Certified Values and Extended Uncertainty

No.	O (%)		N (%)		Ball Weight (g)	Ball size (mm)
	Certified Value	Extended Uncertainty	Certified Value	Extended Uncertainty		
NCS NS11061	0.0016	0.0002	0.0036	0.0002	1.06±0.01	ϕ 6.35
NCS NS11062	0.0012	0.0001	0.0022	0.0001	1.06±0.01	ϕ 6.35
NCS NS11063	0.0030	0.0002	0.044	0.002	0.52±0.01	ϕ 5.00
NCS NS11064	0.0051	0.0002	0.028	0.001	1.07±0.01	ϕ 6.35
NCS NS11065	0.0019	0.0002	0.0070	0.0003	1.07±0.01	ϕ 6.35
NCS NS11066	0.00042	0.00005	0.0050	0.0002	1.04±0.01	ϕ 6.35
NCS NS11067	0.00044	0.00005	0.0061	0.0003	1.04±0.01	ϕ 6.35
NCS NS11068	0.0003	0.0001	0.0028	0.0002	1.04±0.01	ϕ 6.35

Note:

Extended Uncertainty: $U=ku_{\mathrm{CRM}}$; $u_{CRM}=\sqrt{u_{char}^2+u_{bb}^2+u_{lts}^2+u_{sts}^2}$; $u_{char}=s/\sqrt{n}$

U_{CRM} combined uncertainty; U_{bb} between bottle uncertainty;

$Ults$ long time stability uncertainty, neglectable;

$Usts$ short time stability uncertainty, neglectable;

$Uchar$ standard uncertainty of analysis;

s standard deviation;

n number of data;

k cover factor;

k=2 with confidence interval at 95%.

1.The certified value is the mean of analytical results of 8 independent laboratories.
2.The sample is ball packed in plastic bottle, the minimum package is 50 pieces.
3.The sample should be washed by dithylether and acetone before use.
4.The sample should be stored at dry place.
5.The valid time of the sample is 10 years, although we reserve the right to make change as issue revisions.

Analytical Methods

Oxygen

Pulse- infrared method

Nitrogen

Pulse -thermal conductometric method; Photometric method after distillation

Titrimetric method after distillation

Jia Yunhai
Laboratory Director