



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

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

U_{lts} long time stability uncertainty, neglectable;

U_{sts} short time stability uncertainty, neglectable;

U_{char} 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

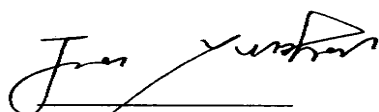
Oxygen

Pulse- infrared method

Nitrogen

Pulse -thermal conductometric method; Photometric method after distillation

Titrimetric method after distillation



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