



Certificate of Certified Reference Material

NCS HC 93648

Ferrosilicon

Issued in 2017

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

This Certified Reference Materials is prepared in accordance with the ISO guides 30-35. The intended use for this CRM is for the quality control in ferrosilicon analysis, the evaluating methods of analysis and the calibration of analytical instruments.

Certified Values and Extended uncertainty (%)

No.		Si	C	Al	P	S	Ca	Cr
NCS HC	Certified Values	72.31	0.083	1.37	0.019	0.0021	1.28	0.165
93648	Extended uncertainty	0.21	0.002	0.03	0.001	0.0005	0.02	0.006

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;
 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%.

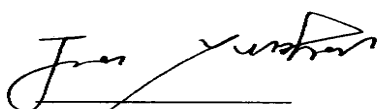
1. 8 independent laboratories take part in the analysis work.
2. The sample is powder packed in glass bottle. The minimum package is 50 grams.
The minimum weight for analysis is: for Al, Ca: 0.10g, P is 0.30g, others is 0.20g.
3. The valid time of the sample is 10 years, although we reserve the right to make change as issue revisions.

Analytical Methods

Element	Analytical method
C, S	Infrared absorption method
Si	Gravimetric method after dehydration with perchloric acid; Potassium silicofluoride titrimetric method
P	Bismuth-phosphorus- molybdenum blue photometric method; ICP-AES
Cr	AAS; ICP-AES; Photometric method
Al	EDTA titrimetric method; ICP-AES; Photometric method
Ca	ICP-AES; AAS

Statement:

This material is used only in labs and for analysis work, producer will be not responsible for any problem caused by misuse or not properly store.
Please check carefully the package, quantity and type of the material after receiving it. Related compensation is only limited in the certified materials, any other losses will be not included.



Jia Yunhai
Laboratory Director