

Certificate of Certified Reference Material

NCS HC 25603b

High Carbon Ferro Chrome

Issued in 2013

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

## Certified Values and Extended Uncertainty (%)

No.		Cr	Si	P	C	S	Ti
NCS HC	Certified Values	65.27	1.27	0.020	7.37	0.015	0.104
25603b	Extended Uncertainty	0.08	0.02	0.001	0.03	0.001	0.005
No.		Mn	Co	Ni	V	Fe	
NCS HC	Certified Values	0.31	0.044	0.39	0.138	24.90	
25603b	Extended Uncertainty	0.01	0.002	0.02	0.003	0.06	

Note:

Extended Uncertainty:  $U = k u_{CRM}$ ;

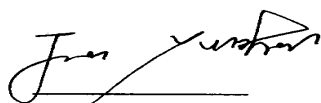
$$u_{CRM} = \sqrt{u_{char}^2 + u_{bb}^2 + u_{lts}^2 + u_{sts}^2}; \quad u_{char} = s / \sqrt{n}$$

$U_{CRM}$  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. Each certified value is the mean of analytical results of 10 independent laboratories.
2. The sample is powder packed in glass bottle with size less 0.088mm.  
 The minimum package is 50 grams.  
 The minimum weight for analysis is: Mn:0.5g, Ti:0.1g, others 0.2g.

## Analytical Methods

Element	Analytical Method
Cr	Potentiometric titrimetric method; Ammonium persulfate oxidation titrimetric method
Si	Gravimetric method after dehydration with perchloric acid; Silicon-molybdenum blue photometric method; ICP-AES
P	Hydrazine sulfate molybdenum blue photometric method; Bismuth-phospho molybdate blue photometric method; ICP-AES
C	Gasometric method; Coulometric method; Infrared method; Gravimetric method
S	Infrared method; Combustion potassium iodate titration method; ICP-AES
Ti	Photometric method with dianthylpyryl methane; ICP-AES method
Mn	Photometric method; ICP-AES
Co	ICP-AES, AAS, Photometric method with nitroso-R-salt
Ni	Dimethylglyoxime photometric method; ICP-AES method
V	BPHA extraction photometric method; ICP-AES method
Fe	Potassium dichromate titrimetric method; ICP-AES



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