

Certificate of Certified Reference Material

NCS HC 11403a

Alloy Tool Steel
(Cr12W)

Reissued in 2015

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

Certified Values and Uncertainty

(%)

No.		C	Si	Mn	P	S
NCS HC 11403a	Certified Value	1.96	0.18	0.31	0.048	0.088
	Standard Deviation	0.02	0.01	0.01	0.002	0.003
		Cr	Ni	Cu	W	
	Certified Value	11.99	0.12	0.061	0.97	
	Standard Deviation	0.05	0.01	0.004	0.01	

Note:

1. Each certified value is the mean of analytical results of 10 independent laboratories.
2. The sample is chips with size 0.280--0.900mm packed in glass bottle.
The minimum package is 100 grams. The minimum weight for analysis is 0.3g.
3. The sample should be stored in dry place.

Analytical Methods

Element	Analytical Method
C	Infrared absorption; Gasometric method; Non-aqueous titrimetric method
Si	The perchloric acid dehydration-gravimetric method; The oxalic acid-ferrous sulfate silicon-molybdenum blue photometric method
Mn	Potassium periodate oxidation photometric method; The sodium arsenite-sodium nitrite titrimetric method
P	The butyl acetate extraction phosphorus-molybdenum blue photometric method; The n-butyric alcohol-trichloromethane extraction photometric method
S	The aluminum oxide chromatographic separation-barium sulfate gravimetric method; Combustion-infrared absorption method; The combustion-potassium iodate volumetric method
Cr	Ammonium persulfate oxidation titrimetric method;
Ni	Dimethylglyoxime photometric method;
W	Cinchonine gravimetric method;
Cu	The neocuprone-trichloromethane extraction photometric method; Photometric method with bis-cyclohexanone oxalylbihydrazone;



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