

Certificate of Certified Reference Material

NCS HS 28741 — NCS HS 28748

Stainless Steel

Issued in 2014

Approved by China National Analysis Center for Iron and Steel

(Beijing China)

Certified Values and Extended Uncertainty

(%)

No.		C	Si	Mn	P	S	Cr	Ni	Cu	Mo
NCS HS 28741	Certified Value	0.039	0.425	1.07	0.037	0.016	18.31	8.19	0.399	0.027
	Uncertainty	0.002	0.004	0.01	0.002	0.001	0.06	0.04	0.005	0.002
NCS HS 28742	Certified Value	0.021	0.414	0.940	0.034	0.0028	18.2	8.11	0.043	0.025
	Uncertainty	0.001	0.003	0.006	0.002	0.0004	0.06	0.03	0.002	0.002
NCS HS 28743	Certified Value	0.110	0.780	0.841	0.024	0.0082	23.71	18.02	0.089	0.115
	Uncertainty	0.003	0.005	0.006	0.002	0.0005	0.07	0.06	0.003	0.003
NCS HS 28744	Certified Value	0.067	0.435	1.10	0.028	0.021	16.80	10.39	0.166	2.01
	Uncertainty	0.002	0.005	0.02	0.002	0.001	0.06	0.05	0.004	0.02
NCS HS 28745	Certified Value	0.018	0.317	1.17	0.042	0.0057	16.61	10.34	0.334	2.05
	Uncertainty	0.001	0.003	0.02	0.002	0.0005	0.06	0.04	0.004	0.02
NCS HS 28746	Certified Value	0.021	0.510	1.87	0.031	0.0009	17.19	8.24	0.340	0.069
	Uncertainty	0.001	0.005	0.02	0.002	0.0002	0.06	0.04	0.004	0.002
NCS HS 28747	Certified Value	0.132	0.502	0.453	0.027	0.0068	16.24	1.79	0.126	0.153
	Uncertainty	0.003	0.005	0.005	0.002	0.0005	0.06	0.02	0.003	0.003
NCS HS 28748	Certified Value	0.045	0.644	0.742	0.028	0.013	15.88	3.85	3.23	0.259
	Uncertainty	0.002	0.005	0.006	0.002	0.002	0.06	0.03	0.02	0.003
		V	Ti	Al	Co	Nb	Sn	Pb	N	As
NCS HS 28741	Certified Value	0.106	0.002*		0.208		0.0051	0.0001	0.069	0.0035
	Uncertainty	0.002			0.002		0.0005	0.0001	0.003	0.0003
NCS HS 28742	Certified Value	0.089	0.006		0.216		0.0001*	0.0001	0.059	0.0025
	Uncertainty	0.002	0.001		0.003			0.0001	0.003	0.0003
NCS HS 28743	Certified Value	0.077	0.003*	0.0056	0.102	0.016	0.0025	0.0004	0.057	0.0042
	Uncertainty	0.002		0.0004	0.003	0.001	0.0003	0.0001	0.003	0.0004
NCS HS 28744	Certified Value	0.048	0.006*	0.012	0.063	0.027	0.0034	0.0005	0.063	0.0037
	Uncertainty	0.002		0.002	0.002	0.002	0.0003	0.0001	0.003	0.0004
NCS HS 28745	Certified Value	0.070	0.002*		0.185		0.0073	0.0001	0.070	0.0055
	Uncertainty	0.002			0.003		0.0003	0.0001	0.003	0.0004
NCS HS 28746	Certified Value	0.096	0.184	0.086	0.191		0.0065	0.0002	0.011	0.0032
	Uncertainty	0.003	0.002	0.003	0.003		0.0004	0.0001	0.001	0.0002
NCS HS 28747	Certified Value	0.075	0.002*		0.051		0.0057	0.0001	0.030	0.0063
	Uncertainty	0.002			0.002		0.0004	0.0001	0.001	0.0004
NCS HS 28748	Certified Value	0.076	0.002*		0.119	0.230	0.0063	0.0001	0.030	0.0047
	Uncertainty	0.002			0.003	0.005	0.0005	0.0001	0.002	0.0004

Note: Date with * is for reference only.

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

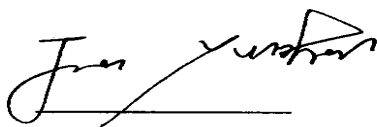
$$u_{CRM} = \sqrt{u_{char}^2 + u_{bb}^2 + u_{lts}^2 + u_{sts}^2}; \quad u_{char} = s / \sqrt{n}$$

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 8 independent laboratories.
2. The sample is cylinder with size $\Phi 38 \times 35$ mm.
3. The sample should be stored at dry place.
4. The valid time for these samples is 15 years.

Analytical Method

- C: The gasometric method; Combustion-infrared absorption method
- Si: Molybdenum blue photometric method; ICP-AES method.
The perchloric acid dehydration-gravimetric method
- Mn: FAAS; ICP-AES method; Potassium periodate oxidation photometric method
- P: Bismuth phosphomolybdimum blue photometric method; ICP-AES method
- S: The aluminum oxide chromatographic separation-barium sulfate gravimetric method
Infrared absorption method; ICP-AES method
- Cr: Ammonium persulfate oxidation titrimetric method
- Ni: Dimethylglyoxime gravimetric method; Dimethylglyoxime photometric method
EDTA titrimetric method;
- Cu: The neocuprone-trichloromethane extraction photometric method
Atomic absorption spectrometry; ICP-AES method; BCO photometric method
- Mo: Thiocyanate photometric method; ICP-AES method; ICP-MS
Thiocyanate-ether extraction photometric method
- V: N-benzoyl phenylhydroxylamine extraction photometric method; ICP-AES ; ICP-MS
- Ti: Photometric method with diantipyrylmethane; ICP-AES method
- Al: Chromazurol S photometric method; ICP-AES method
- Sn: ICP-MS, AFS, ICP-AES
- Pb: ICP-MS, ICP-AES
- Co: 5-Cl-PADAB photometric method; ICP-AES method
- Nb: Sulphochlorophenol S photometric method; ICP-AES method
- As: ICP-MS, ICP-AES
- N: Pulse- thermal conductometric method;
Complex titrimetric method after distillation separation



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