



Well Group

ECNA-7309

Approved by Internal Laboratory

Certificate Of Reference Materials

P/N: 58A CP04156

Category: Pure Copper

Base: Cu Base

Certified date: December 2011

Verified date: December 2021

Form: Disc

size: D 38x35mm

Provided By DHJ Analysis Co., Ltd



Intended Use

This Reference Material is primarily intended for use in Spark Atomic Emission Spectroscopy. Other applications, like XRF, should refer to the original lab.

Preparation

1. This Reference Material was produced by a highly-reputed manufacturer from commercial purity metals and master alloys.
2. This reference Material was made following below steps:
Design chemistry ---- Process it in mediumfrequency induction furnace ---- Water cooled mould ---- Semi-continuous casting ---Homogenization annealing ---Carry out deforming process ---- Make disc shaped---- Homogeneity testing ---- Collect data ---- Get the certification done

Certified Values

(Analysis listed as percentage by weight)

P/N		Ag	As	Bi	Cu+Ag	Fe	Ni	P
58A CP04156	Cert.Value	0.081	0.0064	0.0016	99.82	0.019	0.0600	0.063
	Std. Dev.	0.002	0.0001	0.0001	0.01	0.001	0.0004	0.001
		Pb	S	Sb	Sn	Zn		
	Cert.Value	0.0038	0.0013	0.0044	0.0084	0.0012		
	Std. Dev.	0.0001	0.0001	0.0002	0.0002	0.0001		

- Note:
1. Above values are from 6 sets of data
 2. The certified values listed are present best estimate of the true value based on the testing results
 3. Std. Dev. means Standard Deviation

Analysis Method used

Ag	ICP-AES;ICP-MS
As	ICP-AES;ICP-MS
Bi	ICP-AES;ICP-MS
Cu+Ag	Electrogravimetry
Fe	Phenanthroline photometric method ;ICP-AES .
Ni	ICP-AES;ICP-MS
P	Phosphor molybdenum blue photometric method ;ICP-AES
Pb	ICP-AES;ICP-MS
S	Combustion IR
Sb	ICP-AES;ICP-MS
Sn	ICP-AES;ICP-MS
Zn	ICP-AES;ICP-MS

Homogeneity and Stability

1. The homogeneity of this Reference Material was evaluated with the use of Atomic Emission method and was found acceptable.
2. This Reference Material is considered stable if handled and stored in accordance with



the Usage. This material is nullified if it is contaminated or otherwise altered. No shelf life or expiration date has been determined.

Traceability

All measurement units use International System Unit. 2 certified reference materials were used during the certifying process.

Package, usage and storage

1. This Reference Material is formed in disc. It should be stored in dry, ventilated and clean places.
2. The entire thickness of the unit is usable.
3. The user should pay additional attention when either resurfacing the disk or performing additional polishing, as these processes may contaminate the surface.

Participation:

National Aluminum Loyang Co.

Shenyang Mint Foundry Factory

Liaoning nonferrous metal processing product quality inspection station

Shenyang color-metal production factory

National Aluminum Loyang Co.

Shanghai Material Institute

Technical Manager