

GIREDMET Testing Analytical Center

B. Tolmachevsky per 5, Moscow 119017 Russia. Tel. (7-495) 239-93-38, Fax 953-87-91 119017 Россия Москва, Б. Толмачевский пер. 5
ИСПЫТАТЕЛЬНЫЙ АНАЛИТИКО-СЕРТИФИКАЦИОННЫЙ ЦЕНТР ГИРЕДМЕТА

ROSTECHREGULIROVANIE Accreditation
№РОСС RU.0001.510001

Аккредитация РОСТЕХРЕГУЛИРОВАНИЯ
№РОСС RU.0001.510001

C E R T I F I C A T E

of Chemical Contents for

COPPER POWDER SUPERFINE DISPERSAL

Lot #2,5TN/Cu, Net Weight 2500 kg

50 Boxes (##1-50) per 50 kg, (25 PET Containers per 2.0 kg in each)

MS Laboratory

Serial Number 15392.08

In any reference to this Sample the above name and number should be quoted

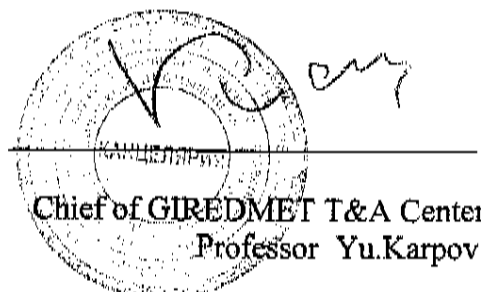
Sum of impurities in Copper Powder (Mg, Al, Ti, Fe, Ni, Zn, Mo, Cd, Sb) is no more than **0.001%wt**. The purity grade of Copper Powder is **99.999 % wt**. It was calculated as difference between 100 % and Sum of Impurities. List of impurities corresponds to TU 1793-011-50316079-2004.

Copper Powder is radiological safe. The specific radioactivity of Copper Powder is no more than $1 \cdot 10^{-11}$ Ci/g.

Sampling was made by TAC Giredmet. Sampling procedure Report from December 16, 2008. Boxes were plumbed by leads TAC GIREDMET "GAC/68".

The impurities contents in Copper Powder and investigation techniques are in the Report #15392.08 (please turn over).

December 19, 2008
page 1/2


Chief of GIREDMET T&A Center
Professor Yu.Karpov

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LABORATORY of MASS SPECTROMETRY

HLiBeBCrOPNaMgAlSiPSClKCaSeTiVCMnFeCoNiCrZnGeGaAsSeBrRbSrVZrNbMoRuRhPdAgCdInSbTeICuBaLaCePrNdSmEuGdTbDyHoErTmYbLuHfTAWReOsIrPtAuHgTlPbBiTl

REPORT

on Impurities Determination #15392.08

COPPER POWDER SUPERFINE DISPERSAL

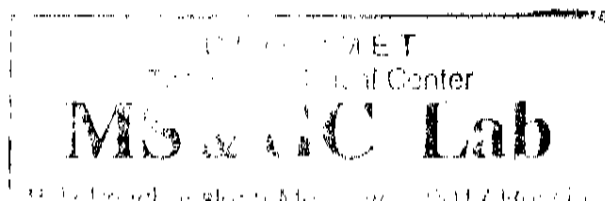
Lot #2,5TN/Cu

Sampling was made in TAC GIREDMET.

The impurities evaluation was made by Spark Source Mass Spectrometry. The JMS-01-BM2 double focusing mass spectrometer manufactured by JEOL (Japan) was applied. The high resolution mass spectra were photographed on Ilford-Q plates. Joyce Loeb (United kingdom) MDM6 microdensitometer and NOVA 4 (USA) on-line minicomputer were used for the mass spectrum lines identification. Quantity estimation was calculated by original MS Lab software. The relative standard deviation is 0.15-0.30. The noble gases and transuranium elements are not tabulated in the table, because their concentrations are lower than 0.01 ppm detection limits.

The results are presented as Parts Per Million (1 ppm = 0.0001 %).

Element	ppm	Element	ppm	Element	ppm
H	ND	Zn	< 0.2	Pr	< 0.05
Li	< 0.01	Ga	< 0.1	Nd	< 0.1
Be	< 0.001	Ge	< 0.2	Sm	< 0.09
B	< 0.01	As	2	Eu	< 0.08
C	ND	Se	< 0.3	Gd	< 0.08
N	ND	Br	< 0.1	Tb	≤ 0.06
O	ND	Rb	< 0.1	Dy	< 0.08
F	0.03	Sr	< 0.1	Ho	< 0.04
Na	0.9	Y	< 0.05	Er	< 0.07
Mg	0.5	Zr	< 0.1	Tm	< 0.05
Al	0.5	Nb	< 0.3	Yb	< 0.08
Si	1	Mo	< 0.1	Lu	< 0.06
P	< 0.05	Ru	< 0.2	Hf	< 0.07
S	30	Rh	< 0.1	Ta	< 0.05
Cl	20	Pd	< 0.3	W	< 0.1
K	< 0.1	Ag	8	Re	< 0.2
Ca	0.7	Cd	< 0.1	Os	< 0.5
Sc	< 0.1	In	< 0.02	Ir	< 0.07
Ti	0.2	Sn	< 0.2	Pt	< 0.1
V	< 0.01	Sb	2	Au	< 0.2
Cr	< 0.1	Te	< 0.4	Hg	< 0.4
Mn	< 0.1	I	< 0.1	Tl	< 0.1
Fe	1	Cs	< 0.1	Pb	10
Co	< 0.05	Ba	< 0.2	Bi	< 0.2
Ni	< 0.05	La	< 0.1	Th	< 0.1
Cu	MATRIX	Ce	< 0.2	U	< 0.1



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LABORATORY of MASS SPECTROMETRY

H Li Be B C N O F Na Mg Al Si P S Cl K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Rb Sr Y Zr Nb Mo Ru Rh Pd Ag Cd In Sn Sb Te I Cs Ba La Ce Pr Nd Sm Eu Gd Tb Dy Ho Er Tm Yb Lu Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Th U

REPORT

of Isotopic Contents #15392.08

COPPER POWDER SUPERFINE DISPERSAL

Lot #2,5TN/Cu

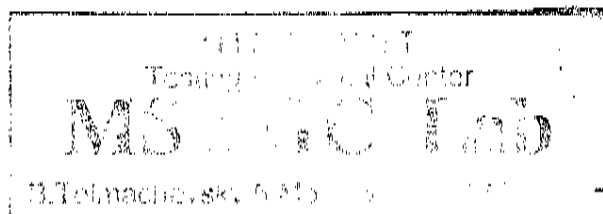
Sampling was made in TAC GIREDMET.

The determination of atomic fractions was made by Spark Source Mass Spectrometry. The JMS-01-BM2 double focusing mass spectrometer manufactured by JEOL (Japan) was applied. The high resolution mass spectra were photographed on Ilford-Q plates. Joyce Loebler (United Kingdom) MDM6 microdensitometer and NOVA 4 (USA) on-line minicomputer were used for the mass spectrum lines identification. Quantity estimation was calculated by original MS Lab software. The relative standard deviation is 0.01-0.05 for isotope abundance measuring.

The results are presented in atomic percent.

Isotope	Measured Abundance % at
Cu63	69.09±0.05
Cu65	30.91±0.03

Isotopic Abundance of Copper corresponds to natural



December 19, 2008
page 2/2

German G. Glavin
Ph.D. Head of MS Lab

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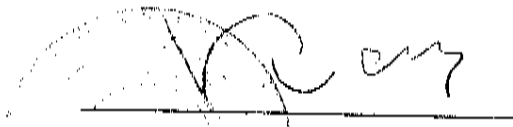
Serial Number 15392.08

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Atomic fraction of stable isotopes ^{63}Cu and ^{65}Cu in Copper Sample #2,5TN/Cu correspond to natural isotopic abundance.

The isotopes contents in Sample #2,5TN/Cu and investigation techniques are in the Report #15392.08 (please turn over).

December 19, 2008
page 1/2


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Professor Yu.Karpov

Payment Slip

Page 1 of 1

Safe Deposit Box System
New Rental - Initial Invoice Information

Financial Center : 0000046 FIMP : 0001
Address : FIFTH AVENUE-UMR Open Date : 08/24/2009
* Next Payment Due Date : 09/15/2010

Box : 0005232-4
Customer : GREGG GROSSMAN

Basic Box Rental : \$ 1,500.00

Surcharge & Others : \$ 0.00

Tax Amount : \$ 119.81

Total Discount : \$ 150.00

Transfer Amount : \$ 0.00

Total Amount Now Due : \$ 1,469.81

I, Aida Gonzalez, Assistant Manager for Citibank N.A. Safe Deposit Area at Fifth Ave Financial Center, 640 Fifth Ave placed in in Safe Deposit Box 10 - Two Kilogram boxes of Copper powder isotope into Safe Deposit Box Number # 5232 on August 25, 2009. Along with the original Seridmet Certificates Confirming same.

Aida L. Gonzalez

AIDA L. GONZALEZ
Assistant Manager
Citibank, N.A. Br. 046
640 - Fifth Avenue

A Gonzalez
August 25, 2009