

Metal and Quality, LLC
Certified Reference Material
Certificate of Chemical Analysis
CA04
Bearing Steel



INFORMATION

Certified Reference Material of Bearing Steel CA04 is intended for verification of analytical methods, for calibration of analytical instruments based on inert gas fusion methods

MEAN VALUES OF LABORATORIES

Lab. No.	Mass fraction in %	
	O	N
1	0.00075	0.0063
2	0.00083	0.0064
3	0.00083	0.0066
4	0.00088	0.0067
5	0.00088	0.0067
6	0.00088	0.0067
7	0.00089	0.0068
8	0.00092	0.0069
9	0.00094	0.0070
10	0.00097	0.0072
11	<10	-
M(M)	0.00088	0.0067
s(M)	0.00006	0.0003

M(M) - Mean of intralaboratory means

s(M) - Standard deviation of the mean values of laboratories

CERTIFIED VALUES (mass fraction in %)

Elements	O	N
Certified	0.00088	0.0067
Uncertainty C(95%)	0.00004	0.0002

Uncertainty C(95%) estimated as the half-width confidence interval of Student's t-distribution, when n is the number of laboratory means

$$C(95\%) = \frac{t \cdot s(M)}{\sqrt{n}}$$

Information values (mass fraction in %)

C	Si	Mn	S	P	Cr	Ni	Cu	W	V	Mo	Sn	Ti	Al
1.0	0.3	0.3	0.005	0.02	1.4	0.1	0.2	0.01	0.001	0.03	0.01	0.002	0.03

SPECIFICATION	Reference material made of bearing steel as polished rods in diameter of 2.8 mm, length of about 80 mm. 1 cm of rod has weight of about 0.5 g
DEVELOPER AND MANUFACTURER	Metal and Quality LLC (Ukraine)
TRACEABILITY	The characterization of material has been achieved by means interlaboratory experiment in accordance to ISO Guide 35:2017. In each laboratory applied the methods of analysis of their choice
DELIVERY	Packing - 100 g in glass bottle and certificate
SAFETY	Reference materials CA04 and packing does not contain explosives and radioactive substances and substances which might influence health and the environment
NOTE	Reference material should be stored in a tightly closed bottle in a dry place. When the bottle is opened for analysis, it should be stoppered immediately after use. Before analysis, it is recommended to clean the sample surface with fine oxides free sandpaper (e.g. of silicon carbide)

PARTICIPATING LABORATORIES

Alchevsk Iron & Steel Works PJSC, Ukraine
 BAM (Federal Institute for Materials Research and Testing), Germany
 Baikov Institute for Metallurgy and Materials, RU
 Dneprospetsstal (DSS) PJSC, Ukraine
 Institute for Certified Reference Materials (ICRM), RU
 Paton Electric Welding Institute, Ukraine
 Severstal JSC, RU
 Trinecke Zelezarny, Czech Republic
 US Steel Kosice, SPO JSC, Slovakia
 Vitkovice Testing Ostrava, Czech Republic
 ŽĎAS JSC, Czech Republic
 ZIRCONIUM State Research-and-Production Enterprise, Ukraine

THE METHODS USED

11 - Neutron Activation Method. Inert gas fusion - all others laboratories

CONTACTS

Metal and Quality, LLC
 37 Nezalezhnoi Ukrain Street, Zaporozhye City, 69019, Ukraine
 Tel/fax: +38 061 7171800
rm@rm.co.ua
<https://rm.co.ua>