

Metal and Quality LLC
Certified Reference Material
Certificate of Chemical Analysis
CX020a
Carbon Steel



APPLICABILITY Certified Reference Material of Carbon steel CX020a is intended for verification of analytical methods, for calibration of analytical instruments based on combustion methods

MEAN VALUES OF LABORATORIES

No.	Mass fraction in %	
	C	S
1	0,0730	0,0320
2	0,0743	0,0320
3	0,0743	0,0325
4	0,0745	0,0332
5	0,0750	0,0333
6	0,0760	0,0347
7	0,0766	0,0349
8	0,0776	0,0360
9	0,0778	0,0365
M(M)	0,0755	0,0339
s(M)	0,0016	0,0017

M(M) - Mean of intralaboratory means

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

CERTIFIED VALUES (mass fraction in %)

Elements	C	S
Certified	0.076	0.034
Uncertainty C(95%)	0.001	0.001

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

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

Indicative content, mass fraction in %

P	Mn	Si	Cr	Ni	Cu	N
0.03	0.4	0.01	0.04	0.01	0.02	0.008

SPECIFICATION Reference material made as chips from sheet carbon steel production of Zaporizhstal PJSC

TRACEABILITY The characterization of material was achieved using an interlaboratory experiment. Each laboratory used an assay of its choice. In the analysis were used exclusively standardized methods and certified reference materials

HOMOGENEITY	The homogeneity was evaluated according ISO Guide 35:2017 - Reference materials - Guidance for characterization and assessment of homogeneity and stability
DELIVERY	Packing - 200 grams in glass bottle and Certificate
DATE OF ISSUE	September 2021
VALID	September 2036
SAFETY	CRM CX020a 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 and cool place. When the bottle is opened for analysis, it should be stoppered immediately after use.

PARTICIPATING LABORATORIES (Ukraine)

Dneprospetsstal (DSS) PJSC
 Dneprometiz PJSC
 Dneprovsky Iron & Steel Works (DMK) PJSC
 Dnieper Metallurgical Plant (DMZ) PJSC
 Kremenchug Steel Casting Works (KSZ) PJSC
 Metal and Quality LLC
 SendLAB LLC
 Zaporizhstal PJSC
 Zaporizhzhya Steelworks (ZSZ) LLC

THE METHODS USED

Infrared absorption method after combustion in an induction furnace, Coulometric method after combustion in a stream of oxygen

CONTACTS

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