

Metal and Quality LLC
CERTIFICATE OF ANALYSIS
CRM CX08
Alloy Steel
(DIN 42Cr4 (1.7045), ASTM 5140, GOST 40X)



INFORMATION

Certified Reference Material of alloyed steel CX08 (DSZU 083.29-2010), produced in conformity to the Certificate No. 1107, authorized by State Committee of Ukraine for Technical Regulation and Consumer Policy.

APPLICABILITY

The CRM CX08 is intended for verification, calibration of measuring instruments, for metrological certification and control of errors of measurements methods at definition of chemical compound of carbon steels (DIN 42Cr4 (1.7045), ASTM 5140, GOST 40X) using chemical and physical-chemical methods

DEVELOPER AND MANUFACTURER

Metal and Quality LLC

CERTIFIED VALUES (mass fraction in % by weight)

CRM CX08	C	Si	Mn	P	S	Cr	Ni	Cu
Certified value	0,410	0,220	0,533	0,0110	0,0241	0,835	0,053	0,086
Estimate of uncertainty	0,002	0,004	0,009	0,0004	0,0006	0,006	0,001	0,004

The certified values are calculated in accordance with the national standard DSTU GOST 8.532-2003.

Uncertainty estimated as the half width confidence interval C(95%) of Student's t-distribution.

Minimum sample for analysis – 0.5 gram

TRACEABILITY

The traceability of DSZU CRM CX08 established in accordance with ISO Guide 30-35. The characterisation of CRM achieved by means inter-laboratory experiment. The average result of each laboratory was obtained by one method with two analysts, as a result of 3 - 6 measurements of each. At analyses used standardized and certified methods of analysis: combustion coulometric and infrared, gravimetric, photometric, titration, flame atomic absorption spectrometry, inductively coupled plasma - optical emission spectrometry. At analysis only CRMs were used.

HOMOGENEITY

The homogeneity was evaluated according to ISO Guide 35:2006 (7.7 Evaluating a homogeneity study) and DSTU GOST 8.531:2002 "Reference materials of composition of solid and disperse materials. Ways of homogeneity assessment"

SPECIFICATION

CRM is available as chips, fraction 0,315 - 1,5 mm

CRM VALIDITY

October, 2030

The chip sample will remain stable, provided that the bottle remains sealed and is stored in a cool and dry atmosphere. When the bottle has been opened the lid should be secured immediately after use. If the contents should become discoloured (e.g. oxidised) due to atmospheric contamination they should be discarded

DATE OF ISSUE

October, 2010

DELIVERY

CRM in glass (150 g), packed into a box and the Certificate

STORAGE

The material should be kept in a dry cool room in the carefully closed bottle. When the bottle is opened, then it should be resealed immediately after use. Transportation of CRM is supposed only in the packing protected from atmospheric moisture. It is forbidden to transport CRM by waterway

SAFETY

The reference material and packing do not contain substances which can directly influence health. Do not inhale. It is necessary to handle cautiously with glass

ANALYSES

Laboratory means, mass content in %

Independent data	C	Si	Mn	P	S	Cr	Ni	Cu
1	0,4046	0,2080	0,5000	0,0100	0,02250	0,8230	0,0500	0,0798
2	0,4060	0,2112	0,5030	0,0100	0,02260	0,8250	0,0507	0,0825
3	0,4070	0,2120	0,5120	0,0102	0,02300	0,8270	0,0510	0,0826
4	0,4073	0,2130	0,5240	0,0105	0,02300	0,8270	0,0516	0,0840
5	0,4075	0,2140	0,5250	0,0107	0,02301	0,8300	0,0522	0,0840
6	0,4078	0,2162	0,5260	0,0107	0,02360	0,8300	0,0524	0,0850
7	0,4090	0,2170	0,5300	0,0108	0,02365	0,8350	0,0525	0,0852
8	0,4095	0,2200	0,5360	0,0110	0,02379	0,8350	0,0530	0,0855
9	0,4100	0,2200	0,5368	0,0111	0,02400	0,8360	0,0534	0,0864
10	0,4110	0,2226	0,5368	0,0111	0,02406	0,8360	0,0544	0,0897
11	0,4112	0,2230	0,5398	0,0113	0,02430	0,8360	0,0545	0,0945
12	0,4116	0,2240	0,5420	0,0115	0,02430	0,8428	0,0571	0,0980
13	0,4125	0,2255	0,5430	0,0115	0,02440	0,8440	-	0,0982
14	0,4129	0,2260	0,5465	0,0118	0,02471	0,8490	-	0,1000
15	0,4136	0,2285	0,5510	0,0120	0,02560	0,8510	-	0,1010
16	0,4149	0,2320	0,5560	0,0122	0,02570	-	-	-
17	0,4150	-	0,5590	-	0,02591	-	-	-
18	0,4150	-	-	-	0,02600	-	-	-
Certified	0,4104	0,2196	0,5333	0,01102	0,02412	0,8351	0,0527	0,0862
Standard Deviation	0,0032	0,0069	0,0170	0,00067	0,00112	0,0085	0,0019	0,0072

PARTICIPATING LABORATORIES

OJSC "ArcelorMittal Kryviy Rih"

OJSC "Ilyich Iron and Steel Works of Mariupol"

OJSC "Zaporizhstal"

OJSC "Dneprospetsstal"

PJSC "Dneprovsky Integrated Iron & Steel Works named after Dzershinsky"

OJAC "Khartsyzsk Tube Works"

OJSC "Alchevsk Iron & Steel Works"

OJSC "Yenakievo Metallurgical Works"

OJSC "Dnepropetrovsk factory rolls"

LTD "Silur"

OJSC "Dnepropetrovsk iron and steel works named after Petrovsky"

OJSC "Kremenchuk Steel Works"

CJSC "ELSTA"

OJSC "Energomashspetsstal"

State Enterprise "Ukrainian Special Steels Institute"

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