

Metal and Quality, LLC
CERTIFICATE OF ANALYSIS
DSZU C65
High Boron Stainless Steel



INFORMATION Reference Material DSZU C65 is intended for calibration of measuring instruments when determining the chemical composition of high boron stainless steel (ASTM A887-20) and similar ones using spark atomic emission spectrometry, glow discharge atomic emission spectrometry and X-ray emission and fluorescence methods

MANUFACTURER Metal and Quality, LLC

CERTIFIED VALUES (mass fraction in %)

	B	Cr	Ni	Mo	Ti	Si	Mn	Al	Cu	W	V	Co	P	N	Nb	C	S
M(M)	2.39	18.7	11.8	0.10	0.31	0.44	0.99	0.26	0.20	0.046	0.022	0.033	0.024	0.020	<i>0.012</i>	<i>0.13</i>	<i>0.008</i>
s(M)	0.07	0.2	0.3	0.01	0.01	0.03	0.04	0.02	0.02	0.004	0.008	0.006	0.005	0.002	<i>0.001</i>	<i>0.02</i>	<i>0.001</i>

SPECIFICATION This reference material is produced through accelerated crystallization of the melt following smelting in an induction furnace. The samples are block-shaped, approximately 30 × 37 mm in size and 17–19 mm thick, with analytical surfaces on both sides

HOMOGENEITY The spark atomic emission method was used to assess homogeneity in one laboratory. The homogeneity was found to be acceptable

TRACEABILITY The characterization of DSZU C65 was achieved through inter-laboratory experiment. Chemical analyses were carried out by the participants in the certification tests both on monolithic samples and on chips taken from monolithic samples. The participating laboratories followed the requirements of ISO 17025 and used standardized analytical methods and the following certified reference materials to validate the analytical data: ECRM 287-1, ECRM 297-1, MBH 13X 8110L, MBH 13X 31603(D), MBH C13X PH20(M), BCS/SS 466/2. A calibration was also used against pure metal standards and analyzed by the ICP-OES method.

RM VALIDITY This reference material has no expiration date. The working surface of these samples should be purified before use. The reference material remain stable if not exposed to excessive heat (e.g., during surface preparation)

NOTE The central area of the sample, approximately 5 mm thick, may be porous and is not recommended for analysis

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DELIVERY The DSZU C65 is supplied in a cardboard box with its certificate

SAFETY A Safety Data Sheet (SDS) is not required for this reference material. Material and packing does not contain hazardous chemicals, explosives and radioactive substances and substances which might influence health and the environment

LABORATORY MEANS, mass fraction in % by weight

n	B	Cr	Ni	Mo	Ti	Si	Mn	Al	Cu	W	V	Co	P	N	Nb	C	S
1	2.300	18.35	11.31	0.090	0.305	0.404	0.939	0.240	0.185	0.041	0.015	0.030	0.019	0.0176	0.0120	0.120	0.0071
2	2.390	18.75	11.75	0.095	0.310	0.444	0.967	0.262	0.186	0.045	0.017	0.030	0.027	0.0201	0.0128	0.142	0.0090
3	2.400	18.80	11.88	0.100	0.312	0.460	1.020	0.270	0.210	0.050	0.028	0.040	0.027	0.0213			
4	2.464	18.80	11.90	0.108	0.323	0.460	1.030	0.281	0.223	0.050	0.030						
5		18.98	11.92														
M(M)	2.389	18.74	11.75	0.098	0.313	0.442	0.989	0.263	0.201	0.046	0.022	0.033	0.024	0.0197	0.0124	0.131	0.0081
s(M)	0.067	0.23	0.26	0.008	0.008	0.027	0.043	0.017	0.019	0.004	0.008	0.006	0.005	0.0019	0.0006	0.016	0.0013

M(M) - Mean of intralaboratory means

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

PARTICIPATING LABORATORIES

Dneprospetsstal, **Ukraine**

EC Eurolab Srl, **Italy**

Luvak Inc., **USA**

Oy NAREMA, **Finland**

ANALYTICAL METHODS USED

Boron (B): ICP-AES, DCP-AES, XRF

Carbon (C), Sulfur (S): AES, Infrared absorption

Nickel (Ni): Gravimetric, ICP-AES, AES

Chromium (Cr): Titrimetric, ICP-AES, AES

Nitrogen (N): Inert Gas Fusion

Other elements: ICP-AES, AES

CONTACT INFORMATION

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