

Metal and Quality LLC
Certified Reference Material
Certificate of Chemical Analysis
CA018a
Titanium



APPLICABILITY

Certified Reference Material of titanium CA018a 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	H
1	0.0494	0.0106	0.00133
2	0.0501	0.0117	0.00141
3	0.0504	0.0121	0.00151
4	0.0505	0.0131	0.00160
5	0.0511	0.0133	0.00187
6	0.0515	0.0133	0.00210
7	0.0531	0.0136	-
M(M)	0.0509	0.0125	0.00164
s(W)	0.0025	0.0009	0.00021
s(M)	0.0028	0.0014	0.00036

M(M) - Mean of intralaboratory means

s(M) - Standard deviation of laboratory means, taking into account standard deviation within laboratories s(W)

CERTIFIED VALUES (mass fraction in %)

Elements	O	N	H
Certified	0.051	0.013	0.0016
Uncertainty C(95%)	0.003	0.001	0.0004

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

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

SPECIFICATION

Reference material made as pins weighing of 0.10 g, diameter of 2 mm

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 pins in glass bottle and Certificate

DATE OF ISSUE	January 2022
VALID	January 2032
SAFETY	CRM CA018a and packing does not contain explosives and radioactive substances and substances which might influence health and the environment
NOTE	This 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.

Samples extracted from the bottle using clean metallic tweezers and placed directly into a carefully cleaned weigher and boat devices of analyzer

PARTICIPATING LABORATORIES

Antares Int. Co. Ltd, Ukraine
Dneprospetsstal (DSS) OJSC, Ukraine
E.O. Paton Electric Welding Institute, Ukraine
Institute for Certified Reference Materials (ICRM), RU
Institute for Ferrous Metallurgy (IMZ), Poland
OSCAR Production Group, Ukraine
Zaporozhye Titanium & Magnesium Combine (ZTMK), Ukraine

THE METHODS USED

Inert gas fusion with infrared absorption (oxygen, hydrogen) and thermal conductivity (nitrogen)

CONTACTS

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