

Certificate of Analysis 1070

Issue Date: 06-10-2025 Version: 02

CRM ITAK-211

Certified Reference Material – Nickel Laterite Ore

Table 1 – ITAK-211 – Certified Values

Element/Unit	Certified Value ^[1]	S ^[2]	S r ^[3]	S∟ ^[4]	U [5]
Al ₂ O ₃ (%) ^a	11.68	0.21	0.050	0.20	± 0.077
CaO (%) ^a	0.637	0.011	0.0062	0.0085	± 0.0035
Co (%) ª	0.1216	0.0061	0.00066	0.0060	± 0.0021
Cr ₂ O ₃ (%) ^a	2.802	0.038	0.034	0.017	± 0.0093
Cu (%) ª	0.348	0.015	0.0077	0.013	± 0.0052
Fe (%) ª	14.76	0.39	0.060	0.38	± 0.14
^[6] LOI (%) ^{b, c}	8.60	0.83	0.17	0.81	± 0.29
MgO (%) ª	3.91	0.13	0.084	0.10	± 0.037
MnO (%) ª	0.596	0.018	0.0084	0.016	± 0.0054
Ni (%) ª	3.269	0.050	0.014	0.049	± 0.018
SiO ₂ (%) ^a	43.58	0.75	0.17	0.73	± 0.26
TiO ₂ (%) ^a	0.423	0.013	0.0050	0.012	± 0.0056
Zn (%) ª	0.1406	0.0036	0.0011	0.0034	± 0.0015

^[1] The Certified Value was calculated according to ISO Guide 35 and ISO 5725-2.

^[2] The standard deviation for proficiency assessment was calculated according to ISO 13528 and 5725-2. This standard deviation can be used for control charts for individual analysis (n=1).

^[3] The within-laboratory standard deviation was calculated according to ISO 5725-2.

^[4] The between-laboratory standard deviation was calculated according to ISO 5725-2.

^[5] The extended standard uncertainty of the mean (α = 5%) was calculated according to ISO Guide 35.

Note: The letters in front of the elements are codes for the Analytical Methods used.



DESCRIPTION

ITAK-211 was prepared from a sample of Nickel Sulfide Ore donated by a Nickel Mining Company from Midwest Brazil in 2008.

This Certified Reference Material (CRM) is presented as a fine powder.

INTENDED USE AND INSTRUCTIONS

ITAK-211 provides important control in analytical data from exploration and can be used as a tool for grade control in routine mining and laboratory operations.

This Certified Reference Material can be used, for example, to calibrate analytical equipment, assess and develop new methods, validate analytical techniques, and arbitrate proficiency testing.

The contents of the bottles/sachets should be thoroughly mixed before taking samples of ITAK-211.

The Certified Reference Material should be used without pre-treatment. ITAK is not responsible for any changes after opening the bottles/sachets.

The Certified Reference Material should be stored in a dry place, away from excessive heat and moisture.

The minimum test portion of the Certified Reference Material is 0.5 g.

CHARACTERISATION AND STATISTICAL EVALUATION OF ANALYTICAL DATA

Eleven specialised laboratories analysed ITAK-211. The statistical evaluation was carried out according to ISO Guide 35 and ISO 5725-2, using the following procedures: identification and treatment of outliers, stragglers, and technically invalid data; calculation of certified values; calculation of standard deviations; and calculation of extended standard uncertainties.

The certified values are metrologically traceable to the International System of Units (SI) derived unit for mass fraction (expressed as percent).

The Technical Report RT-018/2025 STD provides comprehensive details of all manufacturing phases, including certifying results, participating laboratories, and statistical evaluation. <u>Note</u>: This report is available for CRM users on the ITAK database.

ANALYTICAL METHODS

The methods used in the characterisation of CRM ITAK-211 are mentioned as follows:

- a: Fusion method and determination by X-Ray Fluorescence.
- **b**: Gravimetric method.
- **c**: Thermogravimetric Method (TGA).



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PERIOD OF VALIDITY

This CRM certification is valid until June 03, 2035.

CERTIFICATE REPRODUCTION

This certificate must not be modified and may only be reproduced in its entirety and without change.

Alesson

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