Institute
of Non-Ferrous Metals
Poland

CERTIFICATE OF ANALYSIS

Lead PNA series

The assigned values[1] and uncertainites[2] in % w/w

No. / Element	PNA1		PNA2		PNA3	
Ca	**0.0480**	±0.0045	**0.0520**	±0.0043	**0.245**	±0.022
Al	**-**	-	**0.0186**	±0.0023	**0.0538**	±0.0021
Sn	**0.493**	±0.054	**0.559**	±0.060	**0.361**	±0.033
Bi	**0.0149**	±0.0025	**0.0353**	±0.0049	**0.0137**	±0.0032
Ag	**0.0357**	±0.0033	**0.0591**	±0.0031	**0.0214**	±0.0019
Pb	remain		remain		remain	

[1] Unweighted mean value of the means of accepted sets of data, each set being obtained in a different laboratory and/or with a different method of determination.

[2] The certified uncertainity is the expanded uncertainty with a coverage factor k=2, corresponding to a level of confidence of about 95 %.

Prof. Zbigniew Śmieszek
Director of the Institute

Certified on November 2012

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Description of the material:

The certified reference materials are available in the form of discs (40 mm diameter and ~30 height).

Analytical methods applied:

Ca, Al, Sn, Bi, Ag, Pb –	Inductively coupled plasma optical emission spectrometry (ICP OES), Flame atomic absorption spectrometry (FAAS),

Participants:

Institute of Non-Ferrous Metals, Analytical Chemistry Department, Gliwice, Poland

- Optical Emission Spectrometry Laboratory
- Atomic Absorption Spectrometry Laboratory

Huta Cynku "Miasteczko Śląskie", Miasteczko Śląskie,

Intended use:

The CRM is intended for establishing or checking the calibration of optical emission and X-ray spectrometers for analysis of samples of similar matrix composition (for micro-analysis is not verified).

Instructions for use:

Before every use, the surface of CRM must be prepared by milling or turning on a lathe. Samples should be prepared in the same way as the CRM.

Brief description of the production and certification process:

The CRM_s – PNA were made by melting of all components in the inductive, of crucible furnace and by casting into special moulds protecting elimination of segregation of the components during solidification. Homogeneity testing were made taking into account over 45% of the material produced. Investigations were carried out using atomic emission spectrometry method with low voltage spark. Homogeneity was estimated statistically with application of the test F.

The set consists of 3 certified reference materials in form of discs 40 mm in diameter and ~30 mm height.

The certification of PNA series is valid indefinitely, within the measurement uncertainties specified, provided the CRM is handled in accordance with the instructions given in this certificate.