



INSTITUTE OF NON-FERROUS METALS

Analytical Chemistry Department

44-101 Gliwice, ul. Sowińskiego 5

CERTIFICATE OF ANALYSIS

Sn - solder, LC 60, LC 63, LC 63 A

The average results of chemical analyses in wt %

Element ^{No.}	L 1	L 2	L 3	L 4	L 5
Sn	56,06	59,09	60,18	62,81	64,96
Sb	0,52	0,35	0,14	0,079	0,011
Cu	0,11	0,075	0,034	0,013	0,0037
Bi	0,17	0,11	0,22	0,055	0,014
Cd	0,0020	0,0043	0,0065	0,0080	0,0097
As	0,051	0,034	0,092	0,017	0,0035
Zn	0,00093	0,0019	0,0064	0,0011	0,0056
Fe	----	(0,011)	(0,023)	(0,0085)	----
Pb	the rest	the rest	the rest	the rest	the rest

Director of the Institute

Prof. Ph.D. Zbigniew Śmieszek

The confidence intervals in wt % at the probability level of 0,05

Element	No.	L 1	L 2	L 3	L 4	L 5
Sn		0,11	0,10	0,09	0,10	0,12
Sb		0,0075	0,0088	0,0060	0,0018	0,0009
Cu		0,0027	0,0015	0,00086	0,00050	0,00019
Bi		0,0048	0,0033	0,0049	0,0011	0,0011
Cd		0,00013	0,00025	0,00033	0,00018	0,00023
As		0,0015	0,0018	0,0020	0,0016	0,00024
Zn		0,000064	0,00015	0,00023	0,00011	0,00034
Fe		----	----	----	----	----

Analytical methods applied:

Sn - titration;

Sb - atomic absorption, spectrophotometric, spectral with inductively coupled plasma;

Cu - atomic absorption, titration, spectrophotometric, spectral with inductively coupled plasma;

Bi - atomic absorption, spectrophotometric, spectral with inductively coupled plasma;

Cd - atomic absorption, polarographic, spectral with inductively coupled plasma;

As - spectrophotometric, spectral with inductively coupled plasma;

Zn - atomic absorption, polarographic, spectral with inductively coupled plasma;

Fe - atomic absorption, spectrophotometric, spectral with inductively coupled plasma.

The set consists of 5 reference materials in form of discs 40 mm in diameter and 30 mm in height.

The chemical analyses have been carried out in two industrial laboratories and three research laboratories of Non-Ferrous Metals Institutes (Gliwice-Poland, Freiberg-GDR, Plowdiw-Bulgaria).