



INSTITUTE OF NON-FERROUS METALS

Analytical Chemistry Department

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CERTIFICATE OF ANALYSIS

Chemical reference material of electrolytic copper No. 5

The average results of chemical analyses in wt % and the confidence intervals in wt % at the probability level of 0,05

Element	Average results	Confidence intervals \pm
Fe	0,00045	0,000052
As	0,00040	0,000029
Pb	0,0027	0,00012
Sn	0,00046	0,000026
Ag	0,0010	0,00014
Ni	0,00044	0,000029
Zn	(0,0013)	--
Co	0,00081	0,000017
Mn	0,00013	--
Si	(0,00026)	--
Cr	below 0,00005	--
Bi	(0,0000096)	--
Sb	(0,000092)	--

Director of the Institute

Prof. Ph.D. Zbigniew Śmieszek

Analytical methods applied:

- Fe - atomic absorption after co-precipitation on lanthanum carrier, spectrometric*
- As - spectrophotometric with molybdenum blue, atomic absorption after co-precipitation on ferric carrier, spectrometric*
- Pb - atomic absorption after co-precipitation on ferric carrier, spectrometric*
- Sn - spectrophotometric with phenylfluoran after co-precipitation on ferric carrier*
- Ag - atomic absorption*
- Ni - atomic absorption after electrolytic precipitation of copper, spectrometric*
- Zn - atomic absorption after electrolytic precipitation of copper*
- Co - atomic absorption, spectrophotometric with nitroso naphthol*
- Mn - atomic absorption*
- Si - spectrophotometric with molybdenum blue*
- Cr - spectrophotometric with diphenylcarbazide*
- Bi - atomic absorption after co-precipitation on ferric carrier, spectrometric*
- Sb - atomic absorption after co-precipitation on ferric carrier, spectrometric*

The analyses have been carried out in one industrial laboratory and at three institute laboratories (IMN Poland, FNE Freiberg, Science Institute from Bulgaria). Each package contains 200g of reference material in form of chips.