



# INSTITUTE OF NON-FERROUS METALS

*Analytical Chemistry Department*

*44-101 Gliwice, ul. Sowińskiego 5*

## CERTIFICATE OF ANALYSIS

*Nickel*

*The average results of chemical analyses in wt %*

No. Element	1	2	3	4	5
Co	0,0450	0,0905	0,187	0,401	0,714
Mn	0,0063	0,184	0,015	0,074	0,0018
Mg	0,217	0,00605	0,0123	0,0747	0,00138
Cu	0,212	0,0263	0,0443	0,0995	0,0094
Fe	0,0955	0,326	0,0499	0,0225	0,0108
Si	0,00638	0,0122	0,182	0,0731	0,00542

Director of the Institute

Prof. Ph.D. Zbigniew Śmieszek

*The uncertainty in wt % at the probability level of 0,05*

No. Element	1	2	3	4	5
Co	0,0035	0,0032	0,011	0,0203	0,0209
Mn	0,00052	0,020	0,0015	0,017	0,000225
Mg	0,015	0,00059	0,0010	0,0046	0,0008
Cu	0,011	0,0025	0,0007	0,0059	0,0014
Fe	0,0046	0,0087	0,00503	0,00204	0,0009
Si	0,00058	0,0011	0,0207	0,0051	0,00007

*Analytical methods applied:*

*Co - spectrographic, spectrophotometric, gravimetric*

*Mn - spectrographic, spectrophotometric, titration*

*Mg - spectrographic, gravimetric*

*Cu - spectrographic, spectrophotometric, electrolytic*

*Fe - spectrographic, spectrophotometric, titration*

*Si - spectrographic, spectrophotometric, gravimetric*

*The chemical analysis have been carried out in seven specialistic laboratories from Poland. Homogeneity testing were made taking into account over 25% of the material produced. Investigation was carried out using spectrographic method with spark excitation. Homogeneity was estimated statistically. The set consists of 5 standard certified reference materials in form of rods 6 mm in diameter and 100 mm long.*

*CRMs are stable in time.*