



# INSTITUTE OF NON-FERROUS METALS

Analytical Chemistry Department

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## CERTIFICATE OF ANALYSIS

Nickel-Brass MN65

*The average results of chemical analysis in %*

Element <sup>No.</sup>	WH1	WH2	WH3	WH4	WH5
Ni	5,70	6,34	3,44	4,14	4,89
Mn	0,53	0,36	0,25	0,11	0,011
Fe	0,0052	0,038	0,11	0,13	0,22
Si	0,010	0,038	0,072	0,12	0,17
P	0,0029	0,0072	0,013	0,015	0,017
Co	0,0061	0,017	0,031	0,048	0,028
C	(0,0046)	(0,0058)	(0,0070)	(0,0075)	(0,0087)
S	0,0055	0,0071	0,011	0,017	0,021
Cu	68,16	69,14	70,18	71,15	72,28
Zn	the rest	the rest	the rest	the rest	the rest

Director of the Institute

Prof. Ph.D. Zbigniew Smieszek

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

Element No.	WH1	WH2	WH3	WH4	WH5
Ni	0,052	0,084	0,072	0,076	0,065
Mn	0,018	0,0099	0,0091	0,0061	0,00061
Fe	0,0001	0,0016	0,039	0,0041	0,0076
Si	0,0021	0,0019	0,0097	0,0046	0,0071
P	0,00040	0,00050	0,0028	0,00032	0,0021
Co	0,00022	0,00090	0,0013	0,0015	0,0012
C	-	-	-	-	-
S	-	-	-	-	-
Cu	0,062	0,11	0,11	0,034	0,12

*Analytical methods applied:*

- Ni - atomic emission spectrometry, atomic absorption spectrometry*
- Mn - atomic emission spectrometry, atomic absorption spectrometry*
- Fe - atomic emission spectrometry, atomic absorption spectrometry*
- Si - gravimetric*
- P - spectrophotometric, titration*
- Co - atomic emission spectrometry, atomic absorption spectrometry*
- C - method of combusting and infrared determination of CO<sub>2</sub>*
- S - method of combusting and infrared determination of SO<sub>2</sub>, atomic emission spectrometry*
- Cu - electrolysis, titration*

*The chemical analysis have been carried out in three industrial laboratories and at the Institute of Non-Ferrous Metals.*

*Melts have been performed using induction furnace.*

*Homogeneity investigations were carried out using atomic emission spectrometry method with low voltage spark.*

*Homogeneity was estimated statistically with application of the test F. CRMs are in form of discs 40 mm in diameter and 25 mm height. Application of CRMs:*

- Atomic emission spectrometry*
- X-Ray spectrometry*

*CRMs are stable in time.*