



INSTYTUT METALI NIEŻELAZNYCH

Certificate of Analysis

Copper ores, tailings and concentrates [weight%]

uncertainty values on probability level 0.05%

CRMs No/element	Cu	Pb	Ag	As	C _{total}	C _{org.}
W1	0,193	0,0279	0,00045	-	2,34	(0,153)
<i>uncertainty</i>	<i>0,018</i>	<i>0,0029</i>	<i>0,000075</i>	-	<i>0,11</i>	-
W2	0,285	0,0412	0,00062	0,00123	7,59	(0,361)
<i>uncertainty</i>	<i>0,016</i>	<i>0,0043</i>	<i>0,000013</i>	<i>0,000085</i>	<i>0,53</i>	-
W3	5,22	0,313	0,00906	0,0252	-	2,18
<i>uncertainty</i>	<i>0,10</i>	<i>0,011</i>	<i>0,00044</i>	<i>0,0030</i>	-	<i>0,71</i>
W4	10,64	0,623	0,0180	0,0455	(8,56)	3,56
<i>uncertainty</i>	<i>0,14</i>	<i>0,018</i>	<i>0,00064</i>	<i>0,0085</i>	-	<i>0,78</i>
W5	22,95	1,38	0,0392	0,117	10,71	7,91
<i>uncertainty</i>	<i>0,045</i>	<i>0,041</i>	<i>0,0020</i>	<i>0,015</i>	<i>0,048</i>	<i>0,45</i>
W6	29,23	3,51	0,0705	-	8,95	7,32
<i>uncertainty</i>	<i>0,18</i>	<i>0,13</i>	<i>0,0023</i>	-	<i>0,29</i>	<i>0,56</i>
W7	-	0,00424	-	-	-	-
<i>uncertainty</i>		<i>0,000065</i>				

Traceability: Most of the analytical work performed to assess this material has been carried out by laboratories with proven competence, often indicated by the national authority. Series is in accordance with old one produced earlier by IMN.

Director of the Institute

Prof. Ph.D. Zbigniew Śmieszek

Analytical method applied:

Cu – AES with ICP, titration, AAS- atomic absorption

Pb – AES with ICP, AAS- atomic absorption,

Ag – AES with ICP, AAS- atomic absorption

As – AES with ICP, AAS- atomic absorption

C – spectrophotometric IR- after combustion

Analyses were carried out in four IMN laboratories and in three specialistic industrial laboratories.

Each package contains 100 g of certified reference materials in form of powder.