CCRMP
Canadian Certified Reference Materials Project

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PCMRC
Projet canadien de matériaux de référence certifiés

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Certificate of Analysis

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REFERENCE GOLD ORE MA-1b

Recommended Value ± 95% Confidence Interval	
Au	17.0 µg/g ± 0.3 µg/g
	0.497 oz/t ± 0.008 oz/t

DESCRIPTION

MA-1b is a sample of ore from the Macassa Mine at Kirkland Lake, Ontario. The major mineral constituents of the ore matrix are quartz, feldspar, and dolomite, with minor amounts of muscovite, chlorite and pyrite. Chalcopyrite, sphalerite, hematite, magnetite, altaite and melonite are present in minor to trace levels. Gold occurs mainly as native metal or electrum (alloy with minor silver constituent) as mainly as inclusions in the siliceous matrix but also in pyrite. Calaverite ($AuTe_2$) occurs as inclusions in some pyrite grains. The approximate chemical composition of MA-1b is given in the Table.

The ore was dry ground and the sieved minus 74-µm fraction was blended and bottled in 200-g units. The stock was sampled systematically and analysed by fire assay/ gravimetry (FA/G) and fire assay/ atomic absorption spectometry (FA/AAS) procedures to demonstrate sufficient homogeneity of gold for application as a compositional reference material.

CERTIFICATION

The recommended value for gold is the unweighted mean of 175 accepted analytical determinations by 28 laboratories. The uncertainty estimates the expected range of reproducibility of this mean with 95% probability were the measurement program to be repeated many times. This estimate assumes the results are a sampling from an ANOVA Model II statistical model.

Results by method classifications are compiled in the Table, where FA refers to fire assay preconcentration, ICPAES refers to inductively coupled plasma atomic emission spectrometry, INAA refers to instrumental neutron activation analysis, and other symbols are described above. CI is the 95% confidence interval for the mean and S_{Lc} and S_{rc} are the between- and within-set standard deviations obtained

from the ANOVA. CV is the average within-set coefficient of variation. The median within-set replication was 5 and the median sample weight was 15g.

LEGAL NOTICE

The Canadian Certified Reference Materials Project has prepared this reference material and statistically evaluated the analytical data of the inter-laboratory certification program to the best of its ability. The purchaser, by receipt hereof, releases and indemnifies the Canadain Certified Reference Materials Project from and against all liability and costs arising out of the use of this material and information.

REFERENCE

The preparation and certification procedures used for MA-1b will be given in a forthcoming CANMET CCRMP Report which is in preparation. This report will be made available free of charge on application to:

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Table - Distribution of results by method.

Method	No. Sets	No. Results	µg/g Mean	CI	S_{Lc}	S_{rc}	CV,%
FA/G	20	113	16.96	± 0.30	0.61	0.37	1.93
FA/AAS	8	44	17.26	± 0.85	0.99	0.42	2.30
INAA	3	20	17.21	± 1.85	0.66	0.65	3.88
FA/INAA	1	4	16.23	± ----		0.36	2.25
FA/ICP	1	5	17.36	± ----		0.29	1.66
Overall	33	186	17.05	± 0.26	0.70	0.42	2.22

Table - Chemical Constituents of MA-1b

Approx. Conc. wt %		Approx Conc. µ/g	
Si	24.5	Cr	200
Al	6.11	Pb	200
Fe(total)	4.62	Rb	160
Ca	4.60	Zr	140
K	4.45	Cu	100
Mg	2.56	Zn	100
C(total)	2.44	Bi	100
Na	1.49	Ni	90
S(total)	1.17	Mo	80
Ti	0.38	Te	40
Ba	0.18	Co	30
P	0.16	Y	20
Mn	0.09	Au	17.0
H_2O^-	0.1	W	15
LOI(1000°C)	7.9	Sc	13
		As	8
		Ag	3.9
		Sb	3

Pour obtenir la version française du présent certificat d'analyse, prière de s'adresser au Coordinateur du PCMRC.