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Certificate of Analysis

First Issued: October 1995 Last revision: October 1995

MA-3a

Gold Ore Reference Material

Certified Value and
95% Confidence Interval

Constituent	oz/ton	µg/g
Au	**0.250**	**8.56**
	± 0.003	± 0.09

Source

MA-3a is a gold ore sample obtained from the Macassa Division of Barrick Gold Corporation (now KinRoss Gold Corporation) from the mine at Kirkland Lake, Ontario.

Description

The product is a powdered compositional reference material having primarily a siliceous matrix and an intermediate gold concentration. It is inferred, from a mineralogical examination of material from the same mine previously used to produce MA-1 and MA-2, that quartz, feldspar, dolomite, muscovite, and chlorite are major mineral constituents in decreasing order of abundance. Pyrite, chalcopyrite, sphalerite, hematite, magnetite, altaite (PbTe), and melonite ($NiTe_2$) are present in minor-to-trace levels. Calaverite ($AuTe_2$) occurs as inclusions in some pyrite grains. The majority of gold occurs as an electrum (containing silver) dispersed in the gangue minerals.

Intended Use

MA-3a is mainly intended for methods of analysis of gold involving fire assay preconcentration with a sample size of 15g or more. Other techniques will be suitable providing a large enough sample is taken.

Instructions for Use

MA-3a should be used "as is" without drying. The contents of the bottle should be thoroughly mixed before taking samples.

Method of Preparation

The material, in the form of 10-cm chunks, was shipped in two 300-kg lots to CANMET for processing.

Each lot was dried and passed through primary and secondary crushers to reduce the size to 1 mm or less.

The resultant samples were milled, in 25-kg batches, in a vibration energy mill, and screened to -200 mesh. MA-3a was blended according to a split-blending protocol, and bottled in 200-g units.

State of Homogeneity

The homogeneity of the stock with respect to its gold content was tested and confirmed at CANMET using bottles chosen according to a stratified random sampling scheme. A fire assay-atomic absorption method using a 20-g sample was employed for these tests.

Method of Certification

MA-3a was certified by an interlaboratory analysis program. Thirty-one industrial, commercial, and government laboratories participated in an interlaboratory certification program by providing gold analyses by methods of each laboratory's choice. Methods involving fire assay preconcentration predominated. Several laboratories also provided analyses for many other elements. A statistical analysis of the data yielded a certified value for gold and information values for twenty-four other constituents. Data for other elements are either inadequate or inconclusive, but are disclosed in report *CCRMP 95-1E*

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 Canadian 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-3a, including values obtained by individual laboratories, are given in CANMET report *CCRMP 95-1E*. This report is available free of charge on application to:

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Information Values

Element	Wt %
Al	6
C	2.5
Ca	5.5
Fe	5
K	4
LOI	10
Mg	3
Mn	0.1
Na	1.5
P	0.2
S	1
Si	21

Element	µg/g
Ag	2.4
As	8
Co	30
Cu	100
Mo	55
Ni	70
Pb	20
Sb	3
Sr	850
Te	12
V	80
Zn	80