

**Witwatersrand Gold Standard
High Ore Grade
Reference Material**

AMIS0030

Certificate of Analysis

**Certified Concentration and two “Between Laboratory”
Standard Deviations**

Gold: 21.42 ± 1.24 g/t
U by multi acid digestion: $1351^* \pm 106^*$ ppm
U by XRF: $1355^* \pm 92^*$ ppm
Specific Gravity: 2.81 ± 0.13 g/cc.

Indicated Concentration

Silver: 2.87 ppm

(* Or, by applying a chemical conversion factor of $U \times 1.1793 = U_3O_8$
 U_3O_8 by multi acid digestion: 1593 ± 125 ppm
 U_3O_8 by XRF: 1598 ± 108 ppm)

Intended use: AMIS0030 is suitable for monitoring the accuracy of a single analysis of gold ores hosted by siliceous rocks. The material can be used for routine quality control by inserting within a batch of samples, method development and for the calibration of equipment.

The recommended mean and "Between Lab" standard deviations for this standard reflect the average results from the laboratories that participated in the round robin. Slight variations in analytical procedures between laboratories will reflect as slight biases to the recommended concentrations and this is acceptable. Good laboratories however will report results within the two standard deviation levels with a failure of <10 %.

Origin of material: This standard was made from grade-sorted pulp rejects sourced from Anglo Gold Ashanti mine assay laboratories in South Africa. It represents sample material from the basal contacts of the Vaal Reef and the Carbon Leader Reef collected during routine underground sampling.

Approximate mineral and chemical composition: The major gangue mineral is quartz with minor pyrite, uraninite and thucolite. Gold occurs primarily as discrete grains.

The chemical composition, based on an average of 44 analyses from 7 laboratories, is as follows.

SiO ₂ %	S ₀₃ %	Fe ₂ O ₃ %	Al ₂ O ₃ %	K ₂ O %	MgO %
86.157	6.947	5.985	2.971	0.517	0.228
TiO ₂ %	Na ₂ O %	MnO %	CaO %	P ₂ O ₅ %	LOI %
0.137	0.107	0.051	0.042	0.036	2.706

Method of preparation: The material was crushed, dry-milled and air-classified to 100% <54µm. Wet sieve particle size analysis of random samples confirmed the material was 100% <54µm. It was then blended in a bi-conical mixer, systematically divided and then sealed into 1kg Laboratory Packs. Samples were randomly selected for homogeneity testing and third party analysis. Statistical analysis for the consensus test results were carried out by an independent statistician. Explorer Packs are subdivided from the Laboratory packs as required.

Methods of analysis requested:

1. Au. ICP-OES, Pb collection.
2. U and Ag. Multi-acid total digestion, including HF, ICP-OES or MS.
3. U, XRF fusion.
4. SG (gas pycnometer)

Method of certification: Twenty one laboratories were each given eight randomly selected packages of sample. The results from the nineteen laboratories that issued results timeously were used. Results were as set out below:

Lab Code	Au ppm	U ppm	U XRF ppm	SG g/cc
A	20.900	1370		2.730
A	21.000	1350		2.790
A	21.100	1370		2.750
A	21.500	1350		2.730
A	21.400	1380		2.770
A	21.100	1380		2.750
A	21.500	1410		2.750
A	21.200	1380		2.760
B	22.100	1412	1412	2.770
B	21.400	1409	1409	2.740
B	21.700	1418	1418	2.800
B	22.000	1418	1418	2.740
B	21.900	1416	1416	2.750
B	22.000	1411	1411	2.760
B	22.000	1417	1417	2.750
B	21.600	1417	1417	2.750
C	21.381	1300		
C	19.816	1350		
C	20.746	1320		
C	20.147	1330		
C	18.021	1350		
C	18.103	1320		
C	16.406	1320		
C	19.274	1340		
D	21.210	1380		
D	21.540	1400		
D	21.830	1400		
D	21.450	1420		
D	21.470	1400		
D	21.690	1370		
D	21.130	1460		
D	21.240	1380		
E	20.544			
E	20.384			
E	21.745			
E	21.255			
E	21.118			
E	21.230			
E	21.316			
E	21.174			
F	21.000	1340		
F	21.200	1310		
F	21.000	1290		
F	21.400	1360		
F	21.300	1290		
F	21.200	1360		
F	21.300	1350		
F	21.300	1320		
G	21.037	1300	1300	2.779
G	21.033	1292	1292	2.767
G	21.054	1297	1297	2.877
G	20.939	1320	1320	3.011
G	21.216	1297	1297	3.019
G	18.056	1327	1327	2.769
G	21.114	1330	1330	2.806
G	21.129	1336	1336	2.781
H	21.400		1313	
H	21.500		1354	
H	21.500		1336	
H	21.400		1301	
H	21.200		1319	
H	21.400		1287	
H	21.500		1304	
H	21.500		1329	
I	22.910	1300		
I	23.420	1300		
I	23.010	1200		
I	22.230	1200		
I	22.250	1300		
I	22.550	1300		
I	22.620	1300		
I	21.340	1300		
J	21.200	1230	1200	2.750
J	21.300	1300	1300	2.640
J	21.300	1300	1300	2.650
J	21.000	1230	1300	2.700
J	21.000	1250	1300	2.820
J	21.200	1340	1200	2.910
J	21.400	1290	1300	2.800
J	21.600	1270	1300	2.820

Lab Code	Au ppm	U ppm	U XRF ppm	SG g/cc
K	20.500	1340	1355	
K	20.500	1330	1362	
K	20.900	1340	1367	
K	20.800	1270	1365	
K	21.000	1310	1358	
K	20.800	1270	1354	
K	21.200	1280	1363	
K	21.300	1290	1355	
L	22.240	1349	1371	2.800
L	22.850	1352	1387	2.950
L	22.400	1322	1395	2.880
L	22.580	1294	1390	2.850
L	22.140	1346	1370	2.850
L	21.570	1351	1386	2.780
L	22.110	1330	1390	2.910
L	21.850	1278		2.780
M	10.600			2.800
M	21.400			2.800
M	21.200			2.800
M	21.000			2.800
M	20.900			2.800
M	21.200			2.800
M	20.900			2.800
M	21.500			2.800
N	21.600	1400	1306	2.880
N	21.600	1400	1348	2.940
N	21.700	1400	1323	2.920
N	23.100	1400	1314	2.940
N	23.900	1500	1323	2.940
N	21.500	1400	1340	2.950
N	22.300	1400	1314	2.930
N	21.900	1400	1357	2.940
O	21.30			
O	21.90			
O	20.50			
O	21.10			
O	21.60			
O	21.40			
O	21.40			
O	21.50			
P	21.60	1430		
P	21.22	1440		
P	21.06	1400		
P	21.20	1400		
P	21.32	1460		
P	21.26	1430		
P	21.12	1400		
P	20.79	1400		
Q	19.20	1089	1464	2.820
Q	19.50	1049	1420	2.820
Q	18.90	1182	1428	2.820
Q	18.90	1205	1412	2.820
Q	19.20	1233	1414	2.810
Q	19.60	1232	1422	2.800
Q	21.50	1020	1428	2.810
Q	21.60	1128	1438	2.820
R	21.40			
R	20.50			
R	20.70			
R	20.70			
R	21.20			
R	21.60			
R	19.90			
R	20.90			
S	21.70	1380		
S	21.60	1380		
S	21.40	1390		
S	21.50	1370		
S	21.20	1370		
S	21.30	1390		
S	21.40	1370		
S	21.50	1380		

The mean and standard deviation for all data was calculated. Outliers were defined as samples beyond the mean \pm 2 Standard Deviations from all data. These outliers were removed from the data (italicized) and a new mean and standard deviation was determined. This method is different from that used to calculate the Confidence Interval shown on many Government-produced standards in that the actual "between-laboratory" standard deviation is used in the calculations. This produces upper and lower limits that reflect actual individual analyses rather than a grouped set of analyses. The limits can therefore be used to monitor accuracy from individual analyses, unlike the Certified Limits published on other standards which quote a Confidence Interval.

Participating laboratories: (Not in same order as in the table of assays)

1. ACME Analytical Laboratories Ltd. (Canada)
2. Activation Laboratories Ltd., (ActLabs, Ancaster, On Canada)..
3. Anglo Gold Ashanti – Vaal River Laboratory (South Africa).
4. Anglo Gold Ashanti – West Wits Laboratory (South Africa).
5. ALS Chemex Labs Ltd. (Canada).
6. ALS Chemex South Africa (Pty) Ltd.
7. Ammtec Limited (Australia).
8. Anglo American Research Laboratories (Pty) Ltd. (South Africa).
9. Assayers Canada (Vancouver).
10. Genalysis Laboratory Services (Pty) Ltd. (Australia).
11. Gold Fields Limited Driefontein Assay Laboratory (South Africa).
12. Geoservice Centre, Geolaboratory, (GTK, Finland).
13. Performance Laboratories (South Africa).
14. Pt Intertek Utama Services (Intertek, Indonesia).
15. Set Point Laboratories (Pty) Ltd. (South Africa).
16. SGS Lakefield Research Africa (Johannesburg, South Africa).
17. SGS Welshpool Minerals – (Australia).
18. SRC Labs., (Canada).
19. Ultra Trace (Pty) Ltd - (Australia).

Availability: This product is available in Laboratory Packs containing 1kg of material or in Explorer Packs containing client specified weights of material from 50g up to 250g. Laboratory Packs are sealed bottles delivered in sealed foil pouches. Explorer Packs contain material in standard geochem envelopes placed into foil pouches that are nitrogen flushed and vacuum sealed.

Legal notice: This certificate and the reference material described in it have been prepared with due care and attention. However AMIS, Set Point Technology (Pty) Ltd, Mike McWha, Dr Barry Smee and Smee and Associates Ltd; accept no liability for any decisions or actions taken following the use of the reference material.

26 January 2007

Certifying officers:



African Mineral Standards: _____

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