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Certificate of Analysis

Reference Material SP72

Recommended Values and 95% Confidence Intervals
Gold Concentration: 18.16 (+/- 0.10) µg/g
Silver Concentration: 83.0 (+/- 0.9) µg/g

The above values apply only to product in jars or sachets which have an identification number within the following range: ***318 700– 319 586*.**

Prepared and Certified By:

Malcolm Smith BSc, FNZIC
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Date of Certification: 26 June 2013

Certificate Status: Original

Available Packaging: This reference material has been packed in wide-mouthed jars that contain 2.5 kg of product. The contents of some jars may be subsequently repacked into sealed polyethylene sachets.

Origin of Reference Material: Feldspar minerals, basalt and iron pyrites with minor quantities of finely divided gold and silver-containing minerals that have been screened to ensure there is no gold nugget effect.

Supplier of Reference Material:

ROCKLABS
P O Box 18 142
Glen Innes
Auckland 1743
NEW ZEALAND
Email: reference-materials@rocklabs.com
Website: www.rocklabs.com

World Leaders in Sample Preparation Equipment,
Automated Systems and Certified Reference Materials

Description: The reference material is a light grey powder that has been well mixed and a homogeneity test carried out after the entire batch was packaged into wide-mouthed jars. There is no soil component. The product contains crystalline quartz and therefore dust from it should not be inhaled.

The approximate chemical composition is**:**

(Uncertified Values)	
SiO_2	55.88
Al_2O_3	16.21
Na_2O	4.81
K_2O	5.61
CaO	2.86
MgO	2.55
TiO_2	0.70
MnO	0.06
P_2O_5	0.20
Fe_2O_3	3.67
Fe	3.2
S	3.5

Intended Use: This reference material is designed to be included with every batch of samples analysed and the results plotted for quality monitoring and assessment purposes.

Stability: The container (jar or sachet) and its contents should not be heated to temperatures higher than 50 °C. Iron pyrites are likely to oxidize in the air but tests have shown that the increase in weight of an exposed reference material of similar matrix, in the Auckland climate, is less than 0.1 % per year.

Method of Preparation: Pulverized feldspar minerals, basalt rock and barren iron pyrites were blended with finely pulverized and screened gold and silver-containing minerals. Once the powders were uniformly mixed the composite was placed into 887 wide-mouthed jars, each bearing a unique number. 24 jars were randomly selected from the packaging run and material from these jars was used for both homogeneity and consensus testing.

Homogeneity Assessment:

Sampling was performed by Rocklabs Reference Materials and an independent laboratory carried out gold analysis by fire assay of 30 g portions, using a gravimetric finish. Steps were taken to minimize laboratory method variation in order to better detect any variation in the candidate reference material.

Homogeneity: A sample was removed from the top of each of the 24 jars randomly selected from the 887 jars in the batch. The results of analysis of the 24 samples (randomly ordered then consecutively numbered before being sent to the laboratory) produced a relative standard deviation of 0.4%.

Settling: The contents of 3 randomly selected jars were compacted by vibration (to simulate the effect of freighting) and 5 samples were removed successively from top to bottom from each jar. In addition, 5 samples were removed from the last jar in the series. No top to bottom gradation in the gold values was observed neither was there a significant difference between the last jar and the other jars.

Analytical Methodology:

Once homogeneity had been established, two sub-samples were submitted to a number of well-recognized laboratories in order to assign gold and silver values by consensus testing. The sub-samples were drawn from the 24 randomly selected jars and each laboratory received samples from two different jars. Indicative concentration ranges were given. Each laboratory was instructed to analyse the samples for gold and silver using the method they believed would give the best results.

The samples were analysed for gold by all participating laboratories using fire assay followed by either gravimetric or instrument finish (AAS or ICP). Some laboratories analysed the gold samples twice using both methods. In this situation both sets of results were presented separately, and included in the statistical analysis.

Only laboratories that routinely perform silver analysis were requested to analyse the samples for silver. A range of methods were used between labs, ranging from variations on acid digest/instrument finish, to fire assay/gravimetric finish.

The amount of sample used in the analyses varied between laboratories for both gold (range 15 - 50g) and silver (range 0.1 - 2.0g digest/instrument; and 30g fire assay/gravimetric).

Calculation of Certified Value:

As some laboratories returned results for two different methods, 57 sets of gold results were returned from 52 laboratories, and 30 sets of silver results were returned from 30 laboratories. Statistical analysis to identify outliers was carried out using the principles detailed in sections 7.3.2 – 7.3.4, ISO 5725-2: 1994. Assessment of each laboratory's performance was carried out on the basis of z-scores, partly based on the concept described in ISO/IEC Guide 43-1. Details of the criteria used in these examinations are available on request. As a result of these statistical analyses, 9 sets of results were excluded for the purpose of assigning a gold concentration value and 2 sets were excluded for silver. Recommended values were thus calculated from the average of the remaining n = 48 sets of replicate results for gold and n = 28 for silver.

The 95% confidence interval was estimated using the formula:

$$X \pm ts/\sqrt{n}$$

(where X is the estimated average, s is the estimated standard deviation of the laboratory averages, and t is the 0.025 tail-value from Student's t-distribution with n-1 degrees of freedom). The recommended values are provided at the beginning of the certificate in µg/g (ppm) units.

A summary of the results used to calculate the recommended value for silver and gold are listed on page 4 and page 5 respectively. The names of the laboratories that submitted results are listed on page 6. The results are listed in increasing order of the individual laboratory averages.

Statistical analysis of the consensus test results has been carried out by independent statistician, Tim Ball.

Summary of Results Used to Calculate Silver Value

(Listed in increasing order of individual laboratory averages)

Silver (ppm)		
Sample 1	**Sample 2**	**Set Average**
79	78	78.5
78.5	78.9	78.70
80	81	80.5
81	80	80.5
82.9	78.3	80.60
82	80	81.0
82.1	81.0	81.55
83	81	82.0
82	82	82.0
82.3		82.3
83.1	81.8	82.45
82.0	83.0	82.50
83	82	82.5
82	84	83.0
82	84	83.0
83.2	83.5	83.32
83.5	83.4	83.45
82.0	85.7	83.85
83	85	84.0
82	86	84.0
84.0	84.2	84.10
85	84	84.5
87	83	85.0
83	87	85.0
85.00	85.75	85.375
85.1	87.0	86.06
86.70	86.50	86.600
87.60	87.90	87.750

Average of 28 sets	=	83.0 ppm
Standard deviation of 28 sets	=	2.2 ppm
Relative standard deviation	=	2.7 %
95% Confidence interval for average	=	+/- 0.9 ppm

<u>Note</u>: Neither the Standard deviation nor the Confidence interval should be used as a basis to set control limits when plotting individual laboratory results. See notes under "Instructions and Recommendations for Use" (pg 7)

Summary of Results Used to Calculate Gold Value

(Listed in increasing order of individual laboratory averages)

Gold (ppm)		
Sample 1	**Sample 2**	**Set Average**
17.73	16.65	17.191
17.72	17.25	17.485
17.7	17.6	17.65
17.56	17.80	17.680
17.74	17.68	17.710
17.20	18.25	17.725
17.768	17.769	17.769
17.9	17.7	17.80
17.8	17.8	17.80
17.875	17.975	17.925
17.89	17.99	17.940
17.70	18.20	17.950
17.83	18.08	17.955
18.15	17.85	18.000
17.85	18.20	18.025
17.95	18.10	18.025
17.9	18.2	18.05
18.1	18.0	18.05
18.00	18.12	18.060
18.180	18.015	18.098
18.20	18.13	18.167
18.17	18.18	18.174
18.050	18.300	18.175
18.115	18.254	18.185
18.13	18.25	18.188
18.155	18.235	18.195
18.03	18.38	18.207
18.200	18.220	18.210
18.130	18.309	18.219
18.40	18.05	18.225
18.10	18.35	18.225
18.584	17.912	18.248
18.275	18.35	18.313
18.4	18.3	18.35
18.4	18.3	18.35
18.20	18.55	18.375
18.5	18.4	18.45
18.44	18.49	18.467
18.320	18.685	18.503
18.5	18.5	18.51
18.40	18.70	18.550
18.3	18.8	18.55
18.609	18.529	18.569
18.70	18.45	18.575
18.6	18.6	18.60
18.375	19.175	18.775
18.80	18.85	18.825
19.0	18.7	18.85

Average of 48 sets	=	18.16 ppm
Standard deviation of 48 sets	=	0.35 ppm
Relative standard deviation	=	1.9 %
95% Confidence interval for average	=	+/- 0.10 ppm

Note: ***Neither the Standard deviation nor the Confidence interval should be used as a basis to set control limits when plotting individual laboratory results.***
See notes under "Instructions and Recommendations for Use" (pg 7)

Participating Laboratories

Australia		ALS Minerals, Kalgoorlie
	†	ALS Minerals, Perth
		ALS Minerals, Townsville
	†	Bureau Veritas Amdel, Adelaide
		Bureau Veritas Amdel, Kalgoorlie
		Bureau Veritas Geoanalytical, West Kalgoorlie
		Bureau Veritas, Mt Isa, Queensland
	†	Intertek Genalysis Laboratory Services, Perth
Burkina Faso		ALS Minerals, Burkina Faso
		SEMAFO Burkina Faso S.A.
Canada	†	Acme Analytical Laboratories, Vancouver
	†	ALS Minerals, Val-d'Or
	†	ALS Minerals, Vancouver
	†	Bourlamaque, Quebec
	†	Loring Laboratories (Alberta) Ltd, Calgary
	†	SGS Minerals Services, Lakefield
	†	SGS Minerals Services, Vancouver
		Techni-Lab S.G.B. Abitibi Inc/Actlabs, Val d'Or
	†	Techni-Lab S.G.B. Abitibi Inc/Actlabs, Ste-Germaine-Boule
	†	TSL Laboratories Inc, Saskatoon
Chile	†	Acme Analytical Laboratories, Santiago
	†	ALS Minerals, Santiago
Côte d'Ivoire		Bureau Veritas Mineral Laboratories, Abidjan
Ghana		ALS Minerals, Kumasi
Ireland	†	ALS Minerals, Loughrea
Kyrgyz Republic	†	Stewart Assay and Environmental Laboratories LLC, Kara-Balta
Mali		ALS Minerals, Bamako
Namibia	†	Bureau Veritas- Mineral Laboratories, Swakopmund
New Zealand		SGS New Zealand Ltd, Otago
		SGS New Zealand Ltd, Reefton
	†	SGS New Zealand Ltd, Waihi
Peru	†	ALS Minerals, Lima
	†	Inspectorate Services Perú S.A.C., Callao
	†	Minera Yanacocha SRL – Newmont, Lima
Romania	†	ALS Minerals, Rosia Montana
South Africa		AB Analytical Laboratory Services, Boksburg
	†	ALS Minerals, Edenvale
		Gold Fields West Wits Analytical Laboratory, Carletonville
	†	Intertek Minerals, Johannesburg
		Performance Laboratories, Barberton
		Performance Laboratories, Randfontein
		Performance Laboratories, Allanridge
Turkey	†	Acme Analitik Laboratuar Hizmetleri Ltd, Sirketi
	†	ALS Minerals, Izmir
United Kingdom	†	Inspectorate International, Essex
USA	†	ALS Minerals, Reno
		Barrick Goldstrike – Met Services, Nevada
	†	Inspectorate, Sparks
		Newmont Mining Corporation, Carlin
		Newmont Mining Corporation, Lone Tree
	†	Newmont Mining Corporation, Twin Creeks
Zimbabwe		Performance Laboratories, Ruwa

Note: The symbol † identifies laboratories that analysed the samples for both gold and silver.
All laboratories listed above analysed the samples for gold.

Instructions and Recommendations for Use:

Weigh out quantity usually used for analysis and analyse by normal procedure. Do not dry before weighting.

We quote a 95% confidence interval for our estimate of the declared value. This confidence interval reflects our uncertainty in estimating the true values for the gold and silver content of the reference material. The interval is chosen such that, if the same procedure as used here to estimate the declared value were used again and again, then 95% of the trials would give intervals that contained the true value. It is a reflection of how precise the trial has been in estimating the declared value. It **does not** reflect the variability any particular laboratory will experience in its own repetitive testing.

Some users in the past have misinterpreted this confidence interval as a guide as to how different an individual test result should be from the declared value. Some mistakenly use this interval, or the standard deviation from the consensus test, to set limits for control charts on their own routine test results using the reference material. Such use inevitably leads to many apparent out-of-control points, leading to doubts about the laboratory's testing, or of the reference material itself.

A much better way of determining the laboratory performance when analysing the reference material is to accumulate a history of the test results obtained, and plot them on a control chart. The appropriate centre line and control limits for this chart should be based on the average level and variability exhibited in the laboratory's **own** data. This chart will provide a clear picture of the long-term stability or otherwise of the laboratory testing process, providing good clues as to the causes of any problems. To help our customers do this, we can provide a free Excel template that will produce sensible graphs, with intelligently chosen limits, from the customer's own data.

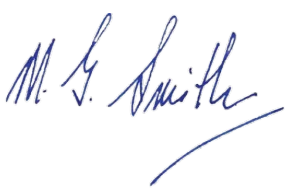
Legal Notice:

This certificate and the reference material described in it have been prepared with due care and attention. However ROCKLABS Ltd, Scott Technology Ltd and Tim Ball Ltd accept no liability for any decisions or actions taken following the use of the reference material.

References:

For further information on the preparation and validation of this reference material please contact Malcolm Smith.

Certifying Officer



M G Smith BSc, FNZIC

Independent Statistician

Tim Ball BSc (Hons)