Certificate of Analysis
Certified Reference Material (CRM) OxQ205 – Gold Au

Analyte	Unit	Certified Value	Expanded Uncertainty (U)	Coverage factor (k)
Au	ppm	34.58	+/- 0.29	2
Ag	ppm	128.66	+/- 2.11	2

Note 1:

- SI units equivalent: 1 ppm (parts per million) = gram per ton = mg/kg = ug/g = 0.0001wt% = 1000ppb (part per billion).
- The expanded uncertainty (U) is reported at an approximate 95% level of confidence and was calculated in accordance with ISO 33405:2024, using coverage factor k = 2.

The above values apply only to product in jars or sachets which have an identification number within the following range: ***596544–597113.***

Prepared and Certified By

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Date of Certification: 30 January 2026

Certificate Version: 1

Available Packaging

This reference material has been packed in wide-mouthed jars containing 2.5 kg of material. Some jars may subsequently be repacked into sealed polyethylene sachets.

Origin of Reference Material

The CRM consists of basalt and feldspar minerals, with minor finely divided gold-containing minerals, screened to eliminate gold nugget effects.

Supplier

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

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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:

Method used: Borate Fusion XRF - (Uncertified Values)

Constituent	wt.%
SiO_2	59.81
Al_2O_3	16.61
Na_2O	3.54
K_2O	7.33
CaO	3.16
MgO	3.01
TiO_2	0.92
MnO	0.07
P_2O_5	0.24
Fe_2O_3	4.84

Handling Instructions

Fine powders present potential hazards to both the eyes and lungs. Therefore, it is recommended to take standard precautions, including the use of safety glasses and dust masks.

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 and Storage instructions

The material must be kept in a cool, dry environment to ensure that it does not affect the integrity of the CRM. Unopened, the reference material has a shelf life of ten years from the certification date. Stability will be regularly assessed, and any observed changes will be promptly communicated to purchasers. The material should be retained in its original packaging, and the jars must be securely closed after each use.

Method of Preparation

This reference material has been produced under quality management systems certified to ISO 9001:2015. Finely pulverized feldspar minerals and basalt rock were blended with similarly pulverized and screened gold-containing minerals. After achieving a uniform mixture of the powders, the resulting composite was distributed into 570 wide-mouthed jars, each assigned with a unique number. A random selection of 26 jars from the packaging run was used for both homogeneity and characterization testing.

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Homogeneity Assessment

Duplicate samples were collected from top and middle of each 26 jars, resulting in 52 samples analyzed. Gold analysis was performed by an independent laboratory using fire assay on 30g portions followed by an ICP-AES finish. Measures were implemented to minimize methodological variations within the laboratory, thereby enhancing the detection of variations in the candidate reference material.

Gold Homogeneity: One outlier was observed in Tank 1; however, with or without this value, the overall results were the same and therefore no further investigation was required. ANOVA results showed zero variability between tanks and between jars, confirming no inhomogeneity due to tanks and jars. The estimated within-jars variability (SD = 0.3 ppm; RSD = 0.9%) was less than 2%, demonstrating that within jars variation is not a significant source of inhomogeneity.

Silver Homogeneity: No obvious outliers were observed. ANOVA results showed that the estimated variability between tanks was zero, confirming homogeneity across tanks. Variability between jars (SD = 0.92 ppm; RSD = 0.72%) and within-jars (SD = 2.1 ppm; RSD = 1.6%) was less than 2%, indicating that neither factor contributes significantly to inhomogeneity.

Analytical Methodology

Once homogeneity was verified, two sub-samples were distributed to a number of laboratories in a round-robin initiative for consensus testing to establish a gold value. The selection of participating laboratories was based on their continued good performance prior interlaboratory programs facilitated by Rocklabs. The sub-samples were derived from a selection of 26 randomly chosen jars, with each laboratory receiving samples from two distinct jars.

Laboratories were instructed to analyze the samples for gold by fire assay using the finish method they deemed most effective. Indicative concentration ranges were provided to aid method selection.

Gold analysis was conducted by all participating laboratories using fire assay followed by either gravimetric or instrument finish (AAS or ICP). The quantity of sample used in the analyses varied among laboratories, ranging from 30–50g. Silver analysis was conducted by a subset of participating laboratories using a four-acid digestion method followed by ICP-AES or AAS finish, with a minimum sample mass of 0.4g.

Calculation of Certified Value

Each of the 28 participating laboratories returned replicate gold results using the same finish method for both samples. The identification of outliers was carried out using the principles detailed in sections 7.3.2 – 7.3.4, ISO 5725-2: 2025. The evaluation of each laboratory's performance relied on z-scores, partly based on the concept described in ISO/IEC 17043-2023. Criteria details for these assessments are available on request. Following the statistical analyses, 3 sets of results were excluded in the process of determining gold concentration value to this reference material.

Consequently, a certified value was evaluated in accordance with ISO 33405:2024 and incorporates contributions from characterization, between- and within-unit homogeneity, transport stability, and long-term stability. The combined standard uncertainty was expanded using a coverage factor k = 2 to obtain the expanded uncertainty (U), corresponding to an approximate 95% level of confidence, as shown in Equation (18) of ISO 33405:2024:

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$$u_{CRM} = \sqrt{{u_{char}}^2 + {u_{homo}}^2 + {u_{trn}}^2 + {u_{lts}}^2}$$

Where u_{char} is uncertainty of characterization, u_{homo} is uncertainty due to inhomogeneity, u_{trn} is uncertainty due to transport instability and u_{lts} is uncertainty due to long-term (storage) instability.

The certified value is provided at the beginning of the certificate in µg/g (ppm) units. A summary of the results used to calculate the certified value is listed below and the names of the laboratories that submitted results are listed below. The results are listed in increasing order of the individual laboratory averages.

Statistical analysis of the consensus test results has been carried out by an independent statistician, Dr Daniel Walsh.

Summary of Results Used to Calculate Gold and Silver Value

(Listed in increasing order of individual laboratory averages)

Gold ppm		
Sample 1	**Sample 2**	**Mean**
32.56	33.49	33.02
33.20	33.30	33.25
33.20	33.40	33.30
33.66	33.48	33.57
33.94	33.82	33.88
34.30	34.00	34.15
34.00	34.60	34.30
34.16	34.56	34.36
34.30	34.70	34.50
34.60	34.60	34.60
34.60	34.60	34.60
34.31	34.89	34.60
34.50	34.90	34.70
34.40	35.00	34.70
35.50	34.30	34.90
34.90	34.90	34.90
35.07	34.76	34.92
35.00	34.90	34.95
35.10	35.10	35.10
35.10	35.10	35.10
35.00	35.40	35.20
35.50	35.30	35.40
35.80	35.20	35.50
35.30	35.70	35.50
35.51	35.50	35.51
Average of the 25 sets		34.58 ppm
Standard deviation of the 25 sets		0.716 ppm
Relative standard deviation		2.1%

Silver ppm		
Sample 1	**Sample 2**	**Mean**
124.0	121.0	122.5
127.0	128.0	127.5
127.9	127.7	127.8
130.0	128.0	129.0
128.5	130.0	129.3
131.0	129.0	130.0
129.0	132.0	130.5
134.8	130.8	132.8
Average of the 8 sets		128.66 ppm
Standard deviation of the 8 sets		2.99 ppm
Relative standard deviation		2.3%

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Participating Laboratories

Australia	ALS Geochemistry, Perth
	ALS Geochemistry, Townsville
	Intertek Genalysis Laboratory Services, Perth
Burkina Faso	ALS Geochemistry, Ouagadougou
Canada	Actlabs Val dÓr
	ALS Geochemistry, Vancouver
	ALS Geochemistry, Val d'Or
	Bureau Veritas Commodities Canada Ltd, Vancouver
	SGS Minerals Analytical Services, Lakefield, Ontario
	Techni-Lab, Quebec
China	Fujian Zijin Mining and Metallurgical Testing, Xiamen
Côte d'Ivoire	Bureau Veritas Mineral Laboratories, Abidjan
Ghana	Intertek Minerals Limited, Tarkwa
Guyana	MSALABS GUYANA INC
Ireland	ALS Geochemistry, Loughrea
Kyrgyz Republic	Stewart Assay and Environmental Laboratories LLC, Kara-Balta
Laos	ALS Geochemistry, Vientiane
Mexico	BV Minerals, Hermosillo
Mali	Bureau Veritas Mineral Mali
Mongolia	ALS Geochemistry, Ulaanbaatar
	ALS Geochemistry, Bayan Khundii
Morocco	LABOMINE
Peru	Minera Yanacocha, Peru
	Inspectorate Services Peru SAC
	ALS Geochemistry, Lima, Peru
Turkey	ALS Geochemistry, Izmir
USA	ALS Geochemistry, Reno
	Bureau Veritas Commodities and Trade, Sparks

Instructions and Recommendations for Use

Weigh out the quantity of CRM usually used for analysis and analyze for total gold by normal procedure. Homogeneity testing has shown that consistent results are obtainable for gold when 30g portions are taken for analysis.

The certified value is accompanied by an expanded uncertainty (U), which represents total uncertainty associated with the certified gold concentration in the sealed packaging. The expanded uncertainty has been calculated in accordance with ISO 33405:2024 using a coverage factor of $k = 2$, corresponding to an approximate 95% level of confidence.

Drying or mixing of the material is not required before the weighing and analysis. Samples may be drawn multiple times from a jar, however, the container must be securely re-closed after each use to maintain the integrity of the Certified Reference Material.

The expanded uncertainty provided with the certified value shall not be used to establish laboratory control limits. The uncertainty reflects the certification process and interlaboratory consensus testing, rather than the repeatability or reproducibility of individual laboratory measurement systems.

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Laboratories are encouraged to establish their own quality control limits by routinely analysing this CRM, recording results over time, and plotting them on an appropriate control chart. This approach enables effective monitoring of laboratory bias and analytical variability based on internally generated data.

Minimum Sample Mass Recommendation

The certified values for gold were established using 30–50 g aliquots by fire assay. A minimum sample mass of 30 g is recommended to ensure representative results. The certified value for silver was determined by a subset of participating laboratories using four-acid digestion followed by ICP-AES or AAS, with a minimum sample mass of 0.4 g.

Note: Statements of uncertainty and homogeneity are applicable only when using at least 30 g for gold and 0.4 g for silver.

Metrological Traceability

The certified values in this report are supported by interlaboratory results that can be traced back to the international measurement (SI) scale of mass. The data presented in the tables indicate mass fractions, expressed in either weight percent, milligrams per kilogram (mg/kg) expressed as parts per million. Analytical samples were carefully selected to adequately represent the entire batch of the prepared CRM. Each set of analytical data undergoes validation by the assayer, incorporating reference materials and quality control checks during analysis. The selection of laboratories was based on their proven performance in previous interlaboratory programs conducted by Rocklabs, with many of these laboratories being accredited to ISO/IEC 17025. The certified values provided in the Certificate of Analysis are derived from the means of accepted data following rigorous statistical treatment.

Commutability

The measurements forming the basis of the certified values in this report involved pre-treatment (fire assay) of the sample. This process simplified the sample to a well-understood form, allowing more accurate and meaningful comparisons and measurements in various testing and measurement processes. The effectiveness and understanding of these methods eliminate concerns regarding commutability for this CRM. All Rocklabs CRMs are derived from natural materials, ensuring their behavior aligns closely with routine 'field' samples in relevant measurement processes. The matrix characteristics of this CRM are detailed in the **'Origin of Reference Material' and 'Description' sections**. Determining the suitability of this product shall be the sole responsibility of the user.

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Legal Notice

This certificate and the reference material described in it have been prepared with due care and attention. However, Scott Technology Ltd and Nano Consulting 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 Sadaf Sadaf.

QMS Accreditation

This Certified Reference Material (CRM) has been produced under a quality management system accredited to ISO 17034:2016 – General requirements for the competence of reference material producers. Our accreditation has been granted by IANZ, under accreditation number 4.

All Rocklabs products are manufactured under management systems that have been certified by Telarc to the following standards:

- ISO 9001:2015 Quality Management System
- ISO 14001:2015 Environmental Management System
- ISO45001:2018 Occupational Health and Safety Management System

Certifying Officer

Sadaf Sadaf — 30th January 2026

Sadaf Sadaf (PhD – Earth Science), Technical Chemist - Rocklabs

Independent Statistician

Daniel Walsh

Dr. Daniel Walsh, PhD