

QOTHO MINERALS (PTY) LTD

A SANAS Accredited PT Provider: PTS0012

36 Pelindaba Road, Broederstroom, Madibeng, 0240
PostNet Suite 173, Private Bag X0003, Ifafi, 0260, North West
Province, South Africa
Tel: +27(0) 87 004 3200



Certificate of Participation

for participation in the QOTHO PTS TIN - 09 - 2025

For the Lab Participant
Global Sampling and Analysis (XRF Finish)

Lab Code: [REDACTED]

Contact person: Natalya Laposhina

Country: Rwanda

Telephone: 078-830-2573

Analyst (s): Didiane, Elizabeth, Alexey, Artem, Natalya

Assessment of Laboratory's Result (s)

Measurand	Sample	Unit	Result	Assigned value	z score (absolute)	Successful result
As	14-008-O	µg/g	2258.500	2188.380	0.442	Yes
As	14-009-C	µg/g	678.500	0.000		Not Evaluated
As	14-010-T	µg/g	21.500	0.000		Not Evaluated
As	14-011-O	µg/g	2291.500	2188.380	0.650	Yes
As	14-012-C	µg/g	668.500	0.000		Not Evaluated
As	14-013-T	µg/g	25.000	0.000		Not Evaluated
Be	14-009-C	µg/g	12.000	0.000		Not Evaluated
Be	14-012-C	µg/g	12.500	0.000		Not Evaluated
Bi	14-008-O	µg/g	143.000	146.471	0.448	Yes

The analytical method listed above pertains to the main analyte of this scheme. Please note that different methods may have been used for the determination of other analytes included in this certificate.

The test results were reported and released by the Technical signatory: Natalya Laposhina

The analysis was conducted by Didiane, Elizabeth, Alexey, Artem, Natalya who is deemed competent or not by the assessment of the laboratory performance.

Issued by:

Takudzwa Tsapayi (Technical Signatory)

Date: 14/11/2025

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Measurand	Sample	Unit	Result	Assigned value	z score (absolute)	Successful result
Bi	14-009-C	µg/g	192.000	188.711	0.204	Yes
Bi	14-010-T	µg/g	<1.000	0.000		Not Evaluated
Bi	14-011-O	µg/g	145.000	146.471	0.190	Yes
Bi	14-012-C	µg/g	189.500	188.711	0.049	Yes
Bi	14-013-T	µg/g	<1.000	0.000		Not Evaluated
Ca	14-008-O	%	0.438	0.445	0.232	Yes
Ca	14-009-C	%	0.268	0.280	0.602	Yes
Ca	14-010-T	%	0.679	0.696	0.877	Yes
Ca	14-011-O	%	0.445	0.445	0.001	Yes
Ca	14-012-C	%	0.267	0.280	0.625	Yes
Ca	14-013-T	%	0.679	0.696	0.902	Yes
Cr	14-008-O	%	0.024	0.024	0.038	Yes
Cr	14-009-C	%	0.011	0.009	1.114	Yes
Cr	14-010-T	%	0.083	0.000		Not Evaluated
Cr	14-011-O	%	0.026	0.024	0.785	Yes
Cr	14-012-C	%	0.010	0.009	0.562	Yes
Cr	14-013-T	%	0.083	0.000		Not Evaluated
Cu	14-008-O	%	0.375	0.436	1.477	Yes
Cu	14-009-C	%	0.166	0.171	0.574	Yes

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Cu	14-010-T	%	0.003	0.000		Not Evaluated
Cu	14-011-O	%	0.407	0.436	0.686	Yes
Cu	14-012-C	%	0.164	0.171	0.785	Yes
Cu	14-013-T	%	0.002	0.000		Not Evaluated
Fe	14-008-O	%	23.605	23.150	0.899	Yes
Fe	14-010-T	%	0.422	0.421	0.070	Yes
Fe	14-011-O	%	23.540	23.150	0.769	Yes
Fe	14-012-C	%	16.931	16.290	2.643	Yes
Fe	14-013-T	%	0.425	0.421	0.221	Yes
K	14-008-O	%	0.768	0.791	0.916	Yes
K	14-009-C	%	0.608	0.613	0.316	Yes
K	14-010-T	%	2.093	2.103	0.184	Yes
K	14-011-O	%	0.768	0.791	0.936	Yes
K	14-012-C	%	0.611	0.613	0.089	Yes
K	14-013-T	%	2.088	2.103	0.296	Yes
Li	14-008-O	%	0.009	0.008	0.675	Yes
Li	14-010-T	%	0.396	0.392	0.232	Yes
Li	14-011-O	%	0.007	0.008	0.345	Yes
Li	14-013-T	%	0.405	0.392	0.725	Yes

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Measurand	Sample	Unit	Result	Assigned value	z score (absolute)	Successful result
Mg	14-008-O	%	1.388	1.340	0.323	Yes
Mg	14-009-C	%	1.032	1.006	0.378	Yes
Mg	14-010-T	%	0.118	0.128	0.923	Yes
Mg	14-011-O	%	1.402	1.340	0.419	Yes
Mg	14-012-C	%	1.024	1.006	0.265	Yes
Mg	14-013-T	%	0.120	0.128	0.741	Yes
Mn	14-008-O	%	0.202	0.197	0.476	Yes
Mn	14-009-C	%	0.180	0.169	0.683	Yes
Mn	14-010-T	%	0.032	0.029	1.132	Yes
Mn	14-011-O	%	0.200	0.197	0.327	Yes
Mn	14-012-C	%	0.180	0.169	0.683	Yes
Mn	14-013-T	%	0.031	0.029	0.859	Yes
Nb	14-008-O	%	0.026	0.029	0.619	Yes
Nb	14-010-T	%	0.008	0.015	1.013	Yes
Nb	14-011-O	%	0.025	0.029	0.817	Yes
Nb	14-013-T	%	0.008	0.015	1.013	Yes
P2O5	14-009-C	%	0.072	0.069	0.395	Yes
P2O5	14-010-T	%	1.762	0.000		Not Evaluated
P2O5	14-012-C	%	0.071	0.069	0.312	Yes

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Measurand	Sample	Unit	Result	Assigned value	z score (absolute)	Successful result
P2O5	14-013-T	%	1.758	0.000		Not Evaluated
Sn	14-008-O	%	5.338	5.679	0.837	Yes
Sn	14-009-C	%	28.011	27.932	0.338	Yes
Sn	14-010-T	%	0.046	0.047	0.118	Yes
Sn	14-011-O	%	5.335	5.679	0.843	Yes
Sn	14-012-C	%	28.032	27.932	0.433	Yes
Sn	14-013-T	%	0.047	0.047	0.009	Yes
Ta	14-010-T	%	0.011	0.014	0.352	Yes
Ta	14-013-T	%	0.011	0.014	0.433	Yes
Th	14-009-C	µg/g	25.000	0.000		Not Evaluated
Th	14-012-C	µg/g	20.000	0.000		Not Evaluated
U	14-009-C	µg/g	15.000	0.000		Not Evaluated
U	14-012-C	µg/g	15.000	0.000		Not Evaluated
W	14-008-O	%	80.000	117.515	0.684	Yes
W	14-009-C	µg/g	260.000	0.000		Not Evaluated
W	14-010-T	µg/g	35.000	0.000		Not Evaluated
W	14-011-O	µg/g	60.000	117.515	1.049	Yes
W	14-012-C	µg/g	279.000	0.000		Not Evaluated
W	14-013-T	µg/g	45.000	0.000		Not Evaluated

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Measurand	Sample	Unit	Result	Assigned value	z score (absolute)	Successful result
Zn	14-008-O	%	0.245	0.228	0.874	Yes
Zn	14-009-C	%	0.241	0.223	1.710	Yes
Zn	14-010-T	%	0.011	0.000		Not Evaluated
Zn	14-011-O	%	0.245	0.228	0.849	Yes
Zn	14-012-C	%	0.241	0.223	1.663	Yes
Zn	14-013-T	%	0.011	0.000		Not Evaluated

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QOTHO PTS TIN - 09 - 2025

Summary of Results

Global Sampling and Analysis (XRF Finish)

Lab code: [REDACTED]

Analyte	Successful	Total	Percentage	Within tolerance limits	Too few labs	14-008-O	14-009-C	14-010-T	14-011-O	14-012-C	14-013-T
As	Yes	6	100.000 %	2	4	0.442	too few labs	too few labs	0.650	too few labs	too few labs
Be		2	66.667 %	0	2	---	too few labs	---	---	too few labs	---
Bi	Yes	6	100.000 %	4	2	-0.448	0.204	too few labs	-0.190	0.049	too few labs
Ca	Yes	6	100.000 %	6	0	-0.232	-0.602	-0.877	0.001	-0.625	-0.902
Cr	Yes	6	100.000 %	4	2	-0.038	1.114	too few labs	0.785	0.562	too few labs
Cu	Yes	6	100.000 %	4	2	-1.477	-0.574	too few labs	-0.686	-0.785	too few labs
Fe	Yes	5	100.000 %	5	0	0.899	---	0.070	0.769	2.643	0.221
K	Yes	6	100.000 %	6	0	-0.916	-0.316	-0.184	-0.936	-0.089	-0.296
Li	Yes	4	100.000 %	4	0	0.675	---	0.232	-0.345	---	0.725
Mg	Yes	6	100.000 %	6	0	0.323	0.378	-0.923	0.419	0.265	-0.741
Mn	Yes	6	100.000 %	6	0	0.476	0.683	1.132	0.327	0.683	0.859

Signed:

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Date: 14/11/2025



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Analyte	Successful	Total	Percentage Within tolerance limits	Too few labs	14-008-O	14-009-C	14-010-T	14-011-O	14-012-C	14-013-T	
Nb	Yes	4	100.000 %	4	0	-0.619	---	-1.013	-0.817	---	-1.013
P2O5	Yes	4	100.000 %	2	2	---	0.395	too few labs	---	0.312	too few labs
Sn	Yes	6	100.000 %	6	0	-0.837	0.338	-0.118	-0.843	0.433	-0.009
Ta	Yes	2	100.000 %	2	0	---	---	-0.352	---	---	-0.433
Th		2		0	2	---	too few labs	---	---	too few labs	---
U		2		0	2	---	too few labs	---	---	too few labs	---
W	Yes	6	100.000 %	2	4	-0.684	too few labs	too few labs	-1.049	too few labs	too few labs
Zn	Yes	6	100.000 %	4	2	0.874	1.710	too few labs	0.849	1.663	too few labs

Summarised assessment

67 of 91 sample/measurand combinations examined successfully, which is equivalent to 100.00% (minimum requirement: 80%).

Therewith the minimum requirements for a successful participation in the ring test are not fulfilled.

Signed:

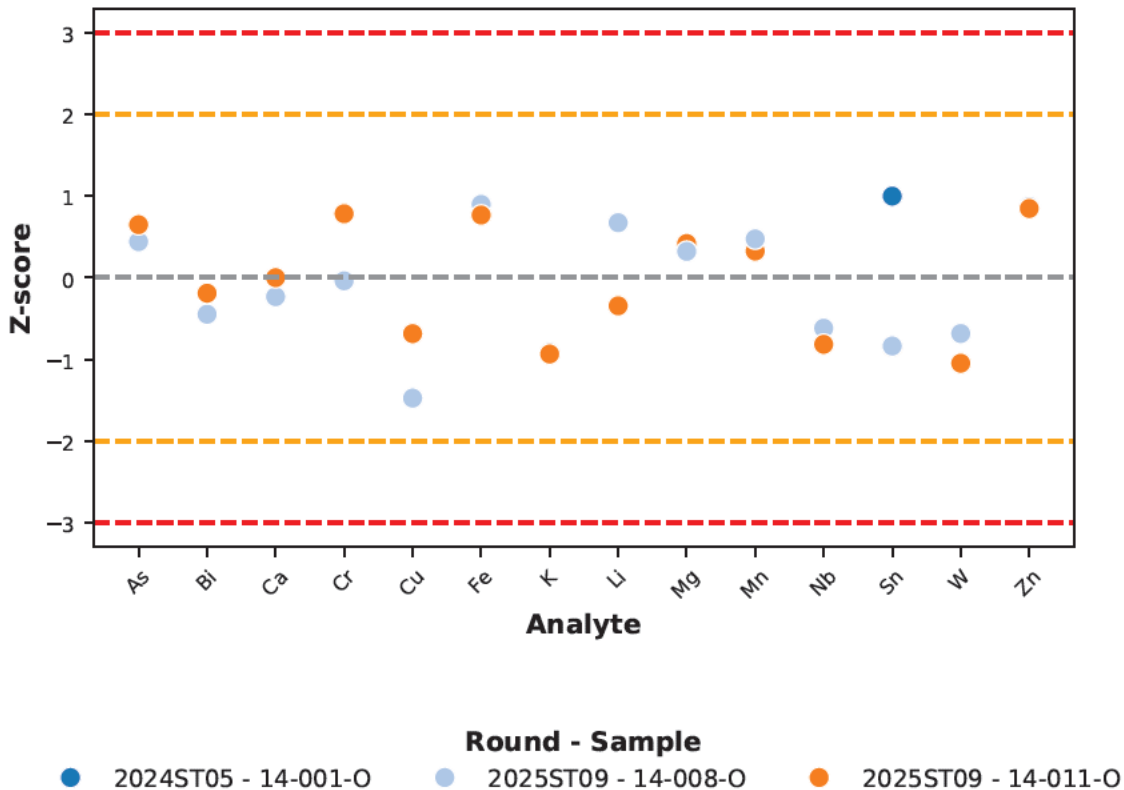
Takudzwa Tsapayi (Technical Signatory)

Date: 14/11/2025



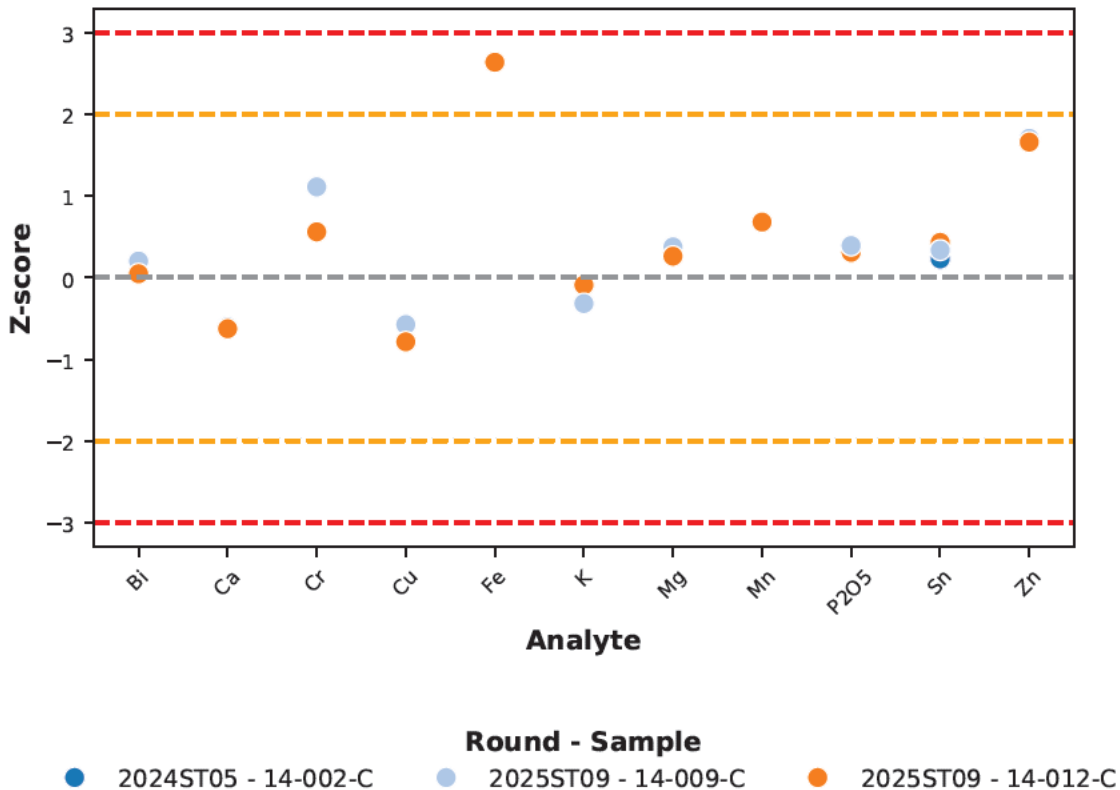
Z-score Trend for Tin Ore Samples

Z-scores by analyte across multiple PT samples and rounds over the last 3 rounds



Z-score Trend for Tin Concentrate Samples

Z-scores by analyte across multiple PT samples and rounds over the last 3 rounds



Z-score Trend for Tin Tail Samples

Z-scores by analyte across multiple PT samples and rounds over the last 3 rounds

