

S1 TITAN 600-800

Geo Exploration Calibration (P/N: 730.0187) and Geo Mining Calibration (P/N: 730.0203)



| GEO EXPLORATION (3 PHASE RESULTS) | MgO | Al2O3 | SiO2 | P | S | Cl | K2O | Ca | Ti | V | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | As | Se | Rb | Sr | Y | Zr |
|--------------------------------------|-------|-------|-------|-------|-----|-----|-------|-----|------|-------|------|-------|-----|-------|----|------|-----|-------|------|-------|-------|-------|-------|------|
| LOD (ppm) on pure SiO2 | 4100 | 1240 | N/A | 38 | 63 | 134 | 55 | 33 | 40 | 20 | 17 | 11 | 20 | 4 | 5 | 4 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 3 |
| Upper Range (wt %) | 70% | 69% | 100% | 13.2% | 41% | 4% | 15.3% | 31% | 7.1% | 10.6% | 3.7% | 45.4% | 67% | 0.31% | 3% | 6.8% | 19% | 0.02% | 2.3% | 0.05% | 0.05% | 0.46% | 0.11% | 2.5% |
| Default Reporting as | OX | OX | OX | EL | EL | EL | OX | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL |
| Conversion factor OX --> EL | 0.603 | 0.529 | 0.467 | - | - | - | 0.83 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| GEO EXPLORATION (3 PHASE RESULTS) | Nb | Mo | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | Ba(K) | La (K) | Ce (K) | Hf | Ta | W | Pt | Au | Hg | Tl | Pb | Bi | Th | U |
|--------------------------------------|-------|------|-------|-------|-------|-------|-------|------|-----|--------|-------|--------|--------|-------|-------|------|-------|------|-------|-------|------|-------|-------|-------|
| LOD (ppm) on pure SiO2 | 3 | 7 | 14* | 13* | 9 | 4 | 1 | 40 | 21 | 7 | 42 | 141 | 192 | 12 | 7 | 39 | 11 | 1* | 1 | 14 | 4 | 3 | 4 | 9 |
| Upper Range (wt %) | 42.4% | 1.5% | 0.03% | 0.08% | 0.66% | 0.78% | 0.06% | 1.6% | 19% | 0.001% | 10.7% | 0.7% | 4.8% | 1.05% | 0.22% | 1.1% | 0.16% | 0.1% | 0.07% | 0.02% | 4.3% | 0.28% | 0.68% | 0.17% |
| Default Reporting as | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL |

| GEO MINING (3 PHASE RESULTS) | MgO | Al2O3 | SiO2 | P | S | Cl | K2O | Ca | Ti | V | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | As | Se | Rb | Sr | Y | Zr |
|---------------------------------|-------|-------|-------|-------|-----|-----|-------|-----|-----|-----|-----|-------|-----|-------|-----|-----|-----|-------|-----|-------|-------|-------|-------|-----|
| LOD (ppm) on pure SiO2 | 4900 | 1250 | N/A | 39 | 60 | 135 | 44 | 35 | 40 | 22 | 16 | 13 | 20 | 3 | 6 | 3 | 2 | 1 | 3 | 2 | 1 | 2 | 1 | 7 |
| Upper Range (wt %) | 70% | 69% | 100% | 13.2% | 41% | 4% | 15.3% | 31% | 60% | 56% | 27% | 45.4% | 70% | 72.4% | 79% | 80% | 80% | 0.02% | 76% | 0.05% | 0.07% | 1.02% | 0.22% | 39% |
| Default Reporting as | OX | OX | OX | EL | EL | EL | OX | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL |
| Conversion factor OX --> EL | 0.603 | 0.529 | 0.467 | - | - | - | 0.83 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

| GEO MINING (3 PHASE RESULTS) | Nb | Mo | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | Ba(K) | La (K) | Ce (K) | Hf | Ta | W | Pt | Au | Hg | Tl | Pb | Bi | Th | U |
|---------------------------------|-----|-----|-------|-------|-------|-------|------|-----|-----|-------|-------|--------|--------|-------|-----|-----|-------|------|-----|-------|-----|-----|-------|-------|
| LOD (ppm) on puer SiO2 | 1 | 10 | 14* | 13 | 10 | 10* | 13 | 69 | 26 | 7 | 62 | 161 | 128 | 9 | 43 | 33 | 11 | 1* | 1 | 15 | 6 | 4 | 4 | 9 |
| Upper Range (wt %) | 70% | 67% | 0.03% | 0.08% | 0.66% | 0.78% | 0.0% | 88% | 19% | 0.02% | 10.7% | 0.70% | 4.8% | 1.05% | 82% | 80% | 0.16% | 0.1% | 86% | 0.02% | 93% | 90% | 0.68% | 0.17% |
| Default Reporting as | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL | EL |

NOTE: Actual real world samples (soil or rocks) may contain interfering elements that the hardware settings or selection of analyte lines does not correct for; therefore the actual working (and displayed) LOD's for these samples may be HIGHER than those determined with the interference free standards

NOTE: The applications consist of separate calibrations for sulfides and oxides. In order to demonstrate the true LOD of the application, in the case of disagreement between measured LOD for oxide and sulfide calibrations, the lower of the two LODs is displayed.

NOTE: Ranges for sulfides and oxides may be different because of typical abundance in different matrix types. The reported upper range is the highest standard in either calibration.

*Some calibrations have artificial thresholds applied to prevent reporting of false positives. The LODs listed are independent of the thresholds.

Sample Prep: All calibration samples were prepared as dry sample powders packed into a sample cup and measured through a 4 micron foil

LOD = Limit of Detection. The smallest concentration which can be detected in a non-interfering matrix.

- In this document LOD is specified for SiO2 matrix in three sigma 99.7% confidence level (3 sigma) and 180 second analysis time in 3-phase mode (60 sec per phase)
- Individual elemental LOD's improve as a function of the square root of the analysis time. Multiply by 0.75 for 120 sec single phase comparison
- Detection limits are specified for SiO2 matrix samples where no other elements are present in the sample. For samples which contain significant amount of other overlapping elements, LOD for specific elements can be significantly higher than reported.
- Actual Limit of Detection in a sample is dependent on several factors, such as: Matrix Interferences, Overlapping elements, Level of statistical confidence and Testing time.
- Convert the Oxide displayed value with the coefficient listed to get elemental concentration

Calibration range: Is based on available reference materials and can be extrapolated up to 10% (relative) over highest value

TRACER 5i / S1 TITAN 600-800 Geo Exploration Calibration P/N: 730.0187



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|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| H | | | | | | | | | | | | | | | | | He |
| Li | Be | | | | | | | | | | | B | C | N | O | F | Ne |
| Na | Mg | | | | | | | | | | | Al | Si | P | S | Cl | Ar |
| K | Ca | Sc | Ti | V | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | Ge | As | Se | Br | Kr |
| Rb | Sr | Y | Zr | Nb | Mo | Tc | Ru | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | I | Xe |
| Cs | Ba | La | Hf | Ta | W | Re | Os | Ir | Pt | Au | Hg | Tl | Pb | Bi | Po | At | Rn |
| Fr | Ra | Ac | | | | | | | | | | | | | | | |

Phase 1: 30 kV

Phase 2: 50 kV

Phase 3: 15 kV

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu |
| Th | Pa | U | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No | Lr |

TRACER 5i / S1 TITAN 600-800

Geo Mining Calibration

P/N: 730.0203



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|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| H | | | | | | | | | | | | | | | | | He |
| Li | Be | | | | | | | | | | | B | C | N | O | F | Ne |
| Na | Mg | | | | | | | | | | | Al | Si | P | S | Cl | Ar |
| K | Ca | Sc | Ti | V | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | Ge | As | Se | Br | Kr |
| Rb | Sr | Y | Zr | Nb | Mo | Tc | Ru | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | I | Xe |
| Cs | Ba | La | Hf | Ta | W | Re | Os | Ir | Pt | Au | Hg | Tl | Pb | Bi | Po | At | Rn |
| Fr | Ra | Ac | | | | | | | | | | | | | | | |

Phase 1: 30 kV

Phase 2: 50 kV

Phase 3: 15 kV

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb | Lu |
| Th | Pa | U | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No | Lr |