Thermo Scientific Niton XL3t 500/900 GOLDD Analyzers

Elemental Limits of Detection for a SiO_2 Matrix in Mining Mode

The Thermo Scientific Niton XL3t 500/900 x-ray tube-based x-ray fluorescence (XRF) anayzer with GOLDD™ technology is purpose-built for high performance, reliability, and ease-of-use, providing further evidence of our leadership through excellence in innovation. With a 50 kV miniature x-ray tube, GOLDD technology, and multiple primary filters – the most versatile configuration ever offered in handheld XRF instruments – the Niton XL3t lowers the detection limits for trace elements to a level never before seen with a portable XRF analyzer.

The chart below details the sensitivity, or limits of detection (LODs), of the Niton XL3t 500/900 with GOLDD technology using mining mode for an SiO_2 matrix. All detection limits are in ppm (mg/kg) unless otherwise stated.

Limits of Detection for SiO_2 Matrix in Mining Mode (60 sec/filter)			
	XL3t 500 GOLDD	XL3t 900 GOLDD	XL3t 900 GOLDD He
Ba	20	50	50
Sb	10	15	15
Sn	10	16	16
Cd	7	8	8
Mo	3	3	3
Nb	3	3	3
Zr	3	3	3
Sr	8	8	8
Rb	6	6	6
Bi	3	3	3
As	5	5	5
Se	4	4	4
Au	15	15	15
Pb	4	4	4
W	50	50	50
Zn	6	6	6
Cu	15	12	12
Ni	25	22	22
Co	25	15	15
Fe	30	25	25
Mn	45	30	30
Cr	25	25	25
V	12	12	12
Ti	8	6	6
Ca	110	70	65
K	100	250	200
Cl	100	150	75
S	100	150	90
P	N/A	600	450
Si	N/A	N/A	N/A
Al	N/A	2000	750
Mg	N/A	2.5%	0.25%

Limits of detection (LODs) are dependent on the following factors:

- Testing time
- Interferences/Matrix
- Level of statistical confidence

Please Note:

The Thermo Scientific Niton XL3t 900 with GOLDD technology gives you light element performance (Mg-P) with and without Helium Purge, while the XL3t 500 with GOLDD technology gives you ultra low detection limits of heavy elements, such as Ba, Sn, and Sb. Contact a Thermo Fisher Scientific office, or your local representative for further clarification on which Niton analyzer fits your analytical requirements.

Ongoing research and advancements in our Niton XL3t GOLDD analyzers will lead to continual improvement in many of the values detailed in this chart.

Though great care has been taken to present true data that can be repeated in the "real world," it is worth noting LODs can vary significantly when the presence of constituent elements in a sample fluctuate. For applications that require sensitivities close to those listed, it is recommended that samples be analyzed as a feasibility study on-site with a company representative. For definition of terms, see ASTM Standard E 456, Standard Terminology Relating to Quality and Statistics.

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