

# Thermo Scientific Niton XL2 GOLDD Series Environmental Analyzers

## Elemental Limits of Detection in SiO<sub>2</sub> and SRM Matrices Using Soil Analysis

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The Niton® XL2 GOLDD Series x-ray fluorescence (XRF) analyzer is the performance choice for your toughest testing applications. Where low detection limits and high sample throughput are critical, our combination of hardware, software, and direct industry experience are combined to provide you with a solution to your most difficult analytical requirements. The chart below details the sensitivity, or limits of detection (LODs)<sup>1</sup>, of the Niton XL2 GOLDD using Soil Analysis Mode for an SiO<sub>2</sub> matrix, a typical soil matrix (SiO<sub>2</sub> with Ca/Fe), and SRM matrix. Soil Analysis Mode offers optimum performance for low levels of RCRA metals and other contaminants/constituents found in soil/sediment type samples. LODs are calculated as three standard deviations (99.7% confidence interval) for each element for a 120-second total analysis time.



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

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

### Please Note:

Ongoing research and advancements in our Niton XL2 Series analyzers with geometrically optimized large area drift detector (GOLDD) technology will lead to continual improvement in many of the values detailed in this chart. Contact a Thermo Fisher Scientific office or your local representative for the latest performance specifications.

Actual analysis time is based on your requirements, and, in most cases, shorter times will give you the detection limits you require. For example, if analysis time was reduced from 60 seconds/filter to 15 seconds/filter, then the detection limits obtained would be twice the values shown in the chart. Similarly, increasing the analysis time will reduce the detection limits by the square root of the increased time.

A/S = Application-specific

N/A = Not applicable

1. Definition and Procedure for the Determination of the Method of Detection Limit, 40 CFR, Part 136, Appendix B. Revision 1.11. U.S. Environmental Protection Agency. U.S. Government Printing Office: Washington, DC, 1995.

Limits of Detection in ppm (mg/kg)				
	Time	60s per filter		
	Matrix	SiO <sub>2</sub>	SiO <sub>2</sub> +Fe+Ca	SRM
Elements	Ba	55	65	65
	Sb	20	25	22
	Sn	20	25	22
	Cd	10	12	12
	Ag	A/S	A/S	A/S
	Pd	8	8	8
	Zr	10	12	13
	Sr	4	6	10
	Rb	4	4	7
	Pb	7	12	10
	Se	4	5	5
	As	5	10	8
	Hg	7	10	8
	Au	10	12	12
	Zn	8	16	16
	W	50	75	75
	Cu	14	20	20
	Ni	30	40	40
	Co	25	125	125
	Fe	40	N/A	N/A
	Mn	40	70	90
	Cr	70	90	100
	Ti	650	750	1000

Element list shown is not exhaustive. For limits of detection for elements not shown, please contact a Thermo Fisher Scientific office or your local representative.

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