Limits of Detection - Electronic Alloys

Thermo Scientific Niton XL5 Plus XRF Analyser

Low limits, high standards

Elemental limits of detection

The Thermo Scientific™ Niton™ XL5 Plus handheld XRF analyser is built for your most demanding applications. Where low detection limits and high sample throughput are critical, the Niton XL5 Plus' combination of hardware and software provide you with solutions to meet your most difficult analytical requirements.

The chart below details the typical sensitivity, or limits of detection (LODs)1 of the Niton XL5 Plus in parts per million (PPM) for various elements in aluminum (Al), iron (Fe), copper (Cu), zinc (Zn) and tin (Sn) base metals. LODs are calculated as three standard deviations (99.7% confidence interval) for each element, using 60-second analysis times per filter (120 seconds total analysis time).

Limits of Detection (mg/kg)
Time: 60s per filter

Element	Al Base	Fe Base	Cu Base	Zn Base	Sn Base
Bi	3	17	40	120	78
Pb	3	63	44	87	79
Hg	7	51	74	430	150
Pt	11	75	140	500	180
Ba	14	48	74	74	1200
Sb	6	20	29	55	200
Sn	5	21	34	31	N/A
In	3	15	13	26	190
Cd	3	13	19	20	140
Ag	2	13	24	23	64
Pd	2	11	15	24	39
Br	1	9	14	68	24
As	4	43	39	70	80
Zn	8	51	120	N/A	130
Cu	12	64	N/A	66	200
Ni	20	260	90	67	290
Co	35	500	100	69	400
Fe	70	N/A	90	110	660
Cr	28	66	29	41	48
V	33	56	32	33	29
Ti	11	58	23	25	71

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

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

Please note:
Ongoing research and advancements in our Niton XL5 Plus analysers will lead to continual improvement in many of the values detailed in this chart. Contact Niton UK for the latest performance specifications.

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

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