Limits of Detection - Plastics

Thermo Scientific Niton XL2 Plus XRF Analyser

Low limits, high standards

Elemental limits of detection

The Thermo Scientific™ Niton™ XL2 Plus handheld XRF analyser is built for your most demanding applications. When low detection limits and high sample throughput is critical, the Niton XL2 Plus' combination of hardware and software provides you with solutions designed to meet your most difficult analytical requirements.

The chart below details the typical sensitivity, or limits of detection (LODs)1, of the Niton XL2 Plus in parts per million (PPM) for various elements in polyethylene (PE) and polyvinyl chloride (PVC) plastics. LODs are calculated as three standard deviations (99.7% confidence interval) for each element using a 30 second analysis time per filter.

Limits of Detection in ppm (mg/kg) Time: 30s per filter		
Element	**PE**	**PVC**
Bi	7	25
Pb	5	15
Hg	4	25
Au	6	35
Ba	17	120
Sb	35	40
Sn	35	33
Cd	25	358
Br	2	6
Se	5	15
As	3	20
Zn	5	55
Cu	10	65
Ni	15	70
Fe	20	90
Cr	30	190
V	160	1000
Ti	200	2000
Cl	15	N/A

Values detailed above are preliminary and subject to change.
A/S= Application Specific N/A = Not Applicable

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 development in our Niton XL2 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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