

LOD for DELTA Professional Alloy Analyzer

Tough on the Outside, Smart on the Inside



The DELTA Professional model DPO-2000 is capable of measuring elements from concentrations as low as several parts per million (ppm) all the way up to 100%. The determination of Limits of Detection (LODs) for any method of analysis depends on a number of factors.

The LODs are presented as a range to better represent typical performance. The low end of the LOD range represents the theoretical value for interference free samples using the typical LOD definition of 3 times the statistical noise. However, all samples are not "interference free." The upper end of the range represents samples with more challenging compositions and may be more representative of the more difficult samples that are commercially common. This higher end of the LOD range is based on repeatability testing across standards with varying composition.

- The Limits of Detection (LODs) reported here are based on automatically selected beam conditions (kV, μ A, and filter settings) and a measurement time of 60 seconds per beam.
- Several certified alloy standards were used for each base material.
- The Fe category contains both low alloy steels and stainless steels. LODs are in general lower for low alloy steels than with stainless steel.
- Actual working samples may contain interfering elements so the actual working LODs for some "real-world" samples may be higher than those presented here.
- The commonly accepted level for the Limit of Quantification (LOQ) or ability to quantify the concentration of an element is 10 times the statistical noise.
- Only commonly occurring elements in each base material are listed. The DELTA is capable of measuring many other elements.

Element	Fe Base*	Cu Base*	Al Base*
Mg	—	—	2000-8000
Al	750-3000	1250-8300	—
Si	200-1200	250-700	140-800
P	75-500	70-400	—
S	50-450	200-1000	—
Ti	200-900	—	250-800
V	80-300	—	100-500
Cr	60-250	45-250	40-350
Mn	90-400	30-150	30-200
Fe	—	65-220	10-250
Co	200-1200	35-120	—
Ni	70-400	60-300	15-100
Cu	40-400	—	15-70
Zn	50-250	150-700	15-70
W	50-350	—	—
Pb	75-450	30-150	5-60
Bi	65-250	60-350	5-60
Zr	15-120	—	5-60
Nb	10-100	—	—
Mo	10-100	—	—
Sn	70-250	80-250	20-70
Sb	70-250	80-275	10-100

*All LODs are reported in ppm.

