

LODs for the DELTA Classic Plus Alloy Analyzer

Tough on the Outside, Smart on the Inside

The DELTA Classic Plus model DCC-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*
Ti	475-1200	—	560-1250
V	379-1000	—	—
Cr	150-600	175-900	140-750
Mn	265-1200	100-500	70-350
Fe	—	120-450	50-600
Co	220-1300	100-320	—
Ni	240-1400	150-700	30-150
Cu	110-500	—	35-120
Zn	245-1000	330-1500	30-100
W	245-1000	—	—
Pb	280-1500	60-250	10-75
Bi	260-1200	160-500	10-75
Zr	25-125	—	10-75
Nb	15-100	—	—
Mo	20-150	—	—
Sn	280-950	175-580	5-175
Sb	250-830	300-1000	40-250
Beam 2			
Ti	200-600	—	—
V	150-350	—	—
Cr	135-450	—	—

*All LODs are reported in ppm.

