Thermo SCIENTIFIC

ARL PERFORM'X – Performance in low alloy aluminum

Summary of analytical results obtained using a set of aluminum low alloy international standards is shown in Table 1 below. The elements and analytical lines used, crystal/detector pairs, X-ray tube conditions and limits of detection (LOD) achieved are listed. Excellent LOD's, most of them below 1 ppm, are achieved for all elements. A precision test consisting of 10 repeat measurements on a low alloy aluminum sample with counting time of 20s per element was conducted at 4000W. Precision values obtained at specific concentrations are included in the table.

Element	Line	Crystal/ Detector	kV/ mA 4200W	LoD [ppm] 100s	Precision 1 sigma 20s [ppm]	at concentration of [ppm]
Si	Kα	PET/FPC	30/140	2.2	6.2	300
Ca	Kα	LiF200/FPC	50/84	0.5	0.6	20
Ti	Kα	LiF200/FPC	50/84	0.6	1	100
V	Kα	LiF200/FPC	50/84	0.6	1	110
Cr	Kα	LiF200/FPC	50/84	0.68	0.8	100
Mn	Kα	LiF200/FPC	50/84	0.6	0.8	100
Fe	Kα	LiF200/FPC	50/84	0.76	1.2	300
Ni	Kα	LiF200/Sc	60/70	0.6	0.8	100
Cu	Kα	LiF200/Sc	60/70	0.6	0.8	100
Zn	Kα	LiF200/Sc	60/70	0.5	0.6	100
Ga	Kα	LiF200/Sc	60/70	0.5	0.6	100
Ag	Kα	LiF200/Sc	60/70	1.7	2.2	50
Cd	Kα	LiF200/Sc	60/70	1.44	1.2	15
Sn	Kα	LiF200/Sc	60/70	1.95	2.4	50
Pb	Lα	LiF200/Sc	60/70	1.1	2.2	35

FPC = Flow Proportional Counter SC = Scintillation Counter

Table 1: Analytical results obtained with international standards

ARL PERFORM'X with its optimized geometry and analytical configuration provides high sensitivity permitting excellent analysis of trace elements in aluminum and its alloys.

When high accuracy is required, full calibration should be performed using certified standards.