

ARL 3460 Advantage

OES Metals Analyzer
Iron and Steel

The well-known Thermo Scientific ARL 3460 has been specifically configured to address the analytical requirements of foundries and metals processing companies.

Named ARL 3460 Advantage, this new model combines cost effectiveness and high quality, performance and reliability of the most reputed optical emission spectrometer in the world.



Designed to meet your needs

With an installed base of more than 5,000 units worldwide, the Thermo Scientific ARL 3460 metals analyzer is recognized today as the reference in terms of stability, reliability, lifetime and performance.

The ARL 3460 Advantage is the worthy child of the ARL 3460. It shares with him the well proven technology and the superior overall performance of PMT detectors.

The ARL 3460 Advantage has the typical performance of the standard ARL 3460, in particular regarding detection limits and precision. ARL 3460 applications notes will give you a better idea on how well the ARL 3460 Advantage performs.

Three instrument configurations are proposed, tailored to the needs of foundries and metals processing companies analyzing cast iron and steel samples.

Like other Thermo Scientific OES instruments, the ARL 3460 Advantage is calibrated in the factory, ensuring excellent accuracy. The calibrations have to be chosen in the table corresponding to the selected instrument configuration (see back page).

The ARL 3460 Advantage provides an immediate cost-effective and high-performance «turn-key» solution, ready to analyze samples on the installation day.

The following tables give the calibrations available for the different ARL 3460 Advantage iron and steel configurations:

ARL 3460 Advantage Fe I

Element	OE-34-CAL-FE-01	OE-34-CAL-FE-09
	Low Alloy Steel	Cast & Nodular Iron & Ni Hard
Fe	80 - 99.9	70 - 97
Al	0.001 - 2	0.003 - 0.15
As	0.001 - 0.15	0.002 - 0.15
B	0.0003 - 0.015	0.0002 - 0.1
Bi	0.002 - 0.1	0.002 - 0.025
C	0.0025 - 1.5	1.4 - 4.5
Ca	0.0003 - 0.005	-
Ce	0.002 - 0.06	0.0025 - 0.065
Co	0.002 - 0.65	0.004 - 0.45
Cr	0.0015 - 6	0.02 - 10
Cu	0.0015 - 1.5	0.01 - 2.7
Mg	-	0.0015 - 0.1
Mn	0.0005 - 2.5	0.06 - 2.2
Mo	0.001 - 1.6	0.001 - 2
Nb	0.0015 - 0.8	0.003 - 0.55
Ni	0.001 - 6	0.02 - 7.5
P	0.001 - 0.12	0.003 - 1.5
Pb	0.0015 - 0.15	0.002 - 0.06
S	0.001 - 0.1	0.001 - 0.22
Sb	0.003 - 0.25	0.003 - 0.3
Si	0.0015 - 3.5	0.2 - 4
Sn	0.001 - 0.25	0.002 - 0.4
Ti	0.0005 - 0.6	0.002 - 0.3
V	0.005 - 1	0.002 - 0.7
W	0.005 - 1.5	0.005 - 0.2
Zn	0.001 - 0.06	0.001 - 0.03
Zr	0.001 - 0.25	0.001 - 0.05

ARL 3460 Advantage Fe IV

Element	OE-34-CAL-FE-01	OE-34-CAL-FE-09
	Low Alloy Steel	Cast & Nodular Iron & Ni Hard
Fe	80 - 99.9	70 - 97
Al	0.001 - 2	0.003 - 0.15
As	0.001 - 0.15	0.002 - 0.15
B	0.0003 - 0.015	0.0002 - 0.1
Bi	0.002 - 0.1	0.002 - 0.025
C	0.0025 - 1.5	1.4 - 4.5
Ca	0.0003 - 0.005	-
Ce	0.002 - 0.06	0.0025 - 0.065
Co	0.002 - 0.65	0.004 - 0.45
Cr	0.0015 - 6	0.02 - 10
Cu	0.0015 - 1.5	0.01 - 2.7
Mg	-	0.0015 - 0.1
Mn	0.0005 - 2.5	0.06 - 2.2
Mo	0.001 - 1.6	0.001 - 2
N	0.0015 - 0.025	0.002 - 0.013
Nb	0.0015 - 0.8	0.003 - 0.55
Ni	0.001 - 6	0.02 - 7.5
P	0.001 - 0.12	0.003 - 1.5
Pb	0.0015 - 0.15	0.002 - 0.06
S	0.001 - 0.1	0.001 - 0.22
Sb	0.003 - 0.25	0.003 - 0.3
Si	0.0015 - 3.5	0.2 - 4
Sn	0.001 - 0.25	0.002 - 0.4
Ti	0.0005 - 0.6	0.002 - 0.3
V	0.005 - 1	0.002 - 0.7
W	0.005 - 1.5	0.005 - 0.2
Zn	0.001 - 0.06	0.001 - 0.03
Zr	0.001 - 0.25	0.001 - 0.05

Notes

For all configurations

Al, B, Ca and Ti soluble/insoluble determination in low alloy steel in option

For configuration Fe II only

The global iron calibration covers the following iron and steel qualities: Low alloy steel, Cr steel, Cr-Ni steel, Mn steel, high speed steel, cast & nodular iron & Ni hard, high alloys cast iron and Ni Resist

For configuration Fe IV only

Low concentration N line with full VUV optics and material included

ARL 3460 Advantage Fe II

Element	OE-34-CAL-FE-01	OE-34-CAL-FE-02	OE-34-CAL-FE-03	OE-34-CAL-FE-04	OE-34-CAL-FE-05	OE-34-CAL-FE-06	OE-34-CAL-FE-09	OE-34-CAL-FE-10	OE-34-CAL-FE-11	OE-34-CAL-FE-12
	Low Alloy Steel	Free Cutting Steel	Cr Steel	CrNi Steel	Mn Steel	High Speed Steel	Cast & Nodular Iron & Ni Hard	High Alloy Cast Iron	Ni Resist	Global Iron
Al	80 - 99.9	90 - 99.9	65 - 90	45 - 89	70 - 91	48 - 95	70 - 97	45 - 86	42 - 86	42 - 99.8
Al	0.001 - 2	0.001 - 0.12	0.002 - 0.35	0.002 - 1	0.004 - 0.1	-	0.003 - 0.15	-	-	0.003 - 2
As	0.001 - 0.15	0.015 - 0.08	-	0.002 - 0.03	-	-	0.002 - 0.15	-	-	0.002 - 0.2
B	0.0003 - 0.015	-	-	0.0005 - 1	-	-	0.0002 - 0.1	-	-	0.0005 - 0.1
Bi	0.002 - 0.1	-	-	0.002 - 0.02	-	-	0.002 - 0.025	-	-	0.002 - 0.1
C	0.0025 - 1.5	0.0025 - 1.3	0.035 - 2.5	0.007 - 2	0.6 - 1.7	0.3 - 1.5	1.4 - 4.5	1.3 - 4	0.4 - 3	0.02 - 4.5
Ca	0.0003 - 0.005	-	-	0.0005 - 0.006	-	-	-	-	-	0.0003 - 0.006
Co	0.002 - 0.65	0.005 - 0.25	0.02 - 0.3	0.02 - 0.6	0.03 - 0.5	0.06 - 11	0.004 - 0.45	-	0.03 - 0.15	0.004 - 20
Cr	0.0015 - 6	0.001 - 3	9 - 31	10 - 35	15 - 4	2 - 6	0.02 - 10	12 - 35	0.25 - 4	0.02 - 35
Cu	0.0015 - 1.5	0.006 - 0.7	0.05 - 2.5	0.01 - 6.3	0.003 - 0.6	0.02 - 0.1	0.01 - 2.7	0.02 - 1.5	0.1 - 9	0.002 - 7
Mg	-	-	-	-	-	-	0.0015 - 0.1	-	0.02 - 0.15	0.002 - 0.15
Mn	0.0005 - 2.5	0.05 - 2	0.2 - 2.8	0.025 - 13	8.5 - 21.5	0.1 - 0.5	0.06 - 2.2	0.5 - 2.3	0.25 - 7.5	0.006 - 21.5
Mo	0.001 - 1.6	0.001 - 1	0.03 - 2.8	0.01 - 6.8	0.03 - 2.2	0.1 - 10	0.001 - 2	0.5 - 4	0.005 - 1	0.001 - 10
N	-	-	-	0.03 - 1	-	-	-	-	-	0.03 - 1
Nb	0.0015 - 0.8	0.006 - 0.07	0.01 - 2.5	0.005 - 3.5	-	-	0.003 - 0.55	-	0.09 - 0.4	0.005 - 3.5
Ni	0.001 - 6	0.007 - 5	0.1 - 7	3.5 - 40	0.04 - 1.6	0.04 - 0.5	0.02 - 7.5	0.15 - 18	12 - 39	0.005 - 40
P	0.001 - 0.12	0.009 - 0.08	0.015 - 0.05	0.002 - 0.05	0.02 - 0.1	0.01 - 0.05	0.003 - 1.5	0.03 - 0.45	0.01 - 0.25	0.005 - 1.2
Pb	0.0015 - 0.15	0.0015 - 0.25	-	0.0015 - 0.004	-	-	0.002 - 0.06	-	-	0.002 - 0.06
S	0.001 - 0.1	0.012 - 0.35	0.002 - 0.07	0.001 - 0.05	0.005 - 0.07	0.002 - 0.05	0.001 - 0.22	0.007 - 0.1	0.008 - 0.08	0.002 - 0.2
Sb	0.003 - 0.25	-	-	0.005 - 0.2	-	-	0.003 - 0.3	-	-	0.005 - 0.3
Si	0.0015 - 3.5	0.002 - 2	0.25 - 2.8	0.04 - 4.5	0.1 - 1.6	0.1 - 0.45	0.2 - 4	0.3 - 2	0.5 - 6	0.02 - 6
Sn	0.001 - 0.25	0.001 - 0.1	0.003 - 0.06	0.003 - 0.12	0.01 - 0.1	-	0.002 - 0.4	-	-	0.002 - 0.4
Ti	0.0005 - 0.6	0.002 - 0.12	0.002 - 0.2	0.002 - 2.2	-	-	0.002 - 0.3	-	-	0.002 - 2.2
V	0.005 - 1	0.006 - 0.6	0.02 - 0.85	0.01 - 1	0.01 - 0.35	0.4 - 4	0.002 - 0.7	-	0.005 - 0.35	0.002 - 10
W	0.005 - 1.5	0.05 - 0.35	0.02 - 0.75	0.02 - 4.5	-	1.8 - 24.5	0.005 - 0.2	-	-	0.01 - 24.5
Zn	0.001 - 0.06	-	-	0.005 - 0.01	-	-	0.001 - 0.03	-	-	0.001 - 0.04

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