SPARK DIRECT READING SPECTROMETER (BASIC TYPE)
CODE OES-T350




printer (included)


filter element (included)


AC voltage regulator (included)


calibration sample (included)


electrode brush (included)


pressure valve (included)


spectral sample grinder (**optional**)


argon purifier (**optional**)

- Widely used in metallurgy, casting, scientific research, commodity inspection, automobile, shipbuilding, aviation, nuclear power, etc.
- Ability to analyze trace elements such as carbon (C), phosphorus (P), sulfur (S), etc.
- The analysis speed is fast, and the element composition of all channels is measured within 20 seconds
- Paschen-Runge structure with full wavelength coverage, the most concise and stable optical system structure
- Perfect aberration correction, so that the spectrometer has excellent resolution, minimize the cross interference of different elements
- Argon-filled optical chamber, effectively reducing the attenuation of P and S rays in the far ultraviolet region
- The software has automatic spectrum correction technology, can store database, trace historical data, output and print reports
- Report format can be customized, data can be sent out

STANDARD DELIVERY

Main unit	1 pc
Computer	1 pc
Software	1 pc
Printer	1 pc
Calibration sample	1 pc
Electrode brush (OES-T350-BR)	2 pcs
Filter element	2 pcs
AC voltage regulator	1 pc
Pressure valve	1 pc

OPTIONAL ACCESSORY

Spectral standard sample	**MSS series**	select standard sample based on the test material
Spectral sample grinder	**OES-MY100**	Ø350mm, 380V
Argon purifier	**OES-T350-PURIFIER**	220V

SPECIFICATION

Curves	**standard curve**	low alloy steel (**A1**), cast iron (**A2**), stainless steel (**A3**)
	customized curve	curves can be added or customized for special base materials (Ti, Pb, Sn, Co, etc.)
Optical system	**optical structure**	paschen-runge structure
	rowland circle of diameter	350mm
	wavelength range	160~510nm
	detector	multi high resolution CCD detectors
	pixel resolution	20pm
	full spectrum	cover the full range of element analysis
	light room temperature	34±0.5°C (be controlled automatically)
Spark source	**type**	digital arc and spark source/new plasma generator
	spark frequency	100~1000Hz
	plasma current	1~80A
	Ignition voltage	>7000V
Spark stand		spray discharge electrode technology reduces argon consumption and improves argon use efficiency
		good heat dissipation, continuous excitation for 100 times, the temperature of the excitation table does not rise more than 5°C
Operation temperature		10~30°C, 23±2°C is recommended
Argon quality		99.999% high purity argon, argon pressure≥4MPa
Argon consumption		5L/min during spark mode
Operation humidity		20%~80%RH
Power supply		AC220V, 50Hz
Power consumption		excitation: 300W, stand by: 40W
Dimension (L×W×H)		700×660×340mm
Weight		30kg

TEST CURVES*

Fe base curves	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**
	Low alloy steel**	Cast iron	stainless steel	High Mn steel	High Cr cast iron	High speed tool steel	High Ni cast iron
Al base curves	**B1**	**B2**	**B3**	**B4**	**B5**		
	Low-Al	Al-Si	Al-Zn	Al-Cu	Al-Mg-Si		
Cu base curves	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
	Brass	Copper	Al-Cu	Beryllium Bronze	Sn-Pb-Cu	Pure copper	Si-Bronze
Ni base curves	**D1**	**D2**	**D3**	**D4**	**D5**		
	Pure Ni	Monel	Hastelloy	Inconel/Incoloy	Nimonic		
Zn base curves	**F1**	**F2**					
	Pure Zn	Zn-Al Alloy					
Mg base curves	**G1**	**G2**					
	Pure Mg	Mg/Al/Mn/Zn					

*Low alloy steel **(A1)** cast iron **(A2)**, stainless steel **(A3)** are standard curves, and all others are optional
The specific range of curve elements is shown in the attached curve table
Low alloy steel **(A1) includes carbon and medium-low alloy steel

OES-T350 TEST CURVE TABLES

FE BASE CURVES

Curve number	A1	A2	A3	A4	A5	A6	A7
Elemental content (%)	Low alloy steel*	Cast iron**	stainless steels	High Mn steel	High Cr ** cast iron	High speed tool steel	High Ni ** cast iron
C	0.006-1.19	1.75-4.04	0.0035-1.0	0.0085-2.38	1.16-3.43	0.003-2.94	1.75-4.04
Si	0.013-3.86	0.2-3.88	0.095-2.41	0.091-1.69	0.055-2.48	0.014-0.967	0.2-3.88
Mn	0.034-2.2	0.08-1.67	0.131-16.13	5.3-22.96	0.201-1.95	0.018-0.846	0.08-6.72
P	0.0019-0.13	0.021-0.699	0.0057-0.065	0.0064-0.188	0.024-0.369	0.0038-0.098	0.0067-0.699
S	0.0009-0.364	0.003-0.22	0.0006-0.095	0.0047-0.108	0.0047-0.123	0.0005-0.076	0.003-0.22
Cr	0.016-4.83	0.021-2.48	6.8-32.58	0.084-29.22	1.17-33.9	0.023-14.16	0.021-2.56
Ni	0.0082-4.4	0.013-1.89	0.09-32.3	0.045-15.34	0.129-2.57	0.07-0.436	0.013-21.26
Mo	0.004-4.19	0.0018-1.08	0.026-6.09	0.0095-3.15	0.086-3.53	0.022-8	0.0011-1.08
Al	0.0021-1.27	0.0073-0.214	0.0057-0.403	0.009-0.403	-	0.032-0.128	0.0073-0.214
Cu	0.0032-0.8	0.018-1.83	0.014-4.22	0.025-1.9	0.154-1.57	0.018-0.364	0.018-7.46
Co	0.004-0.504	0.008-0.034	0.0067-0.69	0.007-0.107	-	0.014-12.3	0.0063-0.034
Ti	0.001-1.18	0.024-0.51	0.002-2.11	0.0041-0.545	0.08-0.3	0.003-1.47	0.024-0.51
Nb	0.004-1.04	0.023-0.576	0.024-2.41	0.0006-0.613	0.01-0.686	0.003-2.33	0.0006-0.576
V	0.0082-0.9	0.014-0.701	0.015-1.4	0.024-0.837	0.059-1.01	0.01-7.54	0.0085-0.701
W	0.005-2.07	0.023-0.574	0.0065-2.2	0.002-1.45	0.015-1.99	0.01-18.68	0.0002-0.574
Pb	0.003-0.26	0.002-0.105	0.0001-0.0037	0.0005-0.002	-	-	0.0022-0.105
Mg	-	0.0006-0.104	-	-	-	-	0.0006-0.104
B	0.0003-0.019	0.012-0.086	0.0007-0.016	0.0007-0.017	0.015-0.177	-	0.012-0.086
Sn	0.0016-0.039	0.0018-0.3	0.0007-0.054	0.0007-0.023	-	0.001-0.005	0.0003-0.3
Zn	-	0.0009-0.0045	0.0011-0.0084	-	-	-	0.0009-0.0045
As	0.007-0.174	0.0021-0.035	0.0013-0.03	0.0013-0.0116	-	-	0.0021-0.035
Bi	0.0019-0.021	-	0.00004-0.0029	0.0013-0.0029	-	-	-
Zr	0.004-0.57	-	-	-	-	0.003-0.01	-
Ca	0.0004-0.0015	-	0.0004-0.0010	0.0004-0.001	-	-	0.00035-0.2
Fe	REF	REF	REF	REF	REF	REF	REF

*Low alloy steel **(A1)** includes carbon and medium-low alloy steel
**Cast iron samples are required to be whitening treated samples

AL BASE CURVES

Curve number	B1	B2	B3	B4	B5
Elemental content (%)	Al low alloy	Al-Si alloy	Al-Zn alloy	Al-Cu alloy	Al-Mg alloy
Si	0.0084-1.58	3.69-20.5	0.027-8.23	0.029-1.57	0.021-0.885
Fe	0.0066-1.26	0.026-1.9	0.049-0.749	0.066-1.61	0.074-0.718
Cu	0.0041-0.99	0.01-8.04	0.005-2.71	0.465-6.57	0.0078-0.308
Mn	0.011-2.38	0.019-0.967	0.047-0.821	0.05-1.5	0.0085-0.865
Mg	0.004-1.5	0.049-1.8	0.01-3.96	0.0079-2.68	0.624-10.32
Cr	0.043-0.36	0.004-0.28	0.087-0.349	0.0099-0.272	0.0093-0.349
Ni	0.0084-0.152	0.0051-1.77	0.012-0.188	0.0084-1.55	0.0015-0.239
Zn	0.003-0.367	0.0064-2.93	0.955-16.5	0.0028-0.728	0.0071-0.571
Ti	0.0021-0.175	0.0071-0.31	0.0059-0.205	0.006-0.415	0.006-0.3
Pb	0.0011-0.0192	0.0025-0.31	-	-	-
Bi	-	-	-	-	-
Ca	-	0.0006-0.034	-	-	-
Cd	-	0.0013-0.12	0.003-0.04	0.062-0.245	-
Co	-	0.003-0.043	-	-	-
Ga	0.012-0.045	0.0054-0.2	-	-	-
Sn	-	0.0024-0.5	-	-	-
Sr	-	0.0002-0.167	-	-	-
V	-	0.005-0.175	-	0.017-0.253	-
Zr	-	0.0043-0.193	0.0084-0.241	0.0058-0.301	-
Ag	-	-	-	-	-
Be	-	0.0047-0.21	-	-	0.00056-0.013
In	-	-	0.014-0.084	-	-
p	-	0.0018-0.0074	-	-	-
B	-	-	-	0.0076-0.056	-
Al	REF	REF	REF	REF	REF

COBALT BASE CURVES

Curve number	C1	C2	C3	C4	C5	C6	C7	C8
Elemental content (%)	Brass	Aluminum Bronze	Sn-Pb-Cu Alloy	Red Copper/ Pure Copper	Chromium Bronze	Beryllium Bronze	Silicon Bronze	Mn Brass
Zn	3.06-41.76	0.18-1.46	0.064-13.79	0.0006-0.0138	0.0068-0.111	0.0068-0.111	0.04-2.2	25.97-41.06
Pb	0.0082-4.48	0.013-0.094	0.159-21.42	0.0005-0.0426	0.0046-0.0718	0.0016-0.0718	0.01-0.2	0.054-0.51
Sn	0.032-1.02	0.025-0.22	2.33-18.96	0.00026-0.133	0.0072-0.0324	0.0072-0.0324	0.086-2.45	-
Mn	0.0046-0.464	0.31-1.8	0.001-0.067	0.001-0.0056	-	-	0.086-2.45	0.33-3.08
Fe	0.016-0.579	0.62-5.62	0.0014-0.467	0.0017-0.0782	0.033-0.124	0.014-0.124	0.065-0.51	0.69-3.28
Ni	0.0019-0.421	0.56-5.95	0.061-1.931	0.0011-0.05	0.014-0.192	0.0066-0.314	0.1-3.96	-
Si	0.0012-0.0938	0.032-0.26	0.0008-0.04	0.00088-0.0272	0.0066-0.153	0.0066-0.153	0.25-4.21	-
Mg	-	-	-	-	0.0014-0.126	0.0014-0.126	-	-
Cr	-	-	-	0.74-0.79	0.424-1.5	0.0074-1.5	0.021-0.37	-
As	0.0053-0.1	-	0.0111-1.07	0.0003-0.0376	0.0048-0.066	0.0048-0.066	-	-
Sb	0.0017-0.029	-	0.001-0.589	0.0001-0.0182	-	-	-	-
Cd	-	-	-	0.001-0.0272	-	-	-	-
Bi	0.00076-0.0122	-	0.0119-0.13	0.001-0.0095	-	-	-	-
Ag	-	-	0.0016-0.495	0.003-0.199	-	-	-	-
Co	-	-	0.0051-0.443	-	-	0.01-2.36	-	-
Al	0.015-0.81	7.8-11.88	0.001-0.052	0.0009-0.0023	0.0017-0.0223	0.0017-0.093	0.003-0.1	-
P	0.0018-0.044	0.011-0.1	0.002-1.208	0.00092-0.0695	-	-	-	-
S	-	-	0.0012-0.091	0.0034-0.127	-	-	-	-
Zr	-	-	-	0.113-0.203	-	-	-	-
Be	-	-	-	-	-	0.583-2	-	-
Cu	REF	REF	REF	REF	REF	REF	REF	REF

NI BASE CURVES

Curve number	D1	D2	D3	D4	D5	D6
Elemental content (%)	Monel Alloy	Inconel Alloy	Hastelloy Alloy	GH30 Alloy	GH4169 Alloy	DZ125 Alloy
C	0.0494-0.13	0.01-0.169	0.01-0.169	0.137-0.241	-	0.0322-0.152
Si	0.146-2.52	0.036-0.85	0.2-0.85	0.311-0.895	-	0.016-0.042
Mn	0.993-1.437	0.05-1.19	0.249-1.19	0.156-0.777	-	0.0022-0.024
P	0.0106-0.019	0.0004-0.038	0.007-0.038	0.001-0.0152	-	0.0023-0.0024
S	0.0006-0.023	0.0002-0.034	0.0086-0.034	0.0034-0.0145	-	0.0005-0.0006
Cr	0.0057-0.2	14.86-29.5	15.42-19.71	16.81-20.56	14.87-22.21	6.57-19.62
Mo	0.0024-0.102	0.0025-20.91	15.59-20.91	-	2.29-4.03	0.63-4.32
Fe	1.053-2	1.2-18.51	2.6-7.3	0.229-1.780	-	0.022-1.023
W	-	0.0011-12.7	0.09-0.498	-	-	0.041-8.8
V	-	0.005-0.498	0.03-0.72	-	-	-
Al	0.0231-1.399	0.03-0.72	0.159-2.6	0.065-0.267	0.14-0.68	1.476-6.13
Co	0.032-0.156	0.0056-2.6	0.046-0.642	-	1.02-1.04	0.024-14.79
Cu	21.53-33	0.0072-0.642	-	0.082-0.245	0.0015-0.002	-
Nb	-	0.0039-5.16	-	-	3.85-6.79	0.028-2.04
Sn	-	-	-	-	-	-
Ta	-	-	-	-	-	2.74-4.82
Ti	0.064-1.005	0.017-0.93	0.06-0.264	-	0.59-1.42	0.62-5.1
B	-	0.0001-0.01	-	-	-	0.0062-0.0242
Mg	0.0026-0.0217	0.0021-0.022	-	-	-	-
Zr	-	0.0018-0.004	-	-	-	0.014-0.06
Pb	0.0004-0.02	-	-	-	-	-
Ni	REF	REF	REF	REF	43.89-60	REF

ZN BASE CURVES

Curve number	F1	F2
Elemental content (%)	Pure Zn	Zn-Al Alloy
Al	0.00036-0.007	0.00036-27.4
Cd	0.00044-0.0132	0.00044-0.3
Cu	0.00012-0.004	0.00012-6.05
Fe	0.00012-0.004	0.00053-0.1
Mg	-	0.0014-0.179
Mn	-	0.001-1.39
Ni	-	0.0019-0.06
Pb	0.00045-0.0152	0.00045-2.87
Sb	-	0.0012-0.309
Sn	0.0004-0.0033	0.0004-2.38
Ti	-	0.0008-0.278
Si	-	0.0013-0.0191
Cr	-	0.0007-0.142
Ag	-	-
Bi	-	0.0027-0.027
Fe	REF	REF

MG BASE CURVES

Curve number	G1	G2
Elemental content (%)	Pure Mg	Mg/Al/Mn/Zn Alloy
Al	0.005-1.06	1.09-11.02
Zn	0.00044-0.0132	0.0068-4.1
Mn	0.017-0.148	0.02-0.61
Si	0.012-0.062	0.019-1.83
Fe	0.0069-0.027	0.0012-0.033
Cu	0.00097-0.025	0.00072-0.291
Ni	0.00026-0.0052	0.00042-0.02
Be	-	0.00011-0.0029
Ti	0.0001-0.0025	-
Pb	0.0011-0.037	-
Mg	REF	REF