

# Mining Analyzer XRF-3360



Mining Analyzer Instrument is a professional manufacturer of high-performance X-ray Fluorescence Spectrometer. The high-performance desktop XRF geology and mining analyzer-XRF-3360, brought up in 2011, is equipped with globally advanced analysis technology, intelligent vacuum system and developed electronic technology. Combined with low-energy tube, vacuum system and Analytical Technologies Ltd. patent low background technology, it efficiently reduces testing interference, and improves energy resolution of Mg, Al, Si, P and other light elements in geology and minerals.

## ▶▶▶ Specialized in Mineral Elements and Grade Testing

- ▶ XRF-3360 Mining Analyzer is specially designed for geology and mining industries.
- ▶ This instrument features high precision, fast testing speed and easy operation etc.
- ▶ Bear several testing modes, including alloy analysis, soil analysis, precious analysis, RoHS analysis
- ▶ Testing samples includes minerals, slag, rocks, etc. Analytical content is from Na to U. Testing samples can be solids, liquids, and powders

## ▶▶▶ Performance Advantages

- ▶ Highly efficient super-thin window X-ray light tube, which is specially developed for mineral testing, reaches the international advanced level
- ▶ Silicon Drift Detector (SDD), provides better energy linearity, resolution, spectrum characteristics and higher peak/base ratio
- ▶ Analytical Technologies Ltd-signal-to-Noise Enhancer (SNE), improves the signal processing ability by 25 times or more
- ▶ Built-in CMOS HD camera
- ▶ Automatic switch of collimator and filter according to different samples, it eliminates the troublesome manual operation



- ▶ Triple X-ray protection design
  - (1) Mechanical protection: Segregate X-ray
  - (2) Electronical protection: Automatic shut-down of X-ray when opening the cover during testing.
  - (3) Software protecting: Automatic shut-down of software program when opening the cover during testing.
- ▶ LCD screen directly shows the important parameters: tube voltage, tube current and vacuum degree
- ▶ 2L vacuum pump

### ▶▶▶ Technical Specifications

Measurable range: Na to U

Analytical range: ppm-99.99% (different materials, with different analytical analytical range)

Simultaneous analytical: Testing tens of elements simultaneously

Precision: 0.05% (content 96%)

Testing time: 60s-200s

Resolution: (140±5)eV

Tube voltage: 5KV-50KV

Tube current: 50μ A-1000μ A

### ▶▶▶ Product Parameters

Power: 200W

Ambient temperature: 15°C-30°C

Sample chamber size: 320mm x 100mm

Weight: 65kg

Voltage input: AC 220V (Optional: 110V)

Ambient humidity: 35%-70%

Instrument dimension: 660mm x 510mm x 350mm

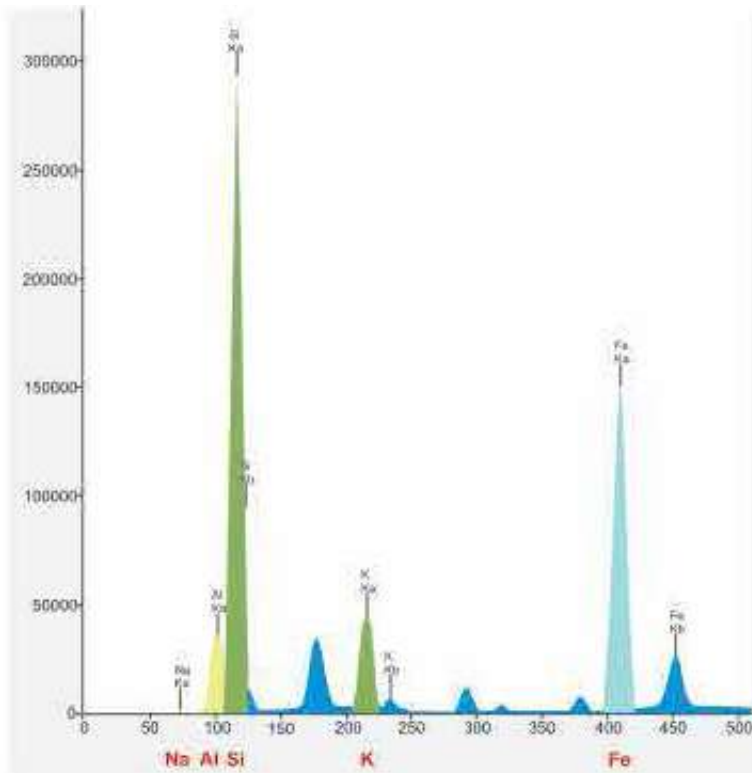
### ▶▶▶ Standard Configuration

- Highly efficient super-thin window X-ray light tube
- High-performance electronic cooling UHRD detector
- Signal-to-Noise Enhancer
- CMOS HD camera
- Collimator and filter
- Triple safety protection mode
- 90mm x 70mm LCD
- Vacuum pump



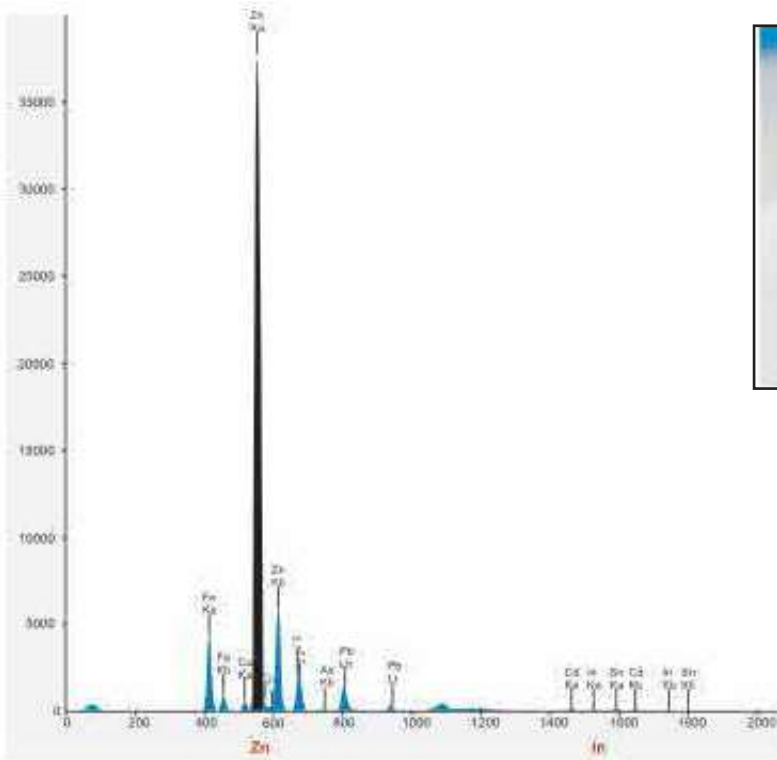
## ▶▶ Application Cases

### Case One Kaolin



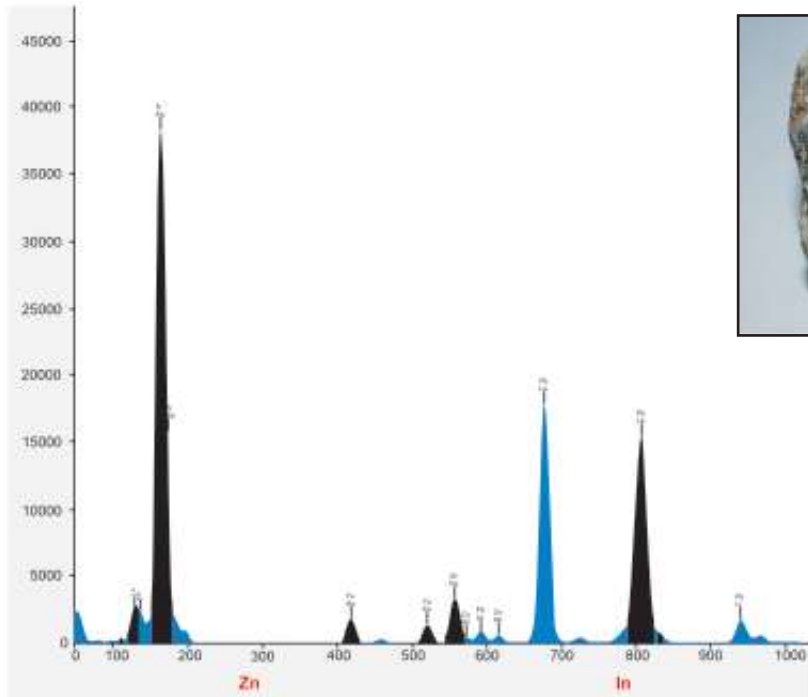
Name	Na <sub>2</sub> O	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	K <sub>2</sub> O
Kaolin-1	0.4775	16.3222	74.6662	4.8268	3.4161
Kaolin-2	0.5892	16.5028	74.6302	4.8413	3.4483
Kaolin-3	0.4711	16.4921	74.6794	4.8281	3.4532
Kaolin-4	0.5814	16.4988	74.6796	4.8460	3.4570
Kaolin-5	0.5375	16.4457	74.6653	4.8253	3.4422
Kaolin-6	0.5425	16.4979	74.6883	4.8258	3.4540
Kaolin-7	0.5494	16.4726	74.6485	4.8116	3.4443
Kaolin-8	0.4972	16.4997	74.7446	4.8327	3.4443
Kaolin-9	0.5439	16.5299	74.6029	4.8235	3.4394
Kaolin-10	0.4972	16.4562	74.6771	4.8128	3.4386
Kaolin-11	0.5773	16.5287	74.7196	4.8233	3.4478
Average value	0.5331	16.4769	74.6729	4.8270	3.4441
Range	0.1181	0.2076	0.1418	0.0343	0.0409
Standard deviation	0.0418	0.0576	0.0388	0.0104	0.0110
Relative standard deviation	7.8326	0.3495	0.0520	0.2147	0.3207

Case Two Zinc concentrate



Name	In	Zn
Zn Mineral 1	0.1662	45.7814
Zn Mineral 2	0.1814	45.6665
Zn Mineral 3	0.1681	45.7325
Zn Mineral 4	0.1843	45.7121
Zn Mineral 5	0.17	45.7047
Zn Mineral 6	0.174	45.5862
Zn Mineral 7	0.1866	45.5271
Zn Mineral 8	0.1882	45.6769
Zn Mineral 9	0.1857	45.8586
Zn Mineral 10	0.1804	45.6416
Zn Mineral 11	0.1808	45.7063
Average value	0.1787	45.6724
Standard deviation	0.0078	0.0698
Relative standard deviation	4.3849	0.1527

Case Three Lead concentrate



Name	Pb	Zn	Cu	Fe	Ca	Si	S	Mg	Al
1	53.62	5.05	3.56	10.11	1.19	3.98	14.16	0.28	0.27
2	53.45	4.95	3.48	9.91	1.28	3.37	15.30	0.32	0.26
3	53.32	5.15	3.49	9.89	1.32	3.54	15.23	0.20	0.26
4	53.84	5.13	3.29	9.94	1.26	3.46	14.98	0.35	0.24
5	53.42	5.07	3.88	9.69	1.25	3.37	15.36	0.61	0.25
6	53.79	5.09	3.46	10.10	1.24	4.12	15.48	0.29	0.28
7	53.23	5.04	3.48	9.97	1.28	3.84	14.98	0.44	0.26
8	53.31	5.06	3.64	9.66	1.19	3.21	14.65	0.52	0.24
9	53.80	5.13	3.54	9.76	1.34	3.94	14.32	0.42	0.27
10	53.19	5.01	3.31	9.82	1.27	4.16	15.04	0.37	0.26
11	52.86	5.34	3.67	9.24	1.60	3.72	14.16	0.43	0.29
Average value	53.44	5.09	3.53	9.83	1.29	3.70	14.88	0.38	0.26
Standard deviation	0.30	0.10	0.17	0.24	0.11	0.33	0.48	0.12	0.02
Relative standard deviation	0.57	1.96	4.68	2.48	8.64	8.90	3.25	30.37	5.87

## PERIODIC TABLE OF ELEMENTS (Characteristic X-Ray energy table)

Per	IA											IIIA	IVA	VA	VIA	VIIA	0		
1	1 H 1.008																2 He 4.008		
2	2 Li 6.941	3 He 4.0026	4 Be 9.0122											5 B 10.811	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.179
3	11 Na 22.990	12 Mg 24.305											13 Al 26.982	14 Si 28.086	15 P 30.974	16 S 32.06	17 Cl 35.453	18 Ar 39.948	
			III B	IV B	V B	VI B	VII B	VIII		I B	II B								
4	19 K 39.098	20 Ca 40.078	21 Sc 44.956	22 Ti 47.88	23 V 50.942	24 Cr 51.996	25 Mn 54.938	26 Fe 55.845	27 Co 58.933	28 Ni 58.69	29 Cu 63.546	30 Zn 65.38	31 Ga 69.723	32 Ge 72.64	33 As 74.922	34 Se 78.96	35 Br 79.904	36 Kr 83.8	
5	37 Rb 85.468	38 Sr 87.62	39 Y 88.906	40 Zr 91.224	41 Nb 92.906	42 Mo 95.94	43 Tc 98.906	44 Ru 101.07	45 Rh 102.905	46 Pd 106.42	47 Ag 107.865	48 Cd 112.411	49 In 114.818	50 Sn 118.710	51 Sb 121.757	52 Te 127.6	53 I 126.905	54 Xe 131.29	
6	55 Cs 132.905	56 Ba 137.327	Ln		72 Hf 178.49	73 Ta 180.948	74 W 183.84	75 Re 186.207	76 Os 190.23	77 Ir 192.225	78 Pt 195.084	79 Au 196.967	80 Hg 200.59	81 Tl 204.387	82 Pb 207.2	83 Bi 208.98	84 Po 209	85 At 210	86 Rn 222
7	87 Fr 223	88 Ra 226	An																

- Alkali Metals
- Non-Metal
- Transitional element
- Halogen
- Lanthanoids
- Actinides
- Alkaline earth
- Rare gases
- Main group metal

Ln	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
	138.9	140.1	140.9	144.2	144.9	150.4	152.0	157.2	158.9	162.5	164.9	167.2	168.9	173.0	175.0
	33.30	34.57	35.86	37.19	38.54	39.91	41.32	42.76	44.23	45.73	47.26	48.82	50.41	52.04	53.59
	37.99	39.45	40.95	42.48	44.05	45.65	47.28	48.95	50.65	52.38	54.16	55.96	57.81	59.69	61.61
	4.651	4.840	5.034	5.230	5.431	5.636	5.846	6.059	6.275	6.495	6.720	6.948	7.181	7.414	7.654
	5.043	5.262	5.489	5.722	5.956	6.206	6.456	6.714	6.979	7.249	7.528	7.810	8.103	8.401	8.708
	5.789	6.052	6.322	6.602	6.891	7.180	7.478	7.778	8.104	8.418	8.748	9.089	9.424	9.779	10.14
4.124	4.287	4.452	4.632	4.816	4.994	5.176	5.361	5.546	5.742	5.942	6.152	6.341	6.544	6.752	
An	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm			
	227	232	231	238	237	244	243	247	247	251	252	257			
	89.904	90.024	91.024	92.024	93.024	94.024	95.024	96.024	97.024	98.024	99.024	100.024			
	10.273	10.648	11.024	11.400	11.776	12.152	12.528	12.904	13.280	13.656	14.032	14.408			
	12.63	12.97	13.29	13.61	13.95	14.29	14.62	14.96	15.31	15.66	16.02	16.38			
	16.73	16.5	16.2	15.9	15.6	15.3	15.0	14.7	14.4	14.1	13.8	13.5			
	18.4	18.98	19.55	20.16	20.77	21.40	22.04	22.69	23.37	24.06	24.76	25.47			

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