Skyray Instrument

Full-element Analysis

Rapid Accurate Non-destructive

Cement

Steel and other nonferrous metals

Aggregate

RoHS

EDX 3600B

X-ray Fluorescence Spectrometer

Skyray Instrument

X-ray Fluorescence Spectrometer

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Performance traits

- It performs professional full-element analysis on cement, steel, aggregate, plating thickness detection and RoHS.
- In-built SNE improves the signal processing ability up to 25 times.
- The collimators and filters can be switched automatically for different samples.
- Electro-cooling UHRD detector instead of liquid nitrogen cooling detector
- Intelligent full-element analysis software matches with the hardware well.

Product Parameters

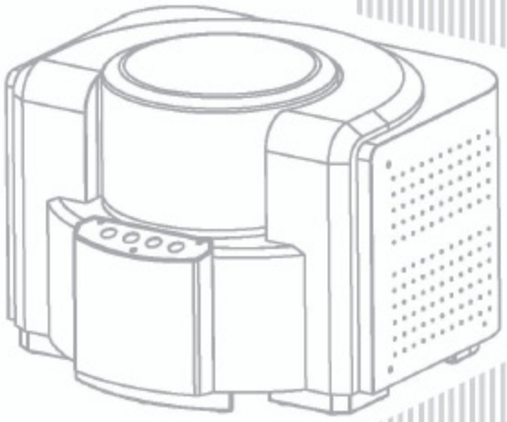
Name: Skyray X-ray Fluorescence Spectrometer
Model： EDX3600B
Input Voltage: AC 110V/220V
Consumed Power: 200W
Ambient Temperature: 15℃-30℃
Ambient Humidity: 35%-70%
Area of Sample Chamber: 320mm×180mm
Size: 650mm×608mm×466mm
Weight: 75kg

Unique configurations

- Signal-to-Noise Enhancer (SNE)
- Light path enhancement system
- Electro-cooling UHRD detector
- In-built high resolution camera
- Automatic collimator and filter switch
- Precise mobile platform
- Enhanced metal sensitivity analyzer

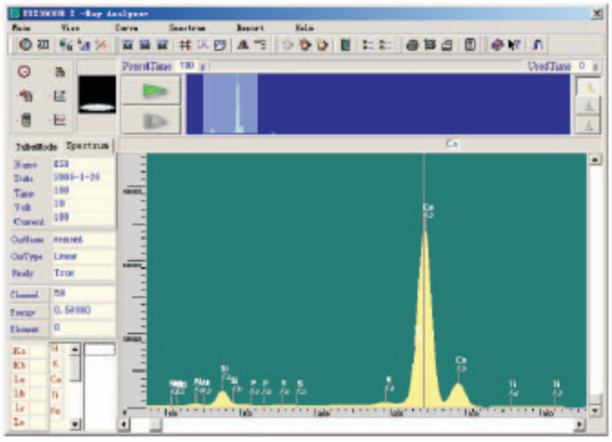
Technical specifications

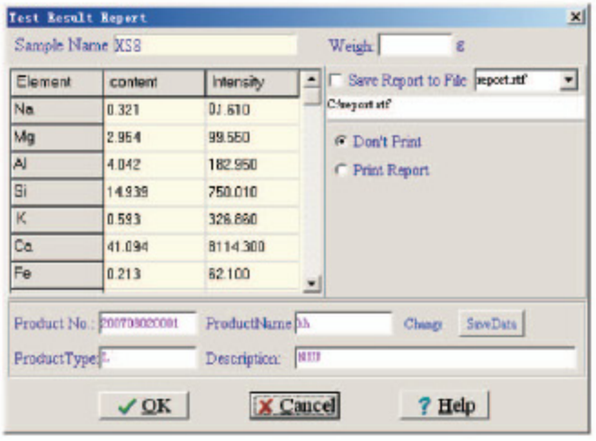
Range of measurable elements: Na to U
Range of element content: 1ppm-99.99%
Ability of simultaneous analysis: 24 elements
Functions: full-element analysis of cement, steel and aggregate
Plating thickness: more than 11 layers, up to 0.005um each layer
Analysis accuracy: 0.05%
Forms of samples: powder, solid and liquid
Testing time: 60-200s
Energy resolution: （150±5）eV
Tube voltage: 5kV-50kV
Tube current: 50uA-1000uA



Examples

Cement industry





Analytical data of light elements taken by EDX3600B

Times \ Elements / Results	Ca content	Na content	Mg content	Al content	Si content	K content	Ti content	Fe content	
Test1	44.410	0.458	3.563	4.582	10.012	0.344	0.113	3.388	200s
Test2	44.400	0.448	3.460	4.442	9.801	0.352	0.113	3.385	200s
Test3	44.448	0.427	3.480	4.493	9.954	0.347	0.112	3.368	200s
Test4	44.461	0.430	3.652	4.397	9.804	0.349	0.111	3.389	200s
Test5	44.423	0.448	3.608	4.491	9.879	0.342	0.113	3.388	200s
Test6	44.475	0.450	3.534	4.519	9.917	0.347	0.112	3.375	200s
Test7	44.446	0.444	3.782	4.663	9.934	0.351	0.111	3.389	200s
Test8	44.347	0.446	3.729	4.442	10.110	0.350	0.109	3.365	200s
Test9	44.355	0.450	3.560	4.450	10.090	0.352	0.111	3.354	200s
Test10	44.444	0.452	3.581	4.359	10.076	0.350	0.113	3.374	200s
Test11	44.444	0.464	3.554	4.548	9.688	0.351	0.113	3.372	200s
Test12	44.429	0.448	3.655	4.499	9.789	0.352	0.113	3.350	200s
Test13	44.430	0.453	3.717	4.521	10.093	0.350	0.113	3.359	200s
Test14	44.490	0.451	3.779	4.466	10.206	0.348	0.111	3.362	200s
Test15	44.462	0.446	3.679	4.483	10.212	0.348	0.115	3.362	200s
Test16	44.494	0.445	3.445	4.426	10.044	0.355	0.109	3.350	200s
Test17	44.440	0.435	3.720	4.418	10.053	0.348	0.111	3.355	200s
Test18	44.418	0.438	3.640	4.543	10.067	0.354	0.108	3.369	200s
Test19	44.428	0.427	3.705	4.359	10.310	0.350	0.112	3.371	200s
Test20	44.551	0.466	3.646	4.659	10.391	0.350	0.110	3.368	200s
Average value of content	44.44	0.45	3.62	4.49	10.02	0.35	0.11	3.37	
Standard deviation of the measurement Sn	0.04	0.01	0.10	0.08	0.18	0.00	0.00	0.01	
3s value	0.13	0.03	0.29	0.25	0.53	0.01	0.01	0.04	
Relative standard deviation RSD (%)	0.10%	2.34%	2.71%	1.82%	1.76%	0.86%	1.51%	0.38%	

$$S_{(n)} = \sqrt{\frac{\sum_{i=1}^{n}(N_i - \overline{N})^2}{n-1}}$$

$$\overline{N} = \sum_{i=1}^{n}\frac{Ni}{n}$$

Sn ---Standard deviation after n times of tests
N--times of test

$\overline{N}$ -Average value after n times of tests
RSD can be calculated by using the equation below

$$RSD = \frac{S_{(N)}}{\overline{N}} \times 100\%$$

Sample name: Cement Xs2#

Full-element Analysis Expert

EDX 3600B

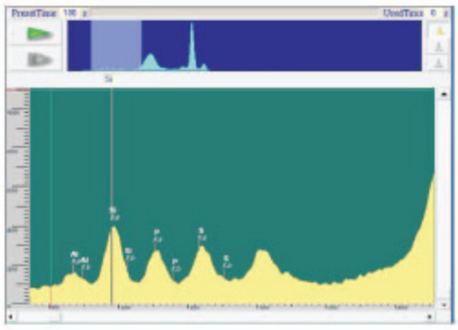
Iron and steel industry

Pig iron

Pig iron is the most important middle product in the production process of iron and steel industry. Its quality is directly concerned with the quality of the final product. It determines the usage amount of energy and accessories before it is processed to steel billet. Si, Mn, P and S in the pig iron can also be detected by X-ray fluorescence spectrometer. The test is highly precise.

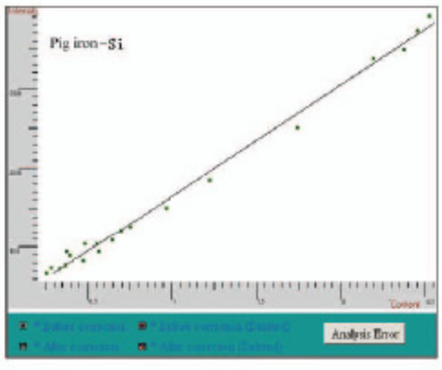
The spectrum and working curve of real iron test taken by EDX3600B are listed below.

The pig iron spectrum taken by EDX3600B



The spectrum figure shows that the spectra line of Si, Mn, P and S are very clear. The sample element measurement can be obtained easily from the spectrum. Moreover, the spectra line of the accessory elements such as Al and Cr are also very clear. They can also be detected at the same time.

Working curve and relative data of Pig iron-Si



Spectrum name	Content	Intensity
LQ-6	1.16	172.06
13682Q	0.39	89.08
11048Q	2.37	348.8
11051Q	2.45	372.8
11048З	2.19	337.96
11049Q	2.52	391.27
4265-1	0.25	66.77
4265-2	0.28	73.63
14297	0.46	115.53
14299-1	0.47	82.44
14300-1	0.55	104.26
14300-2	0.69	122.17
14302-2	0.36	76.36
14323-1	0.37	94.35
14351-1	0.33	73.13

The test accuracy of the actual pig iron test

Elements	Si	Mn	P	S
Range of content	0.1~1.0	0.1~1.0	0.05~0.1	00.010~0.10
(SD) Test accuracy	0.02	0.015	0.004	0.002

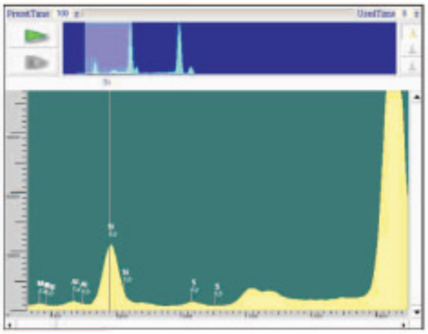
Sintering ore

During the test of sintering ore, EDX3600B mainly detects the elements like Fe, Ca and Si. The test accuracy is very reliable. It can also detect the accessory elements like Mg, P, S, Cr, Mn and Ti.

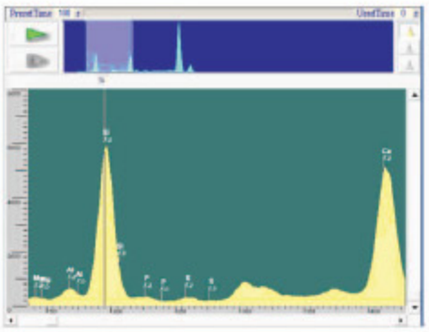
The spectrum and working curve of real sintering ore taken by EDX3600B are listed below.

Sintering ore spectrum taken by EDX3600B

A、spectrum of high-alkali sintering ore

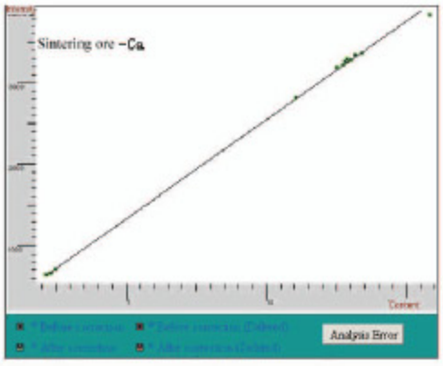


B、Spectrum of low-alkali sintering ore



The spectrum figure shows that the spectra line of Fe, Ca and Si are very clear. The sample element measurement can be obtained easily from the spectrum. Moreover, the spectra line of the accessory elements such as Al, K, S, Fe and Mg are also very clear. They can also be detected at the same time.

The working curve of Ca in sintering ore and other relative data



Spectrum name	Content	Intensity
YSBC15704	15.79	3838.38
CS-D8	2.09	647.39
LS-24	13.13	3344.89
LS-22	12.48	3186.29
LSD-10	2.28	661.17
LSD-11	2.46	712.63
S4-23	12.77	3264.87
LS-25	12.99	3283.42
CSD-9	2.16	645.77
LS-23	12.69	3216.76
LS-21	12.84	3295.33
GBW07219A	11.03	2817.66
S4-45	13.38	3366.53

The test accuracy of the actual test of sintering ore

Elements	Ca	Si	Fe
Range of content	5.00~20.00	5.01~15.00	≥50.00
（SD）Test accuracy	≤0.15	≤0.15	≤0.2

Skyray

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