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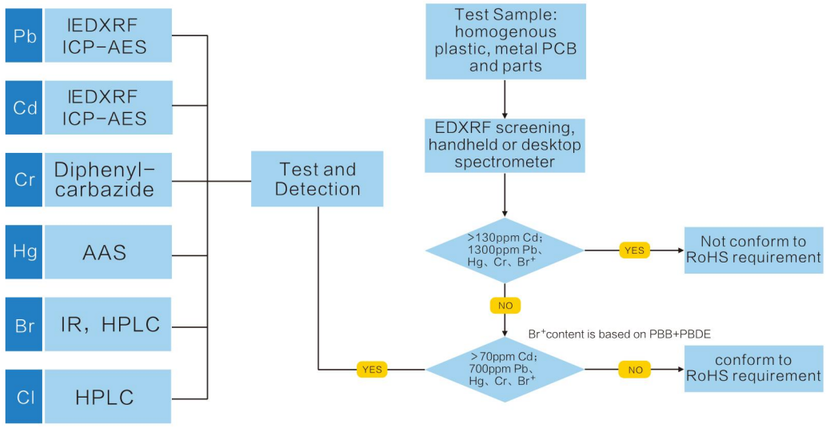
XRF Screening of Substances in RoHS Directive



RoHS Directive Maximum Levels

Hazardous Substances	Cd	Pb	Hg	Cr^{6+}	PBB_S	$PBDE_S$	Cl	Cl+Br
Maximum Levels(PPM)	100	1000	1000	1000	1000	1000	900	1500

Restricted elements and their typical uses

Pb	
Solder	
Coating	Pigment and desiccant
Glass materials	Fluorescent lamps are allowed to contain Pb.
Ceramic materials	Some electronic ceramic materials are allowed to contain Pb.
Iron, aluminum and copper	Certain amount of Pb is allowed
Plastic	PVC stabilizer and toner
Battery	Pb is allowed in acidic batteries for vehicles

$Cr6^+$	
Passivated layers	Cr6+ is usually applied to bare metal surfaces to improve coating adhesion
Corrosion resistant coating	Contained in coating layer
Cr plating	Metallic chromium coating is not subject to monitoring
Plasticizers	Usually used in plastic plating processes rather than in final products

Cd	
	Stabilizer and toner
Solder	rarely used
Ceramics	rarely used
Connectors	relays and switches
Batteries	Cd is allowed in nickel cadmium (Ni, Cd) batteries
Semiconductor	light sensors and solar panels

Hg	
Battery	Prohibited (refer to battery instructions)
Connector	Relays and micro-switches
Fluorescent lamps	A certain amount of Hg is allowed

PBB_S&$PBDE_S$	
Plastic	Brominated flame retardant

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IEDX3800 X-ray Fluorescence Spectrometer

IEDX 3800
X-ray Fluorescence Spectrometer

Product Overview

Based on our proven experience in supplying more than 10,000 XRF instrument around the world, we Innova developed IEDX3800 (intelligent model) to integrate a variety of premium features to meet high standard test requirements.

IEDX3800 can be set up with electronic-refrigerating high-performance semiconductor detector, ultra-low loss optics, high-power HV excitation source, independent cooling air channel, intelligent one-touch test module, computer with large touch screen and automatic robotic injection system (optional). Compared with the previous XRF models, IEDX3800 is noted for its high sensitivity, accuracy, intelligence and efficiency. It helps to achieve a lower operation cost while obtaining a better maintenance performance and simpler instrument use. With manual sample placing and optional automatic injector, it realizes a concept of auto intelligent testing.

Application fields

- RoHS detection, hazardous element analysis
- Composition analysis of ore and alloy (copper, stainless steel, etc)
- Measurement of metal coating thickness, electroplating solution and coating content
- Content detection of gold, platinum, silver and other precious metals and jewelries
- Widely applied in RoHS-related industries, precious metal & jewelry processing industries, banks, jewelry sales and testing institutions, electroplating industry, etc

RoHS Detection

Geological ore detection

Coating test

Precious metal detection

Instrument Parameters

- Range of elements: Aluminum (Al) ~ Uranium (U)
- Detection limit: min 0.1 PPM
- Content: PPM ~99_99%
- Arbitrary optional analysis and identification models
- Independent matrix effect correction model
- Multivariable nonlinear regression program
- Temperature: 15° C to 30° C
- Size of sample chamber: 320x210x50 (mm)
- Power supply: AC 220V ± 5V, UPS is recommended
- Energy resolution: up to 125 ± 5eV
- Tube voltage: 5~65Kv
- Tube current: 0~1000uA
- Dimension (without injector): 500x420 x 390 (mm)
- Dimension (with injector): 580x620 x 940 (mm)
- Weight: 45kg

Injector (optional)

- Cup position: 4-axis horizontal multi-joint manipulator, 85 cup positions
- Standard load: 0.5kg
- Degree of Freedom: 4
- Repeated positioning accuracy: ± 0.02mm
- Height of the whole machine: 490mm
- Weight: 12kg

Product features

High-performance detection system to improve analysis performance

Ultra-high sensitivity on the instrument is achieved as its high-performance semiconductor detector, high-speed digital processing channels, high-power excitation source and best analytical optics. Compared with previous XRF models, 3800 has a lower detection limit of heavy elements, down by 5 to 10 times, making it optimal to fulfill high standard detection requirement. The independent cooling air path enables the instrument to gain better stability under high power operation and improve test reliability.

Easy, automatic and convenient operation

All-in-one design, one-touch test, and full-match smart analysis ensure sample test happens in one movement.

Multi-layer protection, safe and reliable

Safety of users is fully protected owning to multiple X-ray shielding measures such as software misoperation reminder, 3-D labyrinth design, sensing of electronic interlock, mechanical safety lock, and machine interruption in event of software malfunctions.

Automatic Injector (optional)

The instrument can be set up with horizontal multi-joint manipulator or a 85-position automatic sampling system to realize unattended auto testing of up to 85 samples. The industrial level four-axis manipulator is different from a traditional one because of its innovative and lightweight design. The touch-stop feature enables it to collaborate with people unprotected, i.e., without a fence. Direct drive technology helps save 50% of equipment cost while human-machine collaboration improves efficiency by 50% .

Directive on Waste Electrical and Electronic Equipment (2002/96/EC, WEEE for short) and Directive on Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (2011/65/EU, RoHS for short) were published on Feb 13, 2011 by the EU, which stipulates that the WEEE producers shall take on their producer responsibility from August 13, 2005 on and the use of six harmful substances in the relevant electronic appliances shall be prohibited since July 1, 2006. On June 4, 2015, the Official Journal of the European Union (OJ) published the amended RoHS 2.0 Directive (EU) 2015/863, which officially added DIBP, DBP, BBP, and DEHP onto Appendix II: List of Restricted Substances. So far, Appendix II has a total of ten mandatorily restricted substances, and the controlled products have been expanded to include medical and monitoring equipment .