



PORTABLE ENERGY DISSIPATION X-RAY FLUORESCENCE SPECTROMETER

Portable Energy Dissipation X-ray Fluorescence Spectrometer TT-6481

Portable Energy Dissipation X-ray Fluorescence Spectrometer TT-6481 conforms to several ASTM standards, including ASTM D6481 for determining phosphorus, sulfur, calcium, and zinc in lubrication oils by energy dispersive X-ray fluorescence spectroscopy; ASTM D7751 for determining additive elements in lubricating oils by EDXRF analysis;

ASTM D4294 for measuring sulfur in petroleum and petroleum products by energy dispersive X-ray fluorescence spectrometry; and ASTM D5059 for detecting lead and manganese in gasoline by X-ray spectroscopy. This spectrometer is used to analyze metal elements in oils, such as P, S, Cl, Ca, Ti, V, Cr, Mn, Fe, Ni, Cu, Zn, Pb, Mo, Ag, Cd, and Sn.

APPLICATIONS

The primary application of the Portable Energy Dissipation X-ray Fluorescence Spectrometer TT-6481 is the **rapid, non-destructive elemental analysis of a wide range of petroleum products**, for both laboratory and field operations. Using Energy Dispersive X-ray Fluorescence (EDXRF), it quantifies the concentration of various elements to ensure product quality and regulatory compliance.

Specific applications include:

- **Determining additive elements** (Phosphorus, Sulfur, Calcium, Zinc) in lubricating oils (ASTM D6481, ASTM D7751).
- **Measuring sulfur content** in petroleum and fuels (ASTM D4294).
- **Detecting lead and manganese** in gasoline (ASTM D5059).

Key Industries

- **Lubricant Manufacturing:** This is an essential tool for quality control. Lubricant blenders use it to quickly verify that the concentration of metallic additive packages (containing elements like Ca, Zn, P) in their finished products is correct, which is critical for performance.
- **Petroleum Refining:** Refineries use this portable analyzer for rapid quality checks on various product streams. It is crucial for ensuring that fuels like gasoline and diesel meet the strict regulatory limits for sulfur and are free from contaminants like lead.
- **Third-Party Testing & In-Service Oil Analysis:** The instrument's portability and ease of use make it ideal for commercial and mobile labs. They use it to monitor the health of in-service lubricants by tracking additive depletion and the ingress of wear metals, providing critical data for predictive maintenance programs in the automotive, industrial, and marine sectors.

FEATURES

- A rugged, compact elemental analyzer designed for repeatable and reproducible results in laboratory production environments and mobile operations.
- Features an intuitive interface displayed on a large, industrial touchscreen.
- Streamlined software with one-touch measurement start makes it easy for any operator to achieve high-quality results.
- Training for routine analysis takes only minutes.
- Atmospheric compensation allows analysis without the need for helium or vacuum purge, minimizing the cost per analysis.
- Automatic carbon/hydrogen (C/H) ratio correction enables the analysis of multiple types of oils and fuels on a single calibration, simplifying analyzer setup and operation.
- The X-ray tube and detector operate under conditions designed to ensure long-term reliability.
- Built for tough environments.
- Software inspired by point-and-shoot handheld analyzers.
- The entire display area is dedicated to routine analysis.
- One-touch measurement start for routine testing.

- On-board data storage of up to 100,000 results, including spectra.
- Low maintenance costs.
- Easy sample preparation and user-friendly operation.
- No gas consumption or vacuum needed.

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TECHNICAL SPECIFICATIONS

- Factory calibration included:
 - Low sulfur: 10ppm to 100ppm
 - High sulfur: 0.01% to 5%
- Dimensions: 380*372*362mm
- Fast SDD detector resolution provides excellent test performance:
 - Area: 70mm²
 - Energy resolution: 130eV at Mn K α

High Precision Results Without Daily Calibration is Needed				
Unit	PPM	Test Time: 100 seconds		
No	Calibration	300ppm	1000ppm	10000ppm
1	Crude Oil	297	1001	10080
2		293	998	9993
3		305	1017	9982

High Precision Results Without Daily Calibration is Needed			
4	295	1008	9918
5	291	1007	9978
6	309	990	10068
7	312	995	9986
8	316	1015	9999
9	307	1010	9918
10	313	999	9928
11	302	1016	9958
Certified Value		300	10000
Average Test Result		304	9983
Standard Deviation Sn		8.64	53.96
Error ppm		4	-17
RSD		2.85%	0.54%



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