



Determination of Sulfur in Petroleum Products

ASTM D4294

With federal and international regulations becoming increasingly stringent, the need to determine the sulfur content in the characterization of petroleum oils and fuels is a critical component. Energy Dispersive X-Ray Fluorescence, EDXRF, is a well established technique for the analysis of sulfur in petroleum products. The analysis requirements are regulated thru the international standards such as ASTM D-4294.

To meet these tough requirements for the measurement and control of sulfur in fuels and other petroleum products, Olympus NDT has developed the X-5000. The X-5000 is also ideal for measuring other elements, like Fe, Ni, V, Pb, Cr, Cu, and Cl in crude oil, as well as other heavy and refined petroleum products.



The analytical performance, closed beam safety and ease of use of traditional bench top XRF units are all captured in the X-5000. And it delivers true field portability, being packaged into an easy to carry, 22 lb. battery operated XRF with integrated PC and industrialized large touch screen.

The X-5000 sets the benchmark for Performance, Power and Portability - No sample preparation, just collect it and analyze – right on the spot.

Key Features and Benefits

- Portable and lightweight
- Fits on any lab bench, at the work site, inspection line, production area
- Sample positioning tray accommodates all sample cups/bottles
- No sample preparation required
- No daily calibrations
- Starts up immediately, results are displayed in seconds
- Closed beam operation for user safety
- Data is stored automatically in tamperproof format



The unique sample tray ensures proper placement of the sample every time for accurate analysis. The sample tray accommodates both bottles and cups of any size.

No sample preparation, no daily calibration.

The X-5000 is engineered to be used anywhere – in the field, at the production line, in an inspection area. It ensures operator safety as a fully interlocked, closed beam system. The closed beam, integrated design unique to the X-5000 is a critical safety advancement as portable XRF analyzers continue to increase in x-ray power and be applied to ever more demanding, in-the-field analytical challenges.

The X-5000 is your answer for the best analytical performance without compromising field portability or operator safety.

Comparing the laboratory benchtop D4294 compliant instrument against the field-portable X-5000

Sample Type	ASTM D4294	X5000
E10	52	54
Diesel	48	47
Kerosene	260	250
B20	94	99
E10 Gasoline	96	101
Jet A	459	457
No.2 Diesel Oil	878	858
Hydraulic Fluid	448	463
Transformer Oil	33	29
Jet B5	696	712
Mineral Oil	29	30
HFO NIST (2.996%)	3.10%	3.01%

Table: Comparison D4294 to X-5000. Units are in mg/kg (ppm)_except where indicated. X-5000 testing time was 120 seconds.

Specifications	
Concentration Range	ppm - % levels
Analyzer Weight	10 kg (22 lbs)
Measurement Time	180 seconds
Operating Environment	-10 to 50 °C
Power Requirements	AC or Battery
Tube Voltage	10-50 kV
Tube Current	200 µA
User Interface	Built in Touch Screen
Instrument Dimensions	38 x 33 x 28 cm
	15 x 13 x 11 in
Sample Chamber Dimensions	29 x 11 x 15 cm
	11 x 6 x 5 in



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