Detection of Calcium, Zinc, Sulfur and Phosphorus in Lubricating Oils

Introduction

It is critical to protect your equipment operating under extreme temperatures and heavy loads. The lubricants and fuels you use will ensure smooth operation and extend the life of your equipment. The X-5000 X-ray Fluorescence (XRF) analyzer provides a quick, simple way to ensure your lubricants and fuels are in the best possible condition prior to use and allows for instant analysis. Providing vital information when needed, not weeks later, prevents corruption to your valuable machinery.

Lubricants / Additives

Top quality lubricants depend on specially formulated blends of organo-metallic additives. These additives extend lubricant life, protect metal surfaces and increase the range in which a lubricant can be used. The X-5000 measures additive elements such as Ca and Zn for improved lubrication and S and P for extreme pressure lubricants.

By monitoring these levels, you know the status of your lubricant and when to add more of the additives.

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 tamper-proof format

The X-5000 is engineered to be used anywhere – in the field, at the production line, in an inspection area. The X-5000 is your answer for the best analytical performance without compromising field portability or operator safety.

Zero Sample Preparation

Simply put the oil in a sample cup, use the sample tray to ensure proper alignment and press "Start." Quick, accurate analysis every time.

Rugged and Portable

The X-5000 is packaged into an easy to carry, 22 pound battery operated XRF with integrated PC and industrialized large touch screen can be set up in almost any environment within minutes.

Stable Calibration

There is no need to recalibrate the unit frequently. Just a 15 second calibration check daily and you will know your answers are accurate down to the ppm level for a wide range of elements.

Closed Beam

The X-5000 has a closed beam, interlocked design. This means that you can have a high power analysis, while ensuring the safety of your operators.

Element Detection Limits

Element		LOD's
Arsenic	As	1
Calcium	Ca	5
Chlorine	Cl	15
Cobalt	Co	1
Copper	Cu	1
Iron	Fe	1
Lead	Pb	1
Manganese	Mn	1
Molybdenum	Mo	1
Mercury	Hg	1
Nickel	Ni	1
Phosphorus	P	30
Selenium	Se	1
Sulfur	S	12
Vanadium	V	1
Zinc	Zn	1

- LOD's were found in a clean mineral oil matrix without interfering elements, with test times of 180's per beam.

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 pound battery operated XRF with integrated PC and industrialized large touch screen.

X-5000 EDXRF Specifications

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

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