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# RDE-OES SPECTROMETER FOR ELEMENTAL ANALYSIS

Standards  
ASTM D6595, ASTM D6728

Excellent correlation to ICP-AES  
ASTM D5185



# eraoil – Fast & Easy Wear Metal Analysis

Wear metals, additives,  
contaminants

**ERAOIL** is the first and most advanced stand-alone rotating disc electrode spectrometer analyzing wear metals, additives, and contaminants in all kinds of operating liquids, like lubricating oils, fuels, coolants, process water, etc.

Up to 32 elements are measured fully automatically within 30 seconds. **ERAOIL**'s high end CMOS detector in combination with the automatic back-ground correction allow for a sub-ppm detection limit (LOD) for most elements.



Smallest footprint  
with built-in PC

**ERAOIL**'s unique stand-alone design offers a rugged all-in-one package for operation even in smallest on-site testing labs. It comes with a built-in 10" color touchscreen and a PC.

Even an electrode sharpener and an automatic ventilation system are integrated in the **ERAOIL**. Still, it is the RDE-OES analyzer with the smallest footprint on the market.

**ERAOIL** is very easy to use even for untrained operators. The automated measuring procedure follows simple steps and is therefore perfect for on-site inspection: Just fill the sample cup, close the door, and push the start button. The elemental concentration is available immediately.

## High-precision oil & fuel analysis

**ERAOIL** is fully compliant with ASTM D6595 (Oil) and ASTM D6728 (Fuel). ASTM D6595 is the standard for identifying wear metals and contaminants in used lubricating oils and used hydraulic fluids by rotating disc electrode atomic emission spectrometry. For determining contaminants in gas turbine and diesel engine fuel, ASTM D6728 is the standard of choice.

To protect finished fuels against trace contamination **ERAOIL** is available with the special Low Detection Fuel Module to detect e.g. Potassium, Lithium, Sodium and Vanadium at LOD levels of as low as 0.1 ppm.

## Superior precision data outperforming ASTM D6595

ELEMENT	r @ 10 ppm
Ag   Ba   Ca   Li   Mg   Mn   Na   Si	0.1
Al   B   Cd   Cr   Cu   Fe   K   Ni   Ti   V   Zn	0.2
Mo   Pb   Sn	0.3
P	0.5
Sb	0.8

Typical ERAOIL repeatability (r) @ 10 ppm.

## Applications

Multi-elemental analysis is the core of in-service oil analysis. **ERAOIL** is the perfect solution for wear metal analysis of lubricants from engines, transmissions, hydraulic systems and gears boxes. The fast and easy elemental analysis brings clear advantages for the operation of any commercial means of transport or machines in the industrial environment. This solution also offers clear added value for other applications such as coolants, metal working fluids, or any other process fluids.



## Features at a glance

- **Wear metals, contaminants and additives** in lubricating oils and hydraulic fluids according to ASTM D6595 and contaminants in gas turbine and engine fuel according to ASTM D6728
- Up to **32 elements** in **30 seconds** with **sub-ppm** LOD
- **Stand-alone** design with built-in PC, touchscreen, sharpener & ventilation
- **Smallest** and **most rugged** housing for lab and on-site applications
- Compared to traditional ICP spectroscopy, the RDE-OES elemental analysis does not require sample preparation and **no carrier/plasma gas**

# WEAR METALS AND CONTAMINANTS

ELEMENT	LUBRICANT ASTM D6595	LUBRICANT EXTENDED CAL	FUEL ASTM D6728	LOW DETECTION FUEL	COOLANT	WATER
Silver (Ag)	0 – 1000	0 – 1000				
Aluminium (Al)	0 – 1000	0 – 1000	0 – 900		0 – 50	0 – 10
Arsenic (As)		0 – 100				
Boron (B)	0 – 1000	0 – 1000			0 – 1000	
Barium (Ba)	0 – 1000	0 – 6000				
Bismuth (Bi)	0 – 1000	0 – 1000				
Calcium (Ca)	0 – 6000	0 – 20000	0 – 900		0 – 50	0 – 10
Cadmium (Cd)	0 – 1000	0 – 1000				0 – 10
Cerium (Ce)		0 – 100				
Cobalt (Co)		0 – 100				
Chromium (Cr)	0 – 1000	0 – 1000	0 – 900			0 – 10
Copper (Cu)	0 – 1000	0 – 1000	0 – 900		0 – 50	0 – 10
Iron (Fe)	0 – 1000	0 – 1000	0 – 900		0 – 50	0 – 10
Indium (In)	0 – 1000	0 – 1000				
Potassium (K)	0 – 1000	0 – 1000	0 – 900	0 – 1	0 – 1000	0 – 10
Lithium (Li)	0 – 1000	0 – 1000	0 – 900	0 – 1		
Magnesium (Mg)	0 – 2000	0 – 6000	0 – 2700		0 – 50	0 – 10
Manganese (Mn)	0 – 1000	0 – 1000	0 – 900			0 – 10
Molybdenum (Mo)	0 – 1000	0 – 1000			0 – 500	
Sodium (Na)	0 – 1000	0 – 6000	0 – 900	0 – 1	0 – 1000	0 – 10
Nickel (Ni)	0 – 1000	0 – 1000	0 – 900			0 – 10
Phosphorus (P)	0 – 2000	0 – 6000			0 – 2500	
Lead (Pb)	0 – 1000	0 – 1000	0 – 900		0 – 50	0 – 10
Antimony (Sb)	0 – 1000	0 – 1000				
Silicon (Si)	0 – 1000	0 – 1000	0 – 900		0 – 500	0 – 10
Tin (Sn)	0 – 1000	0 – 1000				0 – 10
Strontium (Sr)		0 – 100				
Titanium (Ti)	0 – 1000	0 – 1000				
Vanadium (V)	0 – 1000	0 – 1000	0 – 900	0 – 1		
Tungsten (W)		0 – 100				
Zinc (Zn)	0 – 2000	0 – 6000	0 – 900		0 – 50	0 – 10
Zirconium (Zr)		0 – 100				
<b>TOTAL</b>	<b>26</b>	<b>32</b>	<b>15</b>	<b>4</b>	<b>13</b>	<b>15</b>

All values in this table represent detection ranges in ppm.



# Technical Specifications of eraoil

Available Test Methods	ASTM D6595: Wear metals, contaminants and additives in used lubricating oils and hydraulic fluids ASTM D6728: Contaminants in gas turbine and engine fuel
Correlation to	ASTM D5185 (ICP-AES)
Spectrometer Type	Rotating Disc Electrode Spectrometer (190 - 810nm) Thermally stabilized Paschen-Runge mounting with CMOS detectors
Applications	Determination of additives, wear metals and contaminants in lubricating oils, hydraulic fluids, gas turbine & diesel engine fuel, heavy fuel oil (HFO), crude oil, glycol coolants, process water, mineral water, and grease
Analytical Range	Simultaneous measurement of up to 32 elements in 30 seconds with sub-ppm detection limit (LOD) for most elements incl. automatic background correction
Calibration	Factory calibrated for 26 elements Optional calibration for up to 32 elements
Sample Volume	2 mL; no solvents, reagents or gases are needed, no cleaning of cell window
Operating Conditions	0 °C to 40 °C (32 °F to 104 °F) Up to 90% humidity, non-condensing
Fully Integrated Stand-Alone Design	Built-in electrode sharpener and ventilation system Industry-proven multilingual 10" color touchscreen Built-in PC with Ethernet, USB, and RS232 interfaces Optional connection of a monitor and data input by external keyboard, mouse, or barcode reader
Software	Windows® software for convenient data transfer, viewing spectra and result analysis
Result Database	Over 100,000 detailed test reports and spectra storable in internal memory
Dimensions	W x D x H = 36 x 66 x 69 cm (14.2 x 25 x 27 in)
Weight	85 kg (187 lb)
Power Requirements	90 – 270 V, AC 50/60 Hz, 500 W
Recommended Consumables for 1000 Tests	EOL01 – A001 graphite discs (1000 pcs) EOL01 – A002 graphite electrodes (100 pcs) EOL01 – A003 2 ml sample cups (1000 pcs)

Due to continuing product development, specifications are subject to change.

All eralytics products are manufactured under ISO 9001 regulations and are CE, ROHS and UL/CSA compliant. [www.eralytics.com/eraoil](http://www.eralytics.com/eraoil)



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