

# Energy Dispersive X-Ray Fluorescence



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## What is EDXRF

EDXRF is Energy Dispersive X-Ray Fluorescence, performing tests methods including ASTM D4294 and ISO 8754 for Sulphur, or ASTM D5059 for Lead analysis.

A sample is placed into a safety window in the sample port of the instrument, which is rotated out of the sample port into the path of X-Rays. The atoms present in the sample are excited by the Titanium X-Ray and the detector separates the different energies of the characteristic radiation for each element.



## Why Do We Test

Sulphur content in fuel oil can affect emissions of Particulate Matter and is directly linked to Sulphur Dioxide emissions, contributing to atmospheric pollution and corrosion of equipment in contact with the combustion products, Sulphur levels are strictly controlled by legal requirements globally.

The Lead analysis performed on Gasoline samples ensures cargo compliance with environmental regulations and safeguards public health.



## How Does It Work

For analysis on the EDXRF by ASTM D4294, ISO 8754 and ASTM D5059 plastic sample cells are prepared using a Poly M Film, sample of 10g is then poured and stoppered before placing into the sample port.

SQC samples of known concentration are used to ensure the instrument, calibration of the method being used is working correctly. All results from the SQC's performed are recorded and monitored.

The results for Sulphur are reported in parts per million (ppm) or percentage mass (%m), whereas Lead (Pb) is reported in grams per litre g/l.





## Potential Issues and Solutions:

- During the sample cup preparation, if the film has creases this can cause inaccurate results, a trained laboratory technician needs to visual check each sample cell before using.
- Calibration drift causing low or higher results, which is monitored by running an SQC of a known concentration at the beginning and end of analysis, ensuring confidence in results.





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