



SULFUR Analysis with XRF Method

The XRF method is the best suitable method for total sulphur analysis in petroleum products. Other techniques based on injection techniques and conversion methods to SO_2 and H_2S will not work when the final boiling point of the product exceeds 450°C . X-ray absorption techniques are not considered for the reason of matrix effects and because of safety aspects of the radioactive sources.

The analyzer Hobré Instruments bv proposes is the Metorex C100-SXT.

This analyzer offers the following advantages:

- The X-ray source is an X-ray tube; therefore the radiation is stopped when the power is switched off.
- Analysis is not influenced by product density variation or C/H ratio variations.
- No moving sample wetted parts, analyzer has a very low cost of ownership
- Internal auto referencing on solid reference material, resulting in reduction of drift of the electronics and reduction of the effect of changes in ambient temperature within the operation limits.

Hobré Instruments BV has over 20 years experience with the process analyzers of Metorex and offers practical experience for online analysis including sample conditioning, flushing system and sample recovery system. Metorex has a large installed base of the model C100; the technology is well proven.

The following requirements have to be fulfilled for reliable operation of the analyser:

- The operating temperature of the sample shall be below the IBP of the product.
- The viscosity of the product at operating temperature of the sample cell must not exceed 100 cSt.

With the above requirements the sample temperature to the analyzer cell can be decided.

The outlet of the analyzer to atmospheric drain or sample recovery vessel is strongly recommended. Although the sample cell window can withstand higher pressure; we prefer to minimize the risk of window damage due to pressure shock or vibration in the return line. Also, the common problem of deformation of the window which is known to cause drift in XRF analysis, is eliminated.

For analysis with the EDXRF method, free water and most particles must be removed from the sample. We recommend the use of the Hobré maintenance free HLSS separators with the sampling system





TECHNICAL SPECIFICATIONS OF METOREX C100 LSXT

Principle of measurement:

X-Ray fluorescence, Energy Dispersive.

Source: X-ray tube, low background detector.

ASTM-D4294 (Energy Dispersive X-Ray Fluorescence Spectroscopy)

ASTM-D7212 (Low Sulphur EDXRF using a Low Background Proportional Counter)

Measurement range:

From 1 ppm to % level (application specific)

Detection limit:

1 ppm (measuring time 10 minutes)

Repeatability:

(measuring time 10 minutes, moving average available)

< 100 ppm ± 1 ppm

500 ppm ± 2 ppm

Stability:

Typically better than 0.5% (automatic drift connection).

Calibration:

Using standards in the measurement range.

Easy calibration sample feed and lab grab sample option.

Purging:

For sensitivity and safety a N₂ purge is required for S analysis at low level.

Nitrogen purity 99.9% and Ar < 0.01%

Safety:

ATEX Zone 1 and Zone 2

NEC Class1, Div2

Instrument air purge, nitrogen for measuring head at low S levels (< 0,5%)

NOTE:

The sample conditioning system is essential for the performance of the analyser.

We recommend using the Hobré HLSS filter to ensure sufficient removal of particles and water. Please inquire.

