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Calibration Specification for Sulfur X-ray Fluorescence Spectrometry Analyzers

X射线荧光测硫仪校准规范

(English Translation)

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Introduction

JJF 1071-2010 "Rules for the Compilation of National Metrology Calibration Standards", JJF 1001-2011 "General Metrology Terms and Definition" and JJF 1059.1-2012 "Measurement Uncertainty Evaluation and Representation" together constitute the basis for the formulation of this specification Series Specifications.

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This specification refers to GB/T 11140-2008 "Determination of sulfur content in petroleum products by wavelength dispersive X-ray fluorescence Spectroscopy", GB/T 17040-2019 "Determination of Sulfur Content in Petroleum and Petroleum Products Energy Dispersive X-ray Fluorescence Light Spectroscopy", GB/T 17606-2009 "Determination of Sulfur Content in Crude Oil by Energy Dispersive X-ray Fluorescence Spectrometry", SH/T 0742-2004 "Determination of Sulfur Content in Gasoline (Energy Dispersive X-ray Fluorescence Spectrometry)" and NB/SH/T 0842-2017 "Single wavelength dispersive X-ray fluorescence spectroscopy for the determination of sulfur content in light liquid fuels" relevant content of the Law.

This specification is published for the first time.

Calibration Specification for X-ray Fluorescence Sulfur Meters

1 Scope

This specification applies to the calibration of X-ray fluorescence sulfur meters for the measurement of sulfur content in crude oil and petroleum products.

The mass fraction determination range does not exceed 5%.

2 Reference documents this specification references the following documents.

GB/T 11140-2008 Determination of sulfur content in petroleum products by wavelength dispersive X-ray fluorescence spectrometry GB/T 17040-2019 Measurement of sulfur content in petroleum and petroleum products Energy-dispersive X-ray fluorescence spectrometry GB/T 17606-2009 Determination of sulfur content in crude oil Energy dispersive X-ray fluorescence spectrometry SH/T 0742-2004 Determination of sulfur content in gasoline (energy dispersive X-ray fluorescence spectrometry) NB/SH/T 0842-2017 Determination of Sulfur Content in Light Liquid Fuels Single Wavelength Dispersive X-ray Fluorescence Light Spectroscopy for dated references, only the dated version applies to this specification; for undated references document, the latest version of which (including all amendments) applies to this document.

3 Overview

X-ray fluorescence sulfur meter is used to measure the sulfur content in crude oil and petroleum products.

Divided into energy dispersion type and wavelength dispersion type. The basic working principle is. put the sample in the X-ray beam, the X-ray the X-ray emitted by the tube excites the sulfur atoms in the sample, producing characteristic X-ray spectral lines of sulfur element, and energy dispersive X-ray fluorescence.

The optical sulfur analyzer measures the characteristic X-ray intensity and wavelength of sulfur element through an X-ray detector with a certain energy resolution.

The dispersive X-ray fluorescence sulfur analyzer measures the intensity of the sulfur

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Kalpha line at the wavelength of 0.5373 nm by means of crystal spectroscopy and detectors.

According to the intensity, the samples were quantitatively analyzed by X-ray fluorescence sulfur analyzer.

X-ray fluorescence sulfur analyzer (hereinafter referred to as the instrument) is mainly excited by an excitation source (including a radioactive source or a tube to excite X-rays) radiation source), disperser, sample chamber, detector and signal analysis system.

4 Metrology characteristics the metering characteristics of the instrument are shown in Table 1.

Table 1 Metrology characteristics of the instrument

Calibration item

Sulfur content

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