



Good Value • Quality Performance

Total Sulfur Analyzer

ELEMEN+ SUVF 3000



Deliver robust, uncomplicated analysis of sulfur,
so that you can measure with confidence with
ELEMEN+ SUVF 3000

Analysis of the total sulfur content by combustion and UV fluorescence detection technique

has fast becoming the preferred method to characterize a variety of samples in gases, liquid or solid sample matrices due to its ruggedness, sensitivity, and good linear dynamic range. It is widely used in **petroleum, chemical, electric power, coal, food, biofuels, environmental protection and other application fields.**

The **ELEMEN+ SUVF 3000** Total Sulfur Analyzer utilizes proven UV fluorescent technology combined with its user-friendly software to detect sulfur present in the samples.



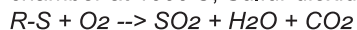
The **ELEMEN+ SUVF 3000** features reliability, ruggedness and stability in one compact footprint. It has a wide dynamic range and allows measurement of sulfur content in gas, liquid and solid samples from percentage % to low ppm level. As the world demand for biofuel increases, all feedstock products that are refined to create automotive fuel must contain low levels of sulfur, including plant oil and reprocessed waste cooking oil. This makes **ELEMEN+ SUVF 3000** the instrument of choice, especially in biofuel application.

The system conforms to the following testing methods for sulfur content measurement:

- **ASTM D5453-2006** Standard Test Method for Determination of Total Sulfur in Light Hydrocarbons, Spark Ignition Engine Fuel, Diesel Engine Fuel, and Engine Oil by Ultraviolet Fluorescence
- **SH/T 0689-2000** Standard test method for determination of total sulfur in light hydrocarbons, motor fuels and oils by ultraviolet fluorescence
- **EN ISO 20846:2004** Petroleum products: Determination of sulfur content of automotive fuels Ultraviolet Fluorescence
- **GB 17930-2013** Determination of sulfur content in Gasoline for motor vehicles
- **GB 19147-2016** Determination of sulfur content in Automobile diesel fuels
- **ISO 20846-2011** Petroleum products — Determination of sulfur content of automotive fuels — Ultraviolet fluorescence method
- **BS EN 15486-2007** Ethanol as a blending component for petrol. Determination of sulfur content. Ultraviolet fluorescence method

Measurement Principle:

When a Sulfur containing sample is combusted in the quartz catalytic chamber at 1000°C, Sulfur dioxide (SO₂) is formed:

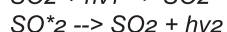
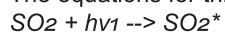


The amount of total sulfur is measured by pulsed UV-Fluorescence detection technique.

The technique involves the following sequence. Firstly, sulfur dioxide (SO₂) is formed during oxidation, the gaseous formed is then transferred to the reaction chamber. Here it is excited by a pulsed UV source. As the excited state is unstable, the excited SO₂ will instantly decay to its ground state energy level. During this process, UV light is emitted. As this light has a different wavelength than the original UV source, the Photomultiplier tube is able to detect this emission.

The amount of light emitted represents the total amount of SO₂ present in the combusted sample flow. This in turn can be taken as the corresponding amount of Total Sulfur in the sample.

The equations for this reaction are:



Calibration:

Due to its good linearity, a single point calibration is sufficient. However, user can perform a multipoint calibration if needed. The **ELEMEN+ SUVF 3000** is equipped with a stable detector, user can keep a calibration curve valid for a several months.

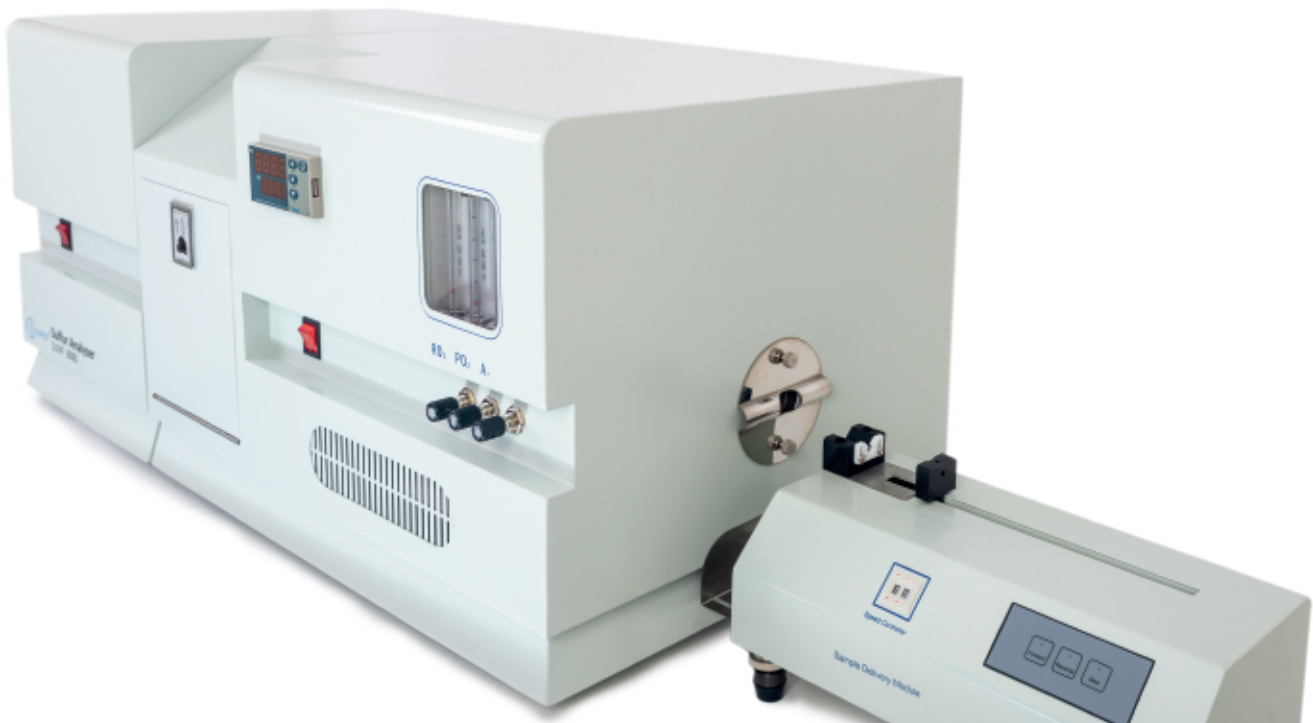
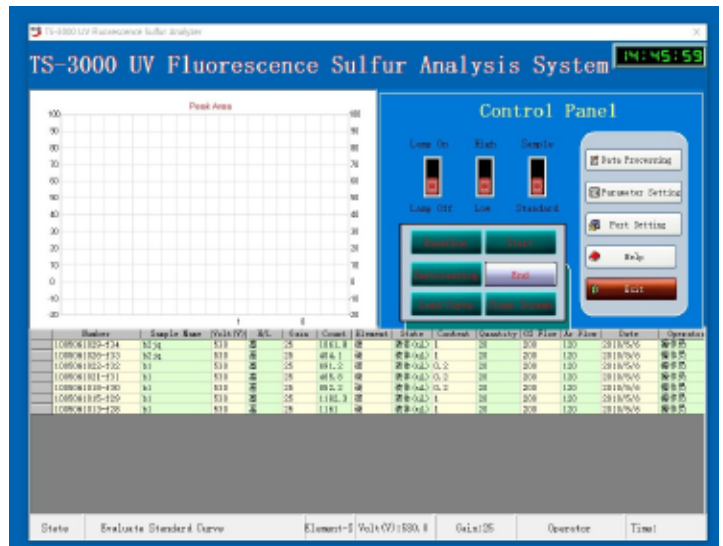
Features & Characteristics:

- *Imported Fluorescence Excitation Source*
- *High sensitivity and accuracy membrane dryer, and filters*
- *Fast and stable metal encapsulated Photomultiplier Tube*
- *Advanced temperature control system with two position heating to ensure rapid and stable heating rate*
- *Wide application scope with good adaptation capability, allowing liquid, solid and gases analysis using selective sample delivery module.*
- *Intuitive and user-friendly operation software. Ease of operation through a few mouse clicks to perform straight forward parameter setting, data collection and data processing.*
- *Requires only a small amount of sample, features short run time allows high sample throughput.*

TS 3000 Operation Software delivers more

During the software development stage, a critical focus was to ensure that TS 3000 software lives up to its claim on "easy-to-use". In particular, we focused on the software layout and simplified function keys.

TS 3000 software has only a few command buttons to choose from. These simple function keys enable user to check instrument status and executing desire operations. The learning curve to master this analyzer is moderate and the intuitive and straight-forward operation software allows user to easily operate through a few mouse clicks from parameter settings to obtaining result.



Accessories for SUVF 3000



Sulfur reference standards



Pyrolyze quartz tube

The **ELEMEN+ SUVF 3000** system when delivered, will be provided with the following standard accessories:

- ELEMEN+ SUVF 3000 Sulfur Analyzer Mainframe
- Liquid Sample Delivery Module
- Quartz Tube
- Standard Reference Material for Sulfur (2, 5, 10, 50, 100 mg/l)
- Micro syringes 25ul (set of 4)
- Silicone septa (pk of 10)
- Silicone rubber tubing (20 cm)
- Thermocouple
- UV Lamp
- Membrane Dryer
- Photomultiplier Tube (PMT)
- Filter (1 set)
- Power cable & communication cable
- User Manual

ELEMEN⁺ SUVF 3000 Total Sulfur Analyzer's Gases & Other Requirements:

Gases: High purity Oxygen (O₂) above 99.95% for combustion

High Purity Argon (Ar) above 99.95% as carrier gas

Regulators: High Purity 2 stage Stainless steel diaphragm gas regulators

Computer & Software: Windows OS 10 (64 bit)

Standard specifications:

Parameters	Specifications
Model	ELEMEN ⁺ SUVF 3000 Total Sulfur Analyzer
Analysis Principle	Combustion - UV Fluorescence
Oxidation Decomposition	Quartz tube combustion method
Sample Type	Liquid, Gases and Solid*
Sample Injection Volume	Liquid: 5-50ul, Gas: 1-5ml, Solid: 1-20mg
Testing Time	Less than 1 min per sample
Measuring Range	0.1 – 10000mg/L (High concentration sample should be diluted)
Temperature Range	Room temp to 1150°C
Temperature Control Precision	±1°C
Power Supply	AC 220 +-10V, 50/60Hz, 1500W
Maximum Power Consumption	3.5kW
Ambient Temperature	10-40°C
Relative Humidity	< 85%
Dimension	Mainframe :305mm(W) x 460mm(D) x 440mm(H) (PC& Printer not included) Temperature Controller: 550mm(W) x 460mm(D) x 440mm(H)
Weight	60kg (Mainframe + Temperature Controller)

*solid sample required optional solid sample injection module



Within the ELEMEN⁺ Family, also available is the ELEMEN⁺ CLS 3000 Chlorine Analyzer based on micro-coulometry technology, capable of measuring low concentration Chlorine content as per ASTM D5808-03, UOP779-08 etc standard testing methods. Call us for more details on ELEMEN⁺CLS3000



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