



Elemental measurement based on

X-ray methods

SPECTROSCAN META

Sulfur and Nitrogen Analyzer



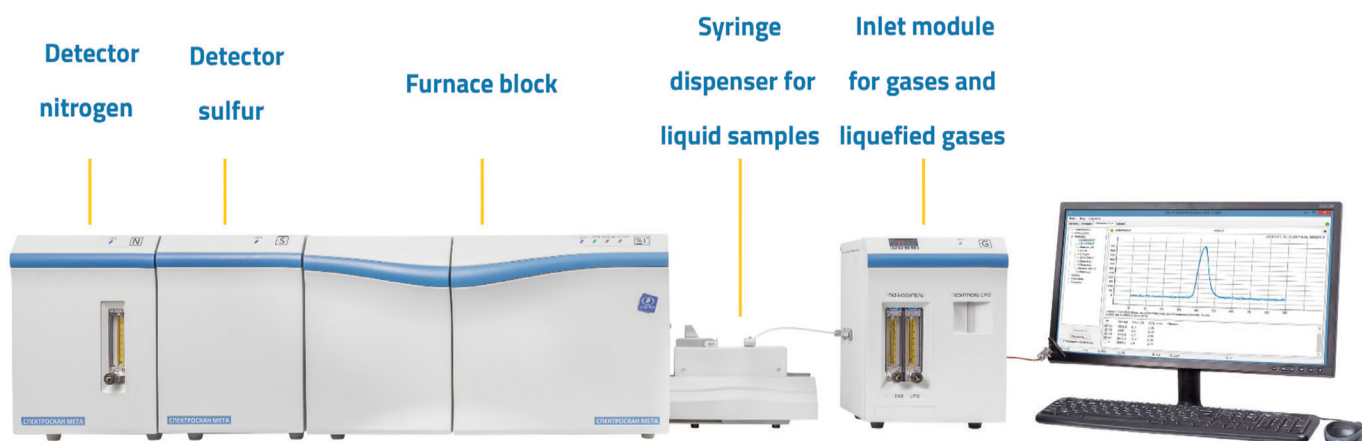
Description

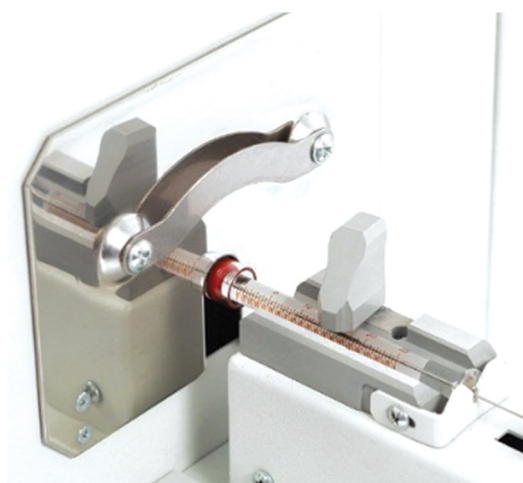
SPECTROSCAN META is an elemental analyzer for determining the total sulfur content by UV fluorescence and the total nitrogen content by chemiluminescence in oil and oil products, hydrocarbon gas, liquefied petroleum gas (LPG), natural gas, liquefied natural gas (LNG), chemical synthesis products, biological materials.

The analyzer allows you to determine the content of sulfur and nitrogen in oil and oil products (diesel fuel, gasoline, kerosene, gas oil and any distillate oil products), hydrocarbon gas, liquefied petroleum gas (LPG), natural gas, liquefied natural gas (LNG), chemical synthesis products, biological materials by ultraviolet fluorescence and chemiluminescence.

Advantages:

- Accurate determination of total sulfur (S), total nitrogen (N) in one sample.
- Low detection limit: 0.2 ppm (S), 0.025ppm (N)
- Wide reading range: 0.03-10000 ppm (S), 0.03-10000 ppm (N)
- Wide measuring range: 1-5000 ppm (S), 0.05-5000 ppm (N)
- Weak matrix influence: carbon / hydrogen ratio, additives, water
- Sample analysis time from 3 minutes
- Semi-automatic device for injecting liquids and a module for injecting gases and liquefied gases
- Convenient software interface, built-in diagnostics, metrological verification.





Comparing the performance of the SPECTRON Meta device with similar models

	SPECTRON Meta			Analytik Jena multi EA5000	TSHR TN/TS 6000
	Nitrogen (L)	Nitrogen	Sulfur		
Measurement limit(ppm)	0.025	0.1	0.1		30ppb (solid) 30ppb (Liquid)
Measurement range	0.05- 20000 ppm	0.3-1000 ppm	1-10000 ppm	100 µg - 100 wt. %	30 ppb- 5000 ppm (solid) 30 ppb- 10000 ppm(Liquid)
Measurement time	From 3 mins			Depending on settings, configuration and performance: 4 mins (vertical) 9 mins (horizontal)	4-10 mins
Viscosity range of analyzer samples,cST	0.2-20			-	-
Automatic sample injection speed range (µl/sec)	0.5-1.5			-	-
Furnace operating temperature C°	900-1100			Maximum 1100°C (Has two horizontal and vertical furnaces)	1250°C dual temperature control
Temperature and pressure control	automatic			automatic	-
Maximum energy consumption (kW)	2.5			-	1.2 (115.230 V, 5.60 Hz)
Required gases	Argon and oxygen			Argon 4.6 and oxygen 4.5	Argon, oxygen or helium
Dimension (mm)	340*500*1300			-	-
Weight (kg)	65			-	-



Spectroscan sulfur analyzer (SE)

Description

Analyzer for quantification of sulfur in liquids by Energy dispersive X-Ray Fluorescence

Spectroscan SE provides quick, accurate, and reliable quantification of Sulfur weight content in nearly all types of liquids.

Spectroscan SE uses Energy-dispersive X-Ray fluorescence method that is very easy to run, requires no sample treatment and delivers accurate results with high repeatability quickly.

Spectroscan SE analyzer fully complies with international standards for sulfur analysis by EDXRF technique.

Built-in tablet PC with 7-inch color touch-screen deliver flexibility in creating user calibrations.

Due to side position of X-ray tube and detector to sample compartment costly optic components are protected from sample spill. The accuracy is improved and LOD is lower as no detector protection film is needed for this design.

Advantage

- Simple in operation, now installation required
- Analyzer parameters are suitable for mobile laboratories
- The sample data and analysis results are shown in display and printed out by inbuilt printer
- Special ventilated cups are developed for volatile samples

Due to lateral position of the sample:

- Error due to water and air bulbs are excluded;
- Contamination of the inner parts of the analyzer is excluded;
- Additional errors due to contamination of the additional protection film is excluded;
- Sample loading unit is easily cleaned.

Application

- Spectroscan SE provides quick, accurate, and reliable quantification of Sulfur weight content in nearly all types of liquids.
- Spectroscan SE analyzer fully complies with international standards for sulfur analysis by EDXRF technique.



Comparing the performance of the SPECTRON SE device with similar models

	SPECTRON SE	USlab	Horiba	XOS (Benchtop)	TANAKA	
					RX-360SH	Rx-630SA posi- 12) (tions
Measurement principles	EDXRF	EDXRF	EDXRF	-	EDXRF	EDXRF
Lowest measurement accuracy (LOD)	1.5ppm	10-100 ppm	20 ppm or less	5.7 ppm	-	-
Measurement range	5 ppm - 5 wt. %	10-100 ppm 1-15 wt %	0 – 9.9999 % wt	5.7 ppm 10 wt. %	15 mg / kg 6 wt %	15 mg / kg 6 wt %
Repeatability	Less than 4.1 ppm for 100 ppm of sample Less than 200 ppm for 2% wt of sample	-	15 ppm or less (for 1% wt sample of Sulfur)			
Measurement time	10-999 seconds (user adjustable) Typical time for two sample replicates: 2 mins	SDD fast detector resolution results in the best perfor- mance during testing	10-600 seconds	30-900 seconds (user adjustable)	-	300 seconds (typically)
Sample cup	Special cup equipped with ventilation	-	-	Standard X sample cup	-	-
Calibration	Requires pre-loading of calibrations for ASTM and other standards. Up to 1000 user calibration curves	Factory calibration includes: 10-100ppm % wt 1-15 (Highly accurate results without the need for daily calibration)	lines 3 sets 5 (total 15 lines) With manual and automatic settings	-	-	No need
Outputs	RJ-45, RS-232 USB, LIMS-connection	-	USB connection with PC, USB memory	Printer, USB & Ethernet, LIMS Integrated	-	-
Dimensions(mm)	185*320*400	362*372*380	140*400*230	153*368*419	140*350*420	270*560*560
Weight(kg)	8/5	-	9	-	12.5	27



Specron SW-D3

Description

SPECTROSCAN SW-D3 is a reliable and accurate WDXRF analyzer of sulfur in liquids. It provides quick determination of sulfur weight content with Limit of Detection as low as 0.15 ppm.

SPECTROSCAN SW-D3 fully complies with international standards for sulfur analysis by WDXRF technique. Advanced design, intuitive menu and extended set of CRMs and consumables in starter pack makes easy the work even for a non-professional analyst.

Spectroscan SW-D3 Sulfur Analyzer is a desk top with inbuilt computer and printer. It consists of two blocks: Spectrometer and vacuum pump. The spectrometer has a closed cycle water cooling system. The measuring tract is in vacuum chamber, but the sample is at the ambient conditions.

Advantage

- Due to the original design no He blowdown is required, providing LOD as low as 0.15 ppm
- Simple in operation;
- Desk top instrument;
- The sample data and analysis results are shown in display and printed out by inbuilt printer;
- Special ventilated cups are developed for volatile samples;
- 3-position sample automatic changer makes analysis of sample replicates easy.

Due to lateral position of the sample:

- Error due to water and air bulbs are excluded;
- Contamination of the inner parts of the analyzer is excluded;
- Additional errors due to contamination of the additional protection film is excluded;
- Sample loading unit is easily cleaned.

Application

- SPECTROSCAN SW-D3 provides determination of sulfur weight content in all types of liquids with Limit of Detection as low as 0.15 ppm.
- SPECTROSCAN SW-D3 fully complies with international standards for sulfur analysis by WDXRF technique.

Comparison of SPECTRON SE and SPECTRON SWD3 devices

	SPECTRON SWD3	SPECTRON SE
Measurement principles	WDXRF	EDXRF
Detection limit(ppm)	0.15	1.5

Comparing the performance of the SPECTRON SW-D3 device with similar models

	SPECTRON SW-D3	Rigaku (Mini-Z Sulfur)	Sindie 7039 XOS	XOS Sindie 2622 Gen 3 with Accu-cell) (vacuum
The determining element	SULFUR			SULFUR
Detection limit (ppm)	0.15	0.26		
Detection limit at 200 seconds	0.5 mg/kg			
Measurable sulfur concentration	0.05mg/kg - 5 %wt	%0.78ppm - 4 wt	wt.% 0.3 - wt.% 10	0.15ppm - wt.% 10
Measurement time for each sample	From 8 minutes	300 seconds (fastest measurement time)	30 -900 seconds (user-definable) usually 300 seconds	30 -900 seconds (user-definable) usually 300 seconds
Weight(kg)	40(spectrometer)		32	32
	9(Vacuum pump)			
Dimention(mm)	340*480*530 (spectrometer)		340*370*500	340*370*500
	380*230*330 (Vacuum pump)			



Specron CLSW

Description

WDXRF Sulfur and Chlorine Analyzer

SPECTROSCAN CLSW is a reliable and accurate WDXRF Sulfur and Chlorine Analyzer of sulfur and chlorine in liquids. It provides quick determination of sulfur and chlorine weight content with Limit of Detection as low as 0.3 ppm for sulfur and 0.2 ppm for chlorine.

SPECTROSCAN CLSW fully complies with international standards for sulfur and chlorine analysis by WDXRF technique.

Advanced design, intuitive menu and extended set of CRMs and consumables in starter pack makes easy the work even for a non-professional analyst.

Advantage

- Due to the original design no He blowdown is required, providing LOD as low as 0.2 ppm for Cl and 0.3 ppm for S
- Simple in operation;
- Desk top instrument;
- The sample data and analysis results are shown in display and printed out by inbuilt printer;
- Special ventilated cups are developed for volatile samples;
- 3-position sample automatic changer makes analysis of sample replicates easy.

Due to lateral position of the sample:

- Error due to water and air bulbs excluded;
- Contamination of the inner parts of the analyzer is excluded;
- Additional errors due to contamination of the additional protection film is excluded;
- Sample loading unit is easily cleaned.

Application

- SPECTROSCAN CLSW provides determination of chlorine and sulfur weight content in all types of liquids with Limits of Detection as low as 0.2 ppm for chlorine and 0.3 ppm for sulfur.
- SPECTROSCAN CLSW fully complies with international standards for chlorine and sulfur analysis by WDXRF



Comparing the performance of the SPECTRON CLSW device with similar models

	XOS Sindie +Cl	SPECTRON CLSW
Sample cup type	Standard cups XRF	Special cups equipped with ventilation
Measurement range and accuracy	Sulfur 0.4 ppm- 5% wt	Sulfur 0.3 ppm- 5% wt
	Chlorine 0.3 ppm - 3000 ppm	Chlorine 0.2 ppm - 1% wt
Measurement duration	30 -900 seconds (user-definable) Sulfur: 0.4 ppm in 300 seconds Chlorine: 0.3 ppm in 300 seconds	10 -999 seconds (user-definable) usually 200 seconds per sample
Weight(kg)	12.7	spectrometer: 40
		Vacuum pump:9
Dimention(mm)	-	spectrometer: 530*480*340
		Vacuum pump: 380*230*330



SPECTROSCAN MAKC-GVM spectrometer

Description

SPECTROSCAN MAKC-GVM" WDXRF spectrometer determines elements from Na (Sodium) to U (Uranium) in solids, liquids or powders, in solutions and thin films, deposits on filters. The spectrometer operation is based on irradiation of the sample with primary X-rays generated by X-ray tube, registration of the secondary fluorescence from the sample elements preliminary diffracted on a crystal, and calculation of the elements concentration with the help of calibration equation, which is a relation between the element concentration and in-

tensity of the registered secondary emission from the element. The spectrometer has high resolution of spectral lines and therefore provides accurate determination of elements in complicated multicomponent substances.

Advantages:

- Non-destructive analysis – all elements in the range from Na (Sodium) to U (Uranium) can be determined from one sample. Desk top spectrometer doesn't require water supply or gas supply systems.
- The measuring system of the spectrometer in the vacuum chamber while the samples are at the ambient pressure, so no He is required for the sample chamber and all samples (including liquid and powder) may be studied without any special measures taken.
- Spectrum scanning and high resolution of crystal analyzers excludes close lines of different elements overlapping (therefore there is no need in their mathematical differentiation), provides correct background accounting. All these provide accuracy and reliability of analysis.
- Automatic sample changer for 10 samples with two spinning samples for analysis of non-homogeneous samples minimizes need of operator activity while measurements.
- The spectrometer is delivered precalibrated for customer's analytical tasks, with required accessories set and sample preparation equipment if necessary.

Standard:

ASTM D2622 / ASTM D4927 / ASTM D6443



Accessories:

- Spectron sample cup
- XRF film
- Sample cup preparation accessories
- Molybdenum sample for detector drift adjustment
- Vacuum probe

Applications

Environmental Aspects:

- Earth Environmental Studies
- Plant Material Analysis
- Ventilation Pollution Analysis
- X-ray spectrometer can be used to
- determine the elements present in aerosol, gas and waste pollution from various plants.
- Waste Analysis
- Soil Analysis
- Water Analysis
- Air Analysis

Mining:

- Non-metallic Mineral Products Analysis
- Cement Production Materials Analysis
- Ceramics and Refractories Analysis
- Ore Processing Products Analysis
- Slag and Waste Analysis

Metallurgy

- Analysis of Ferrous and Non-Ferrous Alloys
- Testing and Troubleshooting
- Analysis of Worn Products in Appropriate Lubricants
- Technological Analysis of Pure Primary Productivity (2NPP) Water
- Analysis of Corrosive Deposits
- Engine Wear Troubleshooting

Geology

- Mineral Resource Forecasting and Survey
- Geochemical Surveys

Specialization Occupations:

- Customs
- Art
- Criminal and Forensic Investigations

Research Studies and Investigations

Comparing the performance of the SPECTRON MAKC-GVM device with similar models

	Bruker	PANalytikal	SPECTRON
Elements	-	Duplex detector for increased sensitivity and extended dynamic range for transition metal analysis Hyper scintillation detector for increased dynamic range for heavy elements Ideal for accurate analysis of Nb and Mo in steel	Sodium (Na ¹¹) to Uranium (U ⁹²)
Limit of Detection (LOD)	Sulfur 0.2ppm	-	from 1-5 ppm Depending on element, matrix and application
			0.01-0.02% Mg ¹²
			0.05-0.1% Na ¹¹
Need for consumable gases	No need for compressed air	Low-volume airlock design for rapid sample rotation in vacuum or low helium consumption in liquid analysis	No
Sample replacement	Up to 4 automatic sample changes	209 sample exchange stations	10 autosamplers 2 rotary samples
Energy consumption	V 240 - 208. Hz 50,60	-	220V, 50Hz
Dimention(mm)	900*840*1350	-	Analyzer Unit: 380*460*560
			Vacuum Pump: 380*230*330
Weight(kg)	446	-	Analyzer Unit: 60
			Vacuum Pump: 15