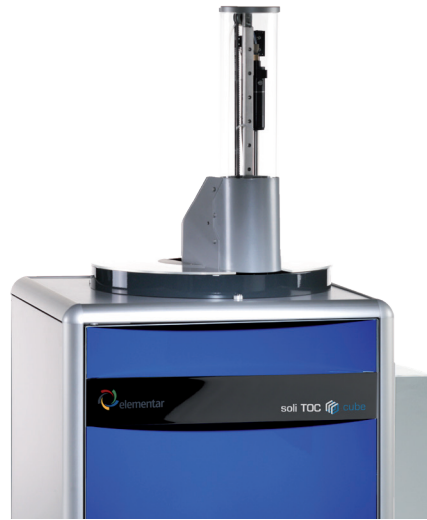# soli TOC cube

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EXCELLENCE IN ELEMENTS

An innovative instrument for the temperature-dependent differentiation of carbon. The soli TOC cube is developed to determine the different carbon fractions (TOC, TIC, elemental carbon) in samples such as: soil, waste, debris, construction materials or other substances via programmed temperature ramping. This method avoids complex sample preparation or use of acids. Automatic ash removal reduces maintenance and an active cooling system guarantees short analysis times.

Elemental combustion analyzer

Analyzer

Concentration analysis of	Total Organic Carbon (TOC_{400}), Elemental Carbon (Residual Oxidizable Carbon, ROC), Total Inorganic Carbon (TIC_{900}), Total Nitrogen* (TN)
Operating modes	TOC/ROC/TIC, TOC/TIC, TOC/ROC, TOC, TIC, ROC, TN*, TOC/ROC/TIC/TN*
Design	Compact benchtop with single power supply
Sample introduction	Vario Solid Sampler
Furnace design	Dynamically heated furnace system with permanent post-combustion
Detector type	High sensitivity infrared detection, electrochemical cell*
Control	Fully digital via external PC (no additional control panel required)

Sample Introduction

Construction	One block, auto-aligned integrated sampling turret
Access	On air, inert gas free easy access
Movement control	Fully electrical
Turret type	Non-stacked 89 position random access
Sampling system	Radial sampling turret with central rotating robotic sampler
Sample container	Both reusable steel and ceramic crucibles holding up to 3 g / 3 ml

Furnace

Type	Robust vertical furnace system for usage of 28 mm inner diameter quartz reaction tubes
Furnace	Resistive heater element with 900°C maximum temperature
Electrical supply	48 Volt safety design
Control	Fully automatic software control (no touchpad control)
Combustion/post-combustion reactor	Straight quartz combustion tube with platinum catalyst filling
Ash removal	Automatic ash removal via robotic sampler
Cooling	Active cooling sytem with furnace cooling fan
Carrier gas	Oxygen/Nitrogen (or Oxygen/Argon)
Connections	Quick swap clamp connections for fast maintenance with no tools required

Detectors/electronics

Type	CO_2 specific infrared
Design	Built-in, software controlled
Detection limit**	<20 ppm (infrared detector)
Type	Nitrogen monoxide sensitive electrochemical cell*
Design	Built-in, software controlled

System Data Sheet

soli TOC cube

Calibration TOC/ROC/TIC	Multipoint, multirange, matrix-independent calibration
Calibration TN*	Multipoint, multirange, matrix-dependent calibration
Analysis time**	~25 min for entire temperature ramp (TOC/ROC/TIC) including TN*, ~8 minutes for acidified samples, self-optimizing according to element content and sample weight
Electronics	Fully digital, fully integrated in unit
Security norms	EU machinery directive 2006/42/EG

Software

Operating system	Windows® 10, Windows® 8, Windows® 7, minimum XP, other systems upon request
Analyzer software	Winvar proprietary software
Features	Automatic leak finding software
	Intelligent error indicator with sophisticated self-diagnostics
	Auto sleep and wake-up
	Statistical calculations
	Indication service cycle
	Remote control
	LIMS integration
	21 CFR part 11 compliant*
	Comprehensive documentation for fast part identification
Data Storage	Non manipulated storage of experimental raw data and peak graphics
Balance	Automatic read out of weighing data*

* requires optional configuration
** depending on sample type, analysis mode and configuration

Measuring Range and Technical Specifications

C:	0 – 50 mg absolute or 0 – 100 %,	standard deviation:	< 0.1 % absolute (100 mg $CaCO_3$)
C**:	LOD <15 µg C absolute	standard deviation:	< 0.1 % absolute (100 mg soil standard)
N*,**:	0 – 20 mg absolute or 0 – 15 %	weight:	approx. 70 kg
	(for entire temperature ramp)	electrical connections:	100/110/200/230 V, 50/60 Hz, 1.8 kW
N*,**:	LOD <20 µg N absolute	gas consumption:	O_2: ~160 mL / min, N_2: ~425 mL / min
		required gases:	Oxygen/Nitrogen (or Oxygen/Argon)
		dimensions:	67 x 55 x 106 cm (W x D x H (including sampling turret)

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