ТЕРМОГРАВИМЕТРИЧЕСКИЙ АНАЛИЗАТОР

TGA THERMOSTEP

Термогравиметрия - станартный метод для анализа органических, неорганических и синтетических материалов.
Термогравиметрический анализ - это измерение потери веса при температурном воздействии на пробу, заданным пользователем.

Анализатор ELTRA TGA Thermostep - термогравиметрический анализатор, который определяет различные параметры, например, влагу, выход летучих и зольность по заданной пользователем программе за один анализ. TGA Thermostep одновременно анализирует 19 проб с весом до 5 грамм и максимальной температурой печи до 1000 °C.

Уникальной особенностью анализатора TGA Thermostep является возможность поднимать крышки тиглей. Анализатор может поднимать и опускать крышки во время анализа автоматически без участия оператора, что позволяет выполнять анализ летучих в углях в полностью автоматизированном режиме.

ПРЕИМУЩЕСТВА

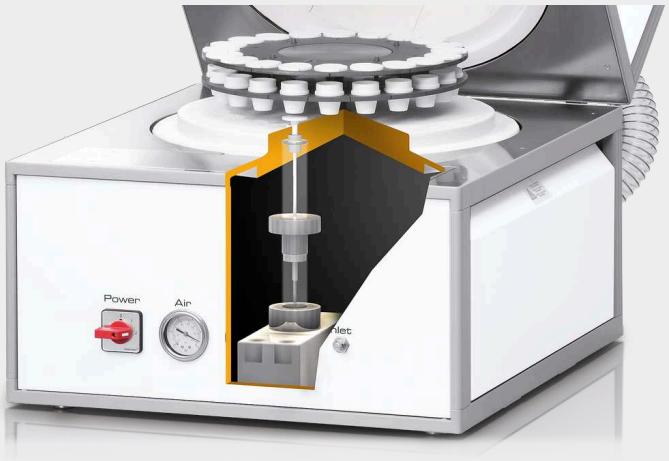
- Measurement of up to 19 samples in one analysis
- Sample weights of up to 5 g
- Fast heating rates, accurate temperature control
- High-performance, precise weighing cell
- Automatic placing and lifting of crucible covers
- Robust design allows for use in laboratories and production

ТЕРМОГРАВИМЕТРИЧЕСКИЙ АНАЛИЗАТОР THERMOSTEP TGA

RELIABLE AND FLEXIBLE

ELTRA TGA analyzers are an ideal alternative to standard laboratory ovens and muffle furnaces for thermogravimetric analysis. Thanks to a programmable furnace that is connected to an integrated balance, heating and weighing are combined in one instrument. This saves time-consuming manual work and allows for high sample throughput. In addition, typical parameters such as moisture, ash and volatiles can be determined in one analysis run.

The TGA Thermostep processes up to 19 different samples, typically weighing between 500 mg and 5 g, in one analysis cycle. The surrounding atmosphere and temperature of up to 1,000 °C within the heating chamber can be freely defined by the user during analysis to create a standard operating procedure. The crucible lids, covering of the samples, can be raised or lowered at each stage of the analysis, thus allowing for safe and ASTM-compliant determination of volatiles in coal samples.



Encapsulated weighing cell

PRECISE RESULTS

HIGH-PERFORMANCE ANALYSIS TECHNOLOGY

The TGA Thermostep is a powerful thermogravimetric analyzer characterized by robust design, high precision and flexibility. It is possible to apply different atmospheres and to use sample weights of up to 5 g. The Thermostep reliably and efficiently measures parameters such as moisture, ash and volatiles according to a user-defined SOP.

PURGING GAS

The TGA Thermostep is very flexible with regards to the purging gas used. At each stage of the analysis either nitrogen, oxygen or surrounding atmosphere can be selected. In the latter, the surrounding atmosphere penetrates into the TGA Thermostep, gently oxidizing the samples.

TEMPERATURE CONTROL

The furnace temperature is monitored by two thermocouples which are not encapsulated. One thermocouple monitors the temperature inside the furnace, the other monitors the temperature within the heating element. Due to the absence of the encapsulation the heating can be controlled quickly and precisely.

ENCAPSULATED WEIGHING CELL

The latest TGA Thermostep generation features an encapsulated weighing cell with 0.1 mg resolution providing highly precise measurements. The encapsulation isolates the weighing cell from the ambient atmosphere and is extremely stable. The weighing cell is connected to the furnace by a ceramic spindle with pedestal on which the crucibles are placed.

HIGH-CAPACITY HEATING ELEMENTS

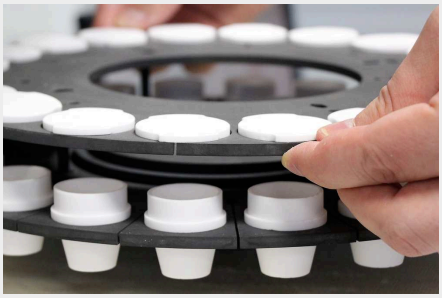
COOLING

SIMPLE OPERATION YIELDS QUICK RESULTS

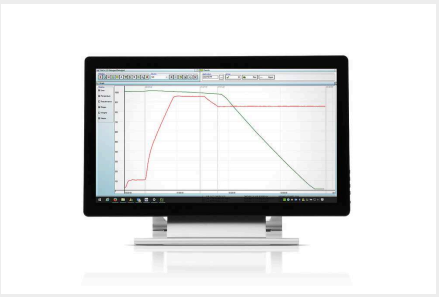
Operation of the TGA Thermostep is simple, convenient and safe. After selecting the Standard Operating Procedure (SOP) in the PC, the sample ID's can be entered into the software. The samples are then weighed in the crucible at the position assigned to the sample ID in the carousel. After one sample has been weighed, the carousel automatically rotates to the next position and the next registered sample can then be weighed in the crucible. Alternatively, a carousel filled with samples which has been weighed externally, can be placed into the analyzer.

It is also possible to position a second carousel with crucible lids above the crucibles. Once the analysis is finished, a new cycle can be started after a short cool-down period.

Weighing the sample



Option: Crucible lids



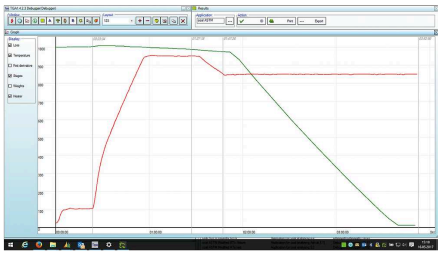
Display of analysis results

ТЕРМОГРАВИМЕТРИЧЕСКИЙ АНАЛИЗАТОР THERMOSTEP TGA

PC CONTROL WITH WINDOWS®-BASED SOFTWARE

The ELTRA TGA Thermostep software provides all necessary features for a fast, easy, safe and reliable thermogravimetric analysis.

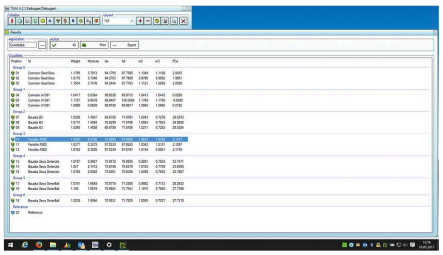
ANALYSIS GRAPH



The TGA software can provide different content of the TGA measurement

- Weight loss graph
- Absolute weights
- First deviation of weight loss
- Temperature graph
- Measuring stages

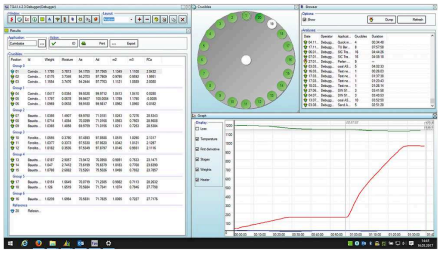
ANALYSIS RESULTS



The results table displays the current available measurement data.

- Display of new results after every measuring step
- Results can be calculated as analysed or on dry base
- Optional grouping for multiple measurements of one sample type

USER DEFINED SCREEN LAYOUT



For a better overview on the current analysis status, the user can create an own layout of the screen

- Measuring graphs
- Current results
- Position of the carousel
- Diagnosis screens

ПРИМЕНЕНИЕ

Due to the flexible application management the TGA Thermostep can measure TGA parameters in many samples like coal, кокс, строительные материалы, пищевые продукты ...

ANALYSIS OF COAL & COKE

The TGA Thermostep can determine the parameter moisture, volatile and ash in one analysis cycle due the automatic placing and removing of lids. The TGA is compliant to ASTM D 7582.

ANALYSIS OF BUILDING MATERIALS

Building materials require the measurement of moisture and loss on ignition (LOI). The LOI can indicate the presence of organic matter or carbonates.

ANALYSIS OF FOOD

Some foods like pet foods, biscuits, or milk require the measurement of dry mass and ash content. Due to the encapsuled weighing cell even the ash content of fluor could be measured safe and precise.

ПРИНЦИП РАБОТЫ

Работать на анализаторе TGA Thermostep просто и удобно. Процесс измерения задается пользователем в соответствии с требованиями по температуре, атмосферы в печи и длительности. Для начала нового анализа просто необходимо выбрать нужную методику в программном обеспечении и взвесить пробы в тиглях. Все последующие шаги выполняются автоматически. Обработка результатов, контроль выполнения анализов и расчет результатов осуществляются автоматически в программном обеспечении, работающем в ОС Windows. Стандартное время анализа по циклу влага, летучие, зольность занимает около 4 часов.

ТЕРМОГРАВИМЕТРИЧЕСКИЙ АНАЛИЗАТОР THERMOSTEP TGA

ХАРАКТЕРИСТИКИ

Измеряемые элементы	влага, зольность, летучие
Материал проб	неорганические, органические, синтетические материалы
Область применения	биология, геология / добыча ископаемых, медицина / фармацевтика, окружающая среда / переработка, пищевая промышленность, сельское хозяйство, стекло / керамика, строительные материалы, угольная промышленность / энергетика, химическая промышленность / пластики
Печь	печь сопротивления, температура настраивается с шагом 1 °C максимум от 50 до 1000 °C
Принцип детектирования	весы
Максимальное количество проб	19 тиглей + 1 тигель сравнения
Разрешение весов	0.0001 г
Точность весов	0.02% СКО
Требуемый газ	в зависимости от методики: кислород качества 99.9 % или лучше (2 - 4 bar) и, или азот качества 99.9 % или лучше (2 - 4 bar) сжатый воздух (5 - 6 bar)
Требование к электропитанию	230В, 50/60Гц, максимальный ток 32А
Размеры (Ш x В x Г)	55 x 52 x 62 см
Вес	~ 65 кг
Требуемое оборудование	ПК, монитор, внешняя вытяжка (диаметр вытяжки: 100 мм / вентилятор с производительностью 4м-3/мин)

www.eltra.com/thermostep

ИНФОРМАЦИЯ ДЛЯ ЗАКАЗА

ELTRA TGA THERMOSTEP

(Please order PC, monitor separately / not for sale in USA)

88100-3001		TGA Thermostep с 2 каруселями, 20 керамических тиглей 20 крышек

REQUIRED ACCESSORIES

УПРАВЛЯЮЩИЙ КОМПЬЮТЕР, МОНИТОР

71015-1000	Computer with Intel Core i5-8400 Processor, 256 GB SSD; 8 GB RAM; Windows 10 operating system; keyboard; mouse
88400-0584	Monitor, TFT (23.8")

FURTHER OPTIONS AND CONSUMABLES

ACCESSORIES (HARDWARE)

72070		Редуктор кислорода
72080		Редуктор азота
26085		Внешняя взвешивающая станция
26102		Внешняя взвешивающая станция с весами
26794		Crucible carousel (ceramic)
26795		Lid carousel (ceramic)

CRUCIBLES, LIDS

26063		Ceramic crucibles
26053		Керамическая крышка

TOOLS FOR OPERATION: SPATULAS, TWEEZERS, TONGS AND OTHER

23111		Spatula, 1 piece, L size
88400-0229		Пинцет (160 мм), скругленый, 1 штука
88400-0472		Пинцет (145 мм), прямой, 1 штука
88400-0475		Set with 6 spatula and 1 tweezers, for multiple weighing procedures
88400-0477		Weighing boat, 1 piece, for weighing and usage of granulates
90145		Tongs for ceramic crucibles and boats, 220 mm, 1 piece

TOOLS FOR MAINTENANCE

71010		Brush, 16 mm, 1 piece, for cleaning balance from dust

CALIBRATION MATERIALS

Calibration materials may show slight variations depending on the current lot.
To see the current certification please visit www.ELTRA.com.

CALCIUM OXALATE

90700-1040		Оксалат кальция, 50 г

COAL, PREMIUM: CERTIFIED C/H/N/S; ASH, VOLATILE CONTENT

92550-3010		Уголь, премиум, 50 г, < 1.0 % S
92550-3020		Уголь, премиум, 50 г, > 1 % S
92550-3040		Уголь, премиум, 50 г, 1.0 – 3.0 % S
92550-3060		Уголь, премиум, 50 г, > 3.0 % S

COKE, PREMIUM: CERTIFIED C/H/N/S; ASH, VOLATILE CONTENT		
92560-3010		Кокс, премиум, 50 г

PET COKE, PREMIUM, C/H/N/S, ASH, VOLATILE CONTENT CERTIFIED	
92570-3020	Pet coke, premium, 50 g, > 1 % S
92570-3040	Pet coke, premium, 50 g, > 1 % S

Please note: The TGA Thermostep requires PC, monitor which have to be ordered separately