



ANALIZOR TERMOGRAVIMETRIC

TGA THERMOSTEP

Termogravimetria reprezintă o metodă standard pentru analiza materialelor organice, anorganice și sintetice. În general, analiza termogravimetrică presupune măsurarea pierderii în greutate în timpul prelucrării la o anumită temperatură sau proces de încălzire definite de utilizator.

Analizorul TGA Thermostep al ELTRA este un analizor termogravimetric ce determină diferiți parametri, cum ar fi umiditatea, substanțele volatile și cenușa la temperaturi și atmosfere definite de utilizator, într-o singură analiză. Analizorul TGA Thermostep analizează simultan până la 19 probe cu greutatea de până la 5 g și poate funcționa la temperaturi de până la 1000° C.

O caracteristică specială a analizorului TGA Thermostep o reprezintă gestionarea capacelor de creuzet. Analizorul poate pune și scoate capacele creuzetelor în timpul analizei. Această caracteristică permite, de exemplu, determinarea exactă a conținutului volatil în cărbune și cocs.

BENEFITS

- | 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



ANALIZOR TERMOGRAVIMETRIC 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



ANALIZOR TERMOGRAVIMETRIC THERMOSTEP TGA

SIMPLE OPERATION YIELDS QUICK RESULTS

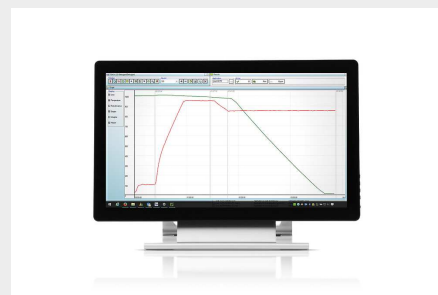
Utilizarea analizorului TGA Thermostep este simplă, facilă și sigură. După selectarea procedurii standard de operare (SOP) în PC, identificatorii probelor pot fi introduși în software. Probele sunt apoi cântărite în creuzete, în pozițiile corespunzătoare ID-urilor atribuite în carusel. După cântărirea unei probe, caruselul se rotește automat către următoarea poziție, iar următoarea probă înregistrată poate fi cântărită. Alternativ, un carusel încărcat cu probe și cântărit extern poate fi introdus direct în analizor. De asemenea, este posibilă poziționarea unui al doilea carusel cu capace pentru creuzete, deasupra acestora. După finalizarea analizei, un nou ciclu poate fi inițiat după o scurtă perioadă de răcire.



Weighing the sample



Option: Crucible lids



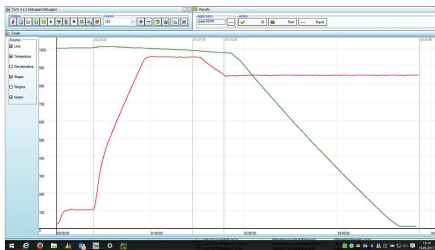
Display of analysis results

ANALIZOR TERMOGRAVIMETRIC 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

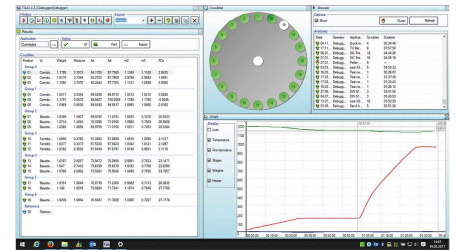
ANALYSIS RESULTS

Sample	Weight	Temperature	Time	Deviation	Status
Sample 1	1.170	1.170	1.170	1.170	1.170
Sample 2	1.170	1.170	1.170	1.170	1.170
Sample 3	1.170	1.170	1.170	1.170	1.170
Sample 4	1.170	1.170	1.170	1.170	1.170
Sample 5	1.170	1.170	1.170	1.170	1.170
Sample 6	1.170	1.170	1.170	1.170	1.170
Sample 7	1.170	1.170	1.170	1.170	1.170
Sample 8	1.170	1.170	1.170	1.170	1.170
Sample 9	1.170	1.170	1.170	1.170	1.170
Sample 10	1.170	1.170	1.170	1.170	1.170
Sample 11	1.170	1.170	1.170	1.170	1.170
Sample 12	1.170	1.170	1.170	1.170	1.170
Sample 13	1.170	1.170	1.170	1.170	1.170
Sample 14	1.170	1.170	1.170	1.170	1.170
Sample 15	1.170	1.170	1.170	1.170	1.170
Sample 16	1.170	1.170	1.170	1.170	1.170
Sample 17	1.170	1.170	1.170	1.170	1.170
Sample 18	1.170	1.170	1.170	1.170	1.170
Sample 19	1.170	1.170	1.170	1.170	1.170
Sample 20	1.170	1.170	1.170	1.170	1.170
Sample 21	1.170	1.170	1.170	1.170	1.170
Sample 22	1.170	1.170	1.170	1.170	1.170
Sample 23	1.170	1.170	1.170	1.170	1.170
Sample 24	1.170	1.170	1.170	1.170	1.170
Sample 25	1.170	1.170	1.170	1.170	1.170
Sample 26	1.170	1.170	1.170	1.170	1.170
Sample 27	1.170	1.170	1.170	1.170	1.170
Sample 28	1.170	1.170	1.170	1.170	1.170
Sample 29	1.170	1.170	1.170	1.170	1.170
Sample 30	1.170	1.170	1.170	1.170	1.170
Sample 31	1.170	1.170	1.170	1.170	1.170
Sample 32	1.170	1.170	1.170	1.170	1.170
Sample 33	1.170	1.170	1.170	1.170	1.170
Sample 34	1.170	1.170	1.170	1.170	1.170
Sample 35	1.170	1.170	1.170	1.170	1.170
Sample 36	1.170	1.170	1.170	1.170	1.170
Sample 37	1.170	1.170	1.170	1.170	1.170
Sample 38	1.170	1.170	1.170	1.170	1.170
Sample 39	1.170	1.170	1.170	1.170	1.170
Sample 40	1.170	1.170	1.170	1.170	1.170
Sample 41	1.170	1.170	1.170	1.170	1.170
Sample 42	1.170	1.170	1.170	1.170	1.170
Sample 43	1.170	1.170	1.170	1.170	1.170
Sample 44	1.170	1.170	1.170	1.170	1.170
Sample 45	1.170	1.170	1.170	1.170	1.170
Sample 46	1.170	1.170	1.170	1.170	1.170
Sample 47	1.170	1.170	1.170	1.170	1.170
Sample 48	1.170	1.170	1.170	1.170	1.170
Sample 49	1.170	1.170	1.170	1.170	1.170
Sample 50	1.170	1.170	1.170	1.170	1.170
Sample 51	1.170	1.170	1.170	1.170	1.170
Sample 52	1.170	1.170	1.170	1.170	1.170
Sample 53	1.170	1.170	1.170	1.170	1.170
Sample 54	1.170	1.170	1.170	1.170	1.170
Sample 55	1.170	1.170	1.170	1.170	1.170
Sample 56	1.170	1.170	1.170	1.170	1.170
Sample 57	1.170	1.170	1.170	1.170	1.170
Sample 58	1.170	1.170	1.170	1.170	1.170
Sample 59	1.170	1.170	1.170	1.170	1.170
Sample 60	1.170	1.170	1.170	1.170	1.170
Sample 61	1.170	1.170	1.170	1.170	1.170
Sample 62	1.170	1.170	1.170	1.170	1.170
Sample 63	1.170	1.170	1.170	1.170	1.170
Sample 64	1.170	1.170	1.170	1.170	1.170
Sample 65	1.170	1.170	1.170	1.170	1.170
Sample 66	1.170	1.170	1.170	1.170	1.170
Sample 67	1.170	1.170	1.170	1.170	1.170
Sample 68	1.170	1.170	1.170	1.170	1.170
Sample 69	1.170	1.170	1.170	1.170	1.170
Sample 70	1.170	1.170	1.170	1.170	1.170
Sample 71	1.170	1.170	1.170	1.170	1.170
Sample 72	1.170	1.170	1.170	1.170	1.170
Sample 73	1.170	1.170	1.170	1.170	1.170
Sample 74	1.170	1.170	1.170	1.170	1.170
Sample 75	1.170	1.170	1.170	1.170	1.170
Sample 76	1.170	1.170	1.170	1.170	1.170
Sample 77	1.170	1.170	1.170	1.170	1.170
Sample 78	1.170	1.170	1.170	1.170	1.170
Sample 79	1.170	1.170	1.170	1.170	1.170
Sample 80	1.170	1.170	1.170	1.170	1.170
Sample 81	1.170	1.170	1.170	1.170	1.170
Sample 82	1.170	1.170	1.170	1.170	1.170
Sample 83	1.170	1.170	1.170	1.170	1.170
Sample 84	1.170	1.170	1.170	1.170	1.170
Sample 85	1.170	1.170	1.170	1.170	1.170
Sample 86	1.170	1.170	1.170	1.170	1.170
Sample 87	1.170	1.170	1.170	1.170	1.170
Sample 88	1.170	1.170	1.170	1.170	1.170
Sample 89	1.170	1.170	1.170	1.170	1.170
Sample 90	1.170	1.170	1.170	1.170	1.170
Sample 91	1.170	1.170	1.170	1.170	1.170
Sample 92	1.170	1.170	1.170	1.170	1.170
Sample 93	1.170	1.170	1.170	1.170	1.170
Sample 94	1.170	1.170	1.170	1.170	1.170
Sample 95	1.170	1.170	1.170	1.170	1.170
Sample 96	1.170	1.170	1.170	1.170	1.170
Sample 97	1.170	1.170	1.170	1.170	1.170
Sample 98	1.170	1.170	1.170	1.170	1.170
Sample 99	1.170	1.170	1.170	1.170	1.170
Sample 100	1.170	1.170	1.170	1.170	1.170

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

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APLICAȚII

Due to the flexible application management the TGA Thermostep can measure TGA parameters in many samples like coal, cărbune bituminos, materiale de construcții, alimente ...

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 encapsulated weighing cell even the ash content of flour could be measured safe and precise.

PRINCIPIU DE FUNCȚIONARE

Operarea analizorului TGA Thermostep este simplă și comodă. Procesul de măsurare trebuie definit o dată, în ceea ce privește temperaturile utilizate, atmosferele și intervalele de încălzire. Pentru a începe analiza, un proces predefinit trebuie ales în software, iar proba trebuie cântărită în creuzet. Toate etapele următoare sunt procesate automat. Prelucrarea tuturor datelor, controlul procesului de măsurare și calcularea rezultatului sunt realizate de un PC extern cu software Windows®. Procesul de determinare a umidității, conținutului de substanțe volatile și conținutului de cenușă are nevoie de aproximativ 4 ore.

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DATE TEHNICE

Elemente măsurate	conținut de cenușă, substanțe volatile, umiditate
Probe	anorganic, organic, sintetic
Domeniul de aplicare	agricultură, biologie, chimie / mase plastice, cărbune / centrale electrice, geologie / exploatare minieră, materiale de construcții, medicină / farmacie, mediu / reciclare, produse alimentare, sticlă / ceramică
Cuptor	cuptor de rezistență cu încălzire ceramică, programabil în trepte de la 1° C la 50° C până la 1000° C
Metoda de detecție	balanță
Numărul maxim de probe	19 creuzete + 1 creuzet de referință
Rezoluția cântarului	0.0001 g
Precizia cântarului	0.02 % RSD
Gaze necesare	în funcție de de aplicație: oxigen pur 99,9% (2-4 bar) și, sau 99,9% azot pur (2-4 bar) și aer 99,5% (5-6 bar)
Alimentare	230 V, 50/60 Hz, max. 32 A
Dimensiuni (W x H x D)	55 x 52 x 62 cm
Greutate	~ 65 kg
Echipament necesar	PC, monitor, external exhaust (exhaust diameter: 100 mm / blower with 4m-3/min)

www.eltra.com/thermostep

INFORMAȚII DESPRE COMANDĂ

ELTRA TGA THERMOSTEP

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

88100-3001



TGA Thermostep with 2 carousels, 20 ceramic crucibles and 20 lids

REQUIRED ACCESSORIES

PC, MONITOR

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

Oxygen regulator

72080

Nitrogen regulator

26085

External weighing station

26102

External weighing station with balance

26794



Crucible carousel (ceramic)

26795

Lid carousel (ceramic)

CRUCIBLES, LIDS

26063



Ceramic crucibles

26053



Ceramic lid

TOOLS FOR OPERATION: SPATULAS, TWEEZERS, TONGS AND OTHER

23111		Spatula, 1 piece, L size
88400-0229		Tweezers (160 mm), curved, 1 piece
88400-0472		Tweezers (145 mm), straight, 1 piece
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
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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		Calcium oxalate, 50 g
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COAL, PREMIUM: CERTIFIED C/H/N/S; ASH, VOLATILE CONTENT

92550-3010		Coal, premium, 50 g, < 1.0 % S
92550-3020		Coal, premium, 50 g, > 1 % S
92550-3040		Coal, premium, 50 g, 1.0 – 3.0 % S
92550-3060		Coal, premium, 50 g, > 3.0 % S

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

92560-3010



Coke, premium, 50 g

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