Coal & Coke Analysis equipment & Thermal Analysers from

Elite Thermal Systems Ltd, UK

Volatile Matter Furnace, VMF/ ISO |

Volatile Matter Furnace, VMF/ASTM |

Minimum Free Space Ovens: MFSO-ISO & MFSO-ASTM |

Laboratory Ashing Furnaces: BMF11 & BSF12/A |

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Thermogravimetric Analysers |

Ash Fusion Determinators |

Multi Tube / Pre Heat Furnace |

Ver 01.26

Volatile Matter Furnace, VMF/ISO

This chamber furnace is designed for Volatile Matter Analysis in accordance with ISO 562 standards. It provides the necessary temperature control and response times to accurately perform Volatile Matter determination.

Standard Features

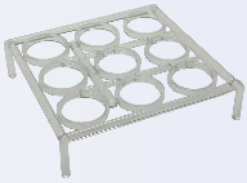
- Maximum Temperature: 1100°C
- Continuous Temperature: 1050°C
- Chamber dimensions (mm): 110 x 200 x 254 (H x W x D)
- Open spiral elements located in the chamber roof and under the hearth supported in low thermal mass insulation ensure rapid heating required for analysis as per ISO 562
- The chimney has a provision to restrict airflow/convection through the furnace
- Provision for inserting external thermocouples (three positions) to check the temperature under the crucibles
- Vertical lifting door keeps the hot face away from the operator when the door is opened
- Positive break door safety switch isolates heating elements from power supply when door is opened
- High-end micro-processor PID controller

VMF/ISO

VMF/ISO

4 Position Crucible Rack

6 Position Crucible Rack



9 Position Crucible Rack

Crucible with Lid

Tray Handle – For holding crucible racks

Optional Features & Accessories

- Over temperature protection controller
- Multi segment, multi program storage controllers with audible alarm & timer
- Crucible racks are available in 4, 6, and 9-positions, and are offered in metal, alumina, and quartz materials
- Crucibles and lids are available in compliance with ISO 562
- Tray Handle – For holding crucible racks

Note: Analytical balance with 0.01g readability is required for weighing.

Volatile Matter Furnace, VMF/ASTM Series

Volatile Matter Furnace, VMF/ASTM (ASTM D3175 Compliant)

The Elite VMF/ASTM is a high-precision Volatile Matter Furnace designed for the determination of volatile matter in coal and coke in accordance with ASTM D3175. Engineered for accuracy and consistency, this system delivers reliable volatile matter analysis for industrial and laboratory applications.

This is the standard version, ideal for routine volatile matter testing. It provides precise temperature control and uniform heating, making it a dependable solution for core volatile matter analysis.

Specification

- Maximum temperature: up to 1000°C
- Continuous operating temperature: up to 1000°C
- Top opening furnace in compliance with ASTM D3175
- Residual current device (RCD) is fitted to provide enhanced operator safety
- Energy efficient, high quality, low thermal mass insulation
- A rugged metal sheathed control thermocouple is protected from accidental damage and allows full use of work tube bore
- Temperature measurement with 'N' type thermocouple
- High end microprocessor PID temperature controller to maintain the required temperature in compliance with ASTM D3175
- The wire crucible holder, Inconel crucible, and lid are supplied as standard.
- Faster ramp rate, less than 20minutes from Room temperature to 950°C
- Uses Vacuum formed heating elements, Ensuring superior thermal efficiency and uniform heat distribution throughout the chamber

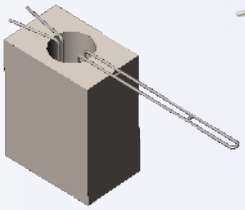
VMF/ASTM
(Standard model)

VMF/ASTM
(N_2 gas port with flow meter option)

Optional Features & Accessories

- N_2 gas port with a flow meter
- Over temperature protection controller
- Ceramic cooling block for cooling the crucibles

Inconel crucible with lid



Ceramic cooling block for cooling the crucibles

Inconel crucible wire

Model	Atmosphere	Max. operating temp.(°C)	Chamber External dimensions H x W x D (mm)	Heated Height (mm)	Tube ID (mm)	Max. power (W)
VMF-ASTM	Nitrogen	1000	375(without furnace lid) x 480 x 357	140	50	950

Note: Analytical balance with 0.01g readability is required for weighing.

Minimum Free Space Oven, MFSO-ISO/MFSO-ASTM

Minimum Free Space oven is utilized for drying process which features a compact heated chamber that provides the lowest practical volume, or minimum free space.

The MFSO-ISO operates with a regulated flow of moisture free nitrogen gas which removes the moisture released by the coal at 105 °C as per BS 1016-104.2:1991, BS ISO 687:2010 & BS ISO 11722:2013.

The MFSO-ASTM operates with a regulated flow of air as per ASTM D3173-11.

Standard Features

- Maximum Temperature: up to 210 °C
- Maximum Continuous Temperature: up to 210 °C
- Chamber dimensions (mm): 43 x 195 x 300 (H x W x D), 2.5Litres
- The ovens feature an aluminum chamber that is resistant to oxidation and corrosion, ensuring excellent temperature uniformity throughout the working volume
- Before entering the front of the work chamber, the nitrogen or air flow passes through a preheating chamber and is adjustable via a flow meter located on the control panel
- Two flow meters are provided to monitor the gas flow of Nitrogen and Chamber seal integrity in the MFSO-ISO
- Two flow meters are provided to monitor the gas flow of Air and Chamber seal integrity in the MFSO-ASTM
- Aluminum loading tray is supplied as a standard accessory

MFSO-ISO

MFSO-ASTM

Optional Features & Accessories

- Over temperature protection
- Multi segment, multi program storage Controllers
- Silica (or) Alumina crucibles with well-fitted lids
- Vacuum desiccator with gas inlet & gas outlet


Crucibles & Lids

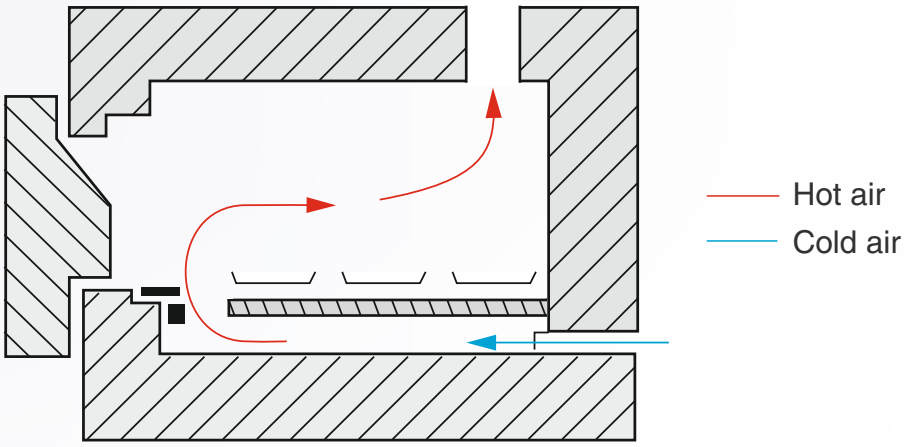

Sample loading tray

Note: Analytical balance with 0.01g readability is required for weighing.

Model	Atmosphere	Max. operating temp.(°C)	Chamber dimensions H x W x D (mm)	Volume (litres)	Max. power (W)
MFSO-ISO	Nitrogen	210	43 x 195 x 300	2.5	500
MFSO-ASTM	Air	210	43 x 195 x 300	2.5	500

Pre-heated airflow feature in Elite Ashing Furnaces (BMF11 & BSF12/A)

For Ashing of samples, the furnace is designed with a pre-heated airflow system and a large chimney to ensure good combustion conditions within the chamber while facilitating the adequate air exchange.



The chamber's airflow management system relies on natural convection to regulate air movement, promoting uniform temperature distribution. Hot air rises while cooler air descends, facilitated by a tall chimney that ensures effective circulation.

The system achieves 4-5 air volume changes per minute, maintaining steady airflow essential for consistent heat treatment. Incoming air is preheated to prevent localized cooling, particularly near the inlet, ensuring consistent temperature throughout the chamber. This stable airflow is crucial for ashing, where precise and uniform heating is required for accurate and repeatable results. The chamber is designed for high-precision applications needing reliable temperature control.

Laboratory Ashing Furnaces 1100^0 C Maximum

BMF11-VRP is designed for general purpose as well as ashing applications and features a pre-heated airflow system and large chimney to ensure good combustion conditions within the chamber

Standard Features

- 3 & 7 litre chamber volumes are available
- Vertical lift door that keeps heated surface away from the user
- Positive break door safety switch that isolates chamber from power supply when door is open
- These furnaces are equipped with an Elite VRP controller, which includes 8 programs, each with 8 segments as standard. In addition, furnaces with Eurotherm controllers are also available. Other multi-segment, multi-program storage controllers are available as an option.
- Its design makes it ideal for Ashing of Coal & coke samples
- A large metal chimney is fitted as standard

BMF11/3-VRP

Options

- Over temperature protection controller

Technical Data

Model	Max Temp (^{0}C)	Max Cont (^{0}C)	Max Chamber Dims (mm) H x W x D	External Case Dims (mm) H x W x D	Chamber Capacity (Litres)	Nominal Power (Kw)	Volts	Phase	Net Wt. (kg)
BMF11/3-VRP	1100	1050	90 x 150 x 235	593 x 400 x 505	3	2.0	230	1	36
BMF11/7-VRP	1100	1050	130 x 180 x 310	680 x 535 x 520	7	3.0	230	1	39

Laboratory Ashing Furnaces 1200° C Maximum

BSF12/A – The BSF12/A furnace is designed for ashing applications. Its design makes it ideal for treating heavier loads, and the processing of material that could contaminate floor mounted heating elements through spillage

Standard Features

- An ashing feature which provides combustion conditions within the chamber, and improved process fume removal from the chamber
- Vertical door keeps heated surface away from the user
- Positive break door safety switch isolates chamber from power supply when door is open
- A large metal chimney is fitted as standard
- BSF models use heating slabs
- 2 sided heating
- Replaceable ceramic hearth tile
- Ideal for ashing foods, plastics, coal, coke & other hydrocarbon materials
- This furnace comes with a controller having single ramp & set point and process timer

BSF12/6A

Options

- 4 side heating elements is available for when heavier loads or metal retorts are fitted
- Over temperature protection controller
- Multi segment, multi program storage controllers

Technical Data

Model	Max Temp (°C)	Max Cont (°C)	Max Chamber Dims (mm) H x W x D	External Case Dims (mm) H x W x D	Chamber Capacity (Litres)	Nominal Power (Kw)	Volts	Phase	Net Wt. (kg)
BSF12/4A	1200	1150	101 x 152 x 254	680 x 535 x 520	4	1.5	230	1	55
BSF12/6A	1200	1150	127 x 152 x 305	730 x 585 x 645	6	2.0	230	1	62
BSF12/10A	1200	1150	127 x 178 x 406	730 x 585 x 645	10	2.5	230	1	73
BSF12/15A	1200	1150	220 x 220 x 310	730 x 585 x 645	15	3.0	230	1	75
BSF12/21A	1200	1150	203 x 228 x 454	780 x 635 x 695	21	5.0	230	1	137
BSF12/45A	1200	1150	300 x 300 x 500	890 x 805 x 765	45	6.0	230	1	148

Free Swelling Index Furnace, FSI

The Swelling Index Furnace, often simply called the free swelling Index (FSI) or Crucible Swelling Number (CSN), measures the swelling behaviour of materials.

The cokeability of coal is an important technological parameter of coals during the reduction process. Coking properties of coal are evaluated using the FSI. It is a test that determines the ability of coal to form a coherent mass, or "coke," when heated in the absence of air. This property is crucial for the steel industry, where coking coal is used in the production of coke, a key ingredient in blast furnace operations.

FSI is determined by comparing the size and shape of the coke button with a chart of standard profiles and scaling a value from 0 to 9 at an interval of 0.5.

Standard Features

- Maximum temperature: 900 °C
- Continuous operating temperature: Up to 850 °C
- Top opening furnace as per ASTM D720, BS ISO 501 & ISO 501
- Residual current device (RCD) is fitted to provide enhance operator safety
- Uses high power resistance heating element
- Excellent temperature stability and quick temperature ramping
- Energy efficient, high quality, low thermal mass insulation
- Temperature measurement with 'N' type thermocouple
- High end Microprocessor PID temperature controller to maintain the required temperature
- A set of Crucible and lid supplied as standard for swelling test as per the dimensions given in the test standard
- Wire Crucible holder supplied as standard

Free Swelling Index Furnace, FSI

Standard Supply

- Free Swelling Index Furnace, FSI
- Silica Crucible – 1 No.
- Silica Crucible lid – 1 No.
- Crucible Holding wire – 1 No.
- Instructions manual – 1 No.

Crucible & Crucible Lid

Inconel crucible wire

Optional Features

- Over Temperature controller
- Silica crucible & lid with hole for calibration
- Ceramic Cooling block for cooling crucibles

UPCOMING LAUNCHES OF ADDITIONAL COAL AND COKE TESTING EQUIPMENT

- Combustion Tube Furnace
- CO_2 Reactivity Test Furnaces

Gray King Coke Test Furnace, GKF

The Gray King coke test furnace evaluates the caking properties of coal or coal blends by carbonising them under standard conditions.

This test data can be easily compared with industrial practices, allowing for a reliable prediction of how the coal will behave during large-scale carbonisation.

The GKF furnace is designed and complies with standards BS ISO 502:2015, BS 1016-107.2, AS 1038.12.2, IS 1353.

Elite Thermal systems offer the choice of two Gray King coke test furnaces, GFK-1 & GFK-4.

Specifications

- Continuous operating Temperature: 600°C
- Both the models have two zones
- GFK-1 can hold a single retort tube whilst the GFK-4 can hold up to 4 retort tubes
- Aluminum bronze stabilisation block which gives improved uniformity of temperature
- Two thermocouples are located inside the stabilisation block, protected by ceramic sheaths
- Energy efficient, high quality, low thermal mass insulation
- High end Microprocessor PID controller & Slave controller to maintain the required temperature
- The furnace is equipped with a wheel and rail system that allows it to be retracted from the retort tubes for cooling, as specified by the Standard
- Horizontal models are supplied as standard with controls in the base

(Retort tubes should be ordered separately)

GKF Furnace

Retort Tubes

Standard Supply

- Gray King Coke Test Furnace, GFK
- Instructions manual-1 No.

Optional Features

- Multi-segment, multi-program storage controller
- Over temperature protection controller

Thermogravimetric Analysers TGA et250

Elite Thermal's Thermogravimetric Analysers (TGAs) are high-performance proximate analysers that determine mass change as a function of temperature and time. They are used to evaluate the thermal stability and composition of materials and are widely applied for the determination of moisture, ash, volatile matter, fixed carbon, and loss on ignition (LOI) in a broad range of organic, inorganic, and synthetic materials.

Elite Thermal offers a comprehensive range of TGA systems designed to meet diverse analytical requirements. The TGA et250 is a versatile and reliable instrument featuring a programmable high-temperature furnace and an integrated precision balance, enabling fast, accurate, and repeatable measurements.

Configured with a single-carousel design, the TGA et250 maximizes laboratory efficiency and throughput and is available in 12, 20, or 24 position formats to suit different sample types and workloads.

Configuration Options:

- **12-Position Carousel:** Optimised for large-volume, low-density samples such as food, feed, cereals, flours, and agricultural products where increased exposed surface area is required for accurate analysis.
- **20-Position Carousel:** Provides a balanced solution for laboratories handling mixed sample matrices, offering flexibility across a wide range of applications.
- **24-Position Carousel:** Ideal for high-throughput analysis of dense and homogeneous materials such as minerals, cement, graphite, and inorganic powders.

Elite Thermal's Thermogravimetric analysers replace traditional analytical techniques that are labour-intensive, slow, and susceptible to operational errors. TGA et250 comes with an integrated balance that combines drying, ashing, and weighing processes, thereby improving efficiency, precision, and providing high sample throughput.

Elite Thermal's TGA systems are designed to comply with major international standards, including ASTM, ISO, DIN, EN, and related methodologies. Typical applications span a wide range of industries, including coal and coke, mineral ores, cement and limestone, foodstuffs, animal feeds, biomass, and specialty materials.

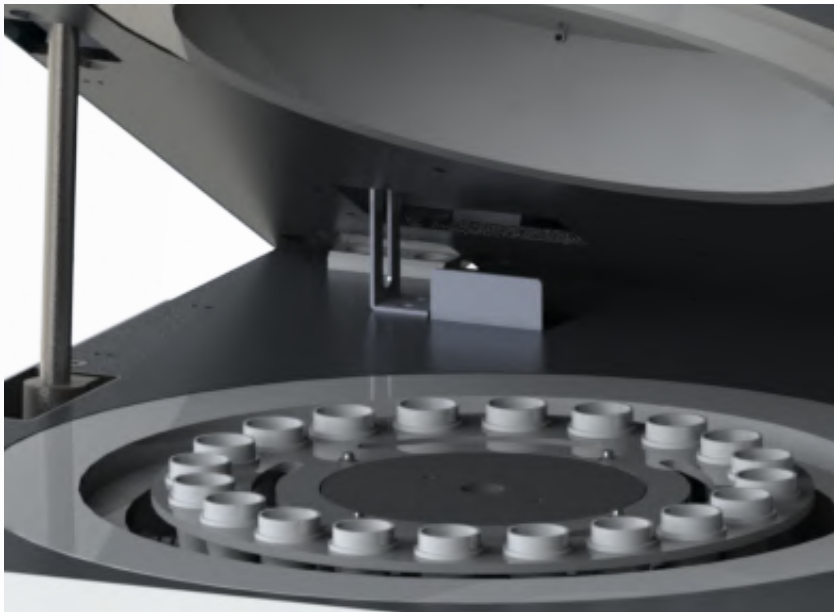
A typical proximate analysis workflow includes the determination of moisture, volatile matter, and ash content, with fixed carbon calculated by difference. The advanced software provides extensive customisation options, including temperature ramp rates, start and end temperatures, programmable gas flows, and mass-constancy criteria, ensuring a highly adaptable platform that meets the specific analytical needs of each laboratory.

TGA et250 key features

- Single Carousel Design
- Simultaneous multi-sample analysis
- Flexible carousel options for diverse sample matrices
- Integrated high-resolution balance
- Programmable furnace up to 1100 °C
- Compliance with ASTM, ISO, DIN, EN, AOAC standards
- Manual Handling of Crucible lids

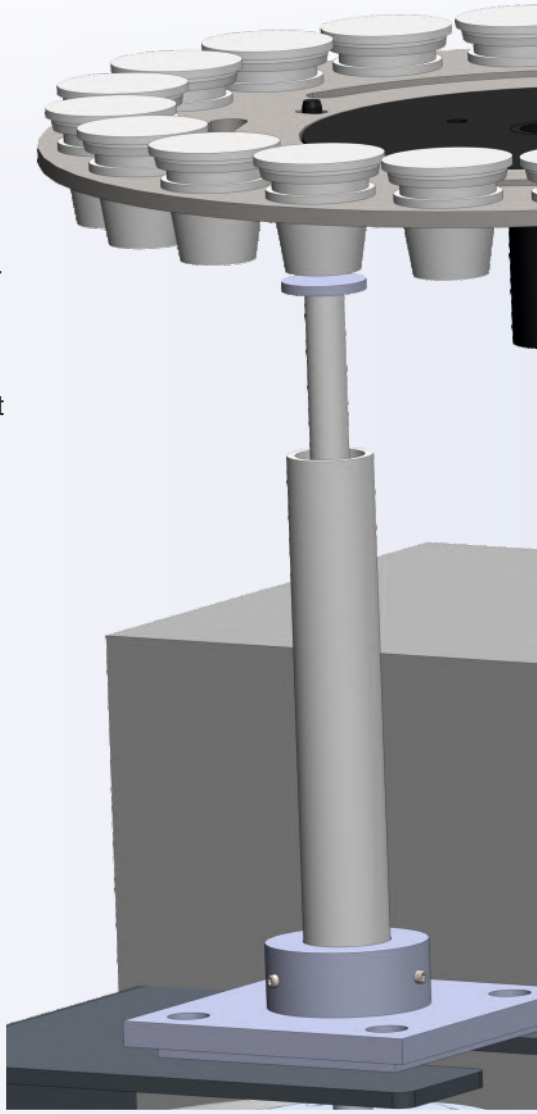
Robust Heating Elements

- High power thermal elements facilitate quick temperature ramp-up and provide exceptional temperature stability
- Embedded heating elements ensure uniform temperature inside the furnace chamber throughout the analysis cycle
- Higher maximum temperature range up to 1100°C



Effective Temperature Control

- Best-in-class temperature set point control is achieved through the use of two high precision thermocouples
- The first thermocouple is used to monitor the furnace temperature. The second thermocouple is used to precisely measure the sample temperature
- Additional thermocouples are available as an optional feature. In addition to the two thermocouples mentioned above, a third thermocouple is provided for monitoring the lower furnace, and a fourth thermocouple provides temperature cross-verification and temperature calibration functionality
- These third and fourth thermocouples are factory-installed options. They must be ordered along with the main TGA et250 instrument



Precise Weighing System

- TGA et250 is integrated with a top-loading balance featuring an inbuilt auto-calibration facility and the ability to weigh the sample crucibles repeatedly throughout the analysis
- Thermally isolated balance for accurate weighing
- High-resolution balance ensuring accuracy to 0.0001 g for precise results

Exceptional Analytical Performance

- State-of-the-art thermogravimetric analyser featuring robust hardware and user-friendly software encased in a durable design, delivering exceptional analytical capabilities
- TGA et250 is constructed using high-quality materials, ensuring superior functionality and performance even in challenging conditions, and offering consistent operation and reliability
- The carousel is constructed from specialised materials that withstand high temperature stress without warping
- TGA et250 is available in a dual furnace package which allows for two TGAs to be operated from a single PC for laboratories that require the highest sample throughput

Exhaust & Cooling System

- In-built exhaust system with two internal blowers minimises harmful vapours and odours in the laboratory
- Cooldown process is automatically initiated at the end of each analysis cycle
- User programmable furnace lid opening to improve cool down time
- Up-and-down movement of the carousel using pneumatic control and motorised rotation enables precise and accurate analysis without any oscillation
- External exhaust system is optionally available for even faster cooling

External exhaust system

Gas Flows

- With TGA et250, users can seamlessly transition between oxidising and inert atmospheres through automated controls
- An optional feature includes a software-controlled mass flow controller, which enables programmable adjustment of gas flow rates

TPH Module (Temperature, Pressure & Humidity)

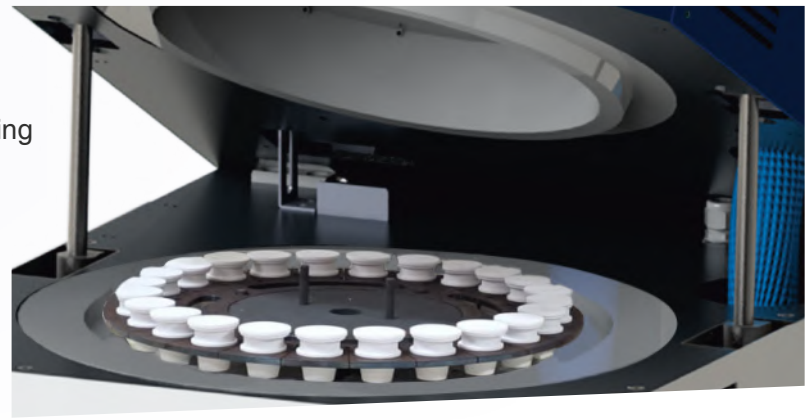
An optional feature includes a software-monitored TPH Module. The TPH Module enhances analytical reliability by supporting:

- Balance stability and drift control under varying environmental conditions
- Buoyancy and air density compensation, improving the accuracy of apparent sample weight and minimizing buoyancy effects acting on the crucible

Carousel Architecture & Automation

Single Carousel Design

- Bi-directional rotation
- Automatic skipping of empty positions
- Pneumatic vertical movement for precise positioning
- Smooth, vibration-free operation



Carousel Materials

- The carousel is available in metal or ceramic material grades. Carousel MOC must specify while placing the order.

12-Position Carousel Optimised for Low-Density, High-Bulk Materials

The 12-position carousel is specifically engineered for large-volume crucibles, ideal for materials requiring greater exposed surface area as referenced in ISO 2171, ISO 712, AOAC, and ASTM methods.

Key Advantages

- Large exposed surface area for uniform heating
- Reduced risk of spattering, puffing, and sample loss
- Representative sampling without over-compaction

Typical Applications

- Semolina, flour, bran, starch
- Cereals (wheat, rice, maize, barley)
- Food and feed products
- Agricultural and biomass materials

This configuration is particularly suitable where standards specify minimum crucible surface area to ensure accurate moisture and ash determination.

TGA et250 With 12 Positions

20-Position Carousel – Optimised for General Purpose Applications

The 20-position carousel is a versatile configuration for routine analysis, offering an optimal balance between sample throughput and crucible capacity. It ensures consistent geometry, controlled surface area, and uniform thermal exposure in compliance with ASTM, ISO, DIN, and EN fuel testing standards.

TGA et250 With 20 Positions

Key Advantages

- Balanced sample capacity for routine laboratory workflows
- Uniform crucible geometry for reproducible heating conditions
- High repeatability and reproducibility across multiple samples
- Suitable for continuous quality control and compliance testing

Typical Applications

- Coal and coke
- Biomass and alternative fuels
- Solid recovered fuels (SRF/RDF)
- Petroleum coke and carbonaceous fuels
- Mixed fuel matrices in power and process industries

24-Position Carousel – Optimised for Dense and Homogeneous Samples

The 24-position carousel utilises small-volume crucibles to provide maximum throughput with excellent repeatability.

Key Advantages

- High sample throughput
- Uniform crucible geometry and surface exposure
- Ideal for routine, repetitive testing
- Reduced analysis cycle cost per sample

Typical Applications

- Minerals and ores
- Cement, clinker, raw meal
- Inorganic chemicals
- Graphite and carbon materials
- Fine powders and homogeneous solids

TGA et250 With 24 Positions

Ordering Information

Item Name	Part Number
TGA et250 Thermogravimetric Analyser, Single Carousel, Metal, 12 Position	TGA et250-100-12
TGA et250 Thermogravimetric Analyser, Single Carousel, Ceramic, 12 Position	TGA et250-200-12
TGA et250 Thermogravimetric Analyser, Single Carousel, Metal, 20 Position	TGA et250-100-20
TGA et250 Thermogravimetric Analyser, Single Carousel, Ceramic, 20 Position	TGA et250-200-20
TGA et250 Thermogravimetric Analyser, Single Carousel, Metal, 24 Position	TGA et250-100-24
TGA et250 Thermogravimetric Analyser, Single Carousel, Ceramic, 24 Position	TGA et250-200-24
TGA et250D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Ceramic, 24 samples	TGA et250D-200-12
TGA et250D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Metal, 24 samples	TGA et250D-100-12
TGA et250D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Metal, 40 samples	TGA et250D-100-20
TGA et250D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Ceramic, 40 samples	TGA et250D-200-20
TGA et250D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Metal, 48 samples	TGA et250D-100-24
TGA et250D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Ceramic, 48 samples	TGA et250D-200-24
Ceramic Crucible 11cc for 20 pos. carousel, pack of one	et100-146
Ceramic Crucible lid for 11cc Crucible(et100-146), pack of one	et100-046
Ceramic Crucible 14cc for 20 pos. carousel, pack of one	et100-147
Ceramic Crucible lid for 14cc Crucible (et100-147), pack of one	et100-047
Ceramic Crucible 42cc for 20 pos. carousel, pack of one	et100-148
Ceramic Crucible 45cc for 12 pos. carousel, pack of one	et100-149
Ceramic Crucible 8cc for 24 pos. carousel, pack of one	et100-142
Ceramic Crucible lid for 8cc crucible(et100-142), pack of one	et100-042
Metal Carousel, for crucible – 24 positions	et112-265
Ceramic Carousel, for crucible – 24 positions	et112-272
Ceramic carousel for crucible – 20 Positions	et107-321SH
Metal Carousel for Crucibles – 20 Positions	et112-255
Metal Carousel for Crucible – 12 Positions	et112-267
Ceramic Carousel for Crucible – 12 Positions	et112-269
External Blower, TGA - 1Number	et101-244

For more details on TGA spares, please check our price list.

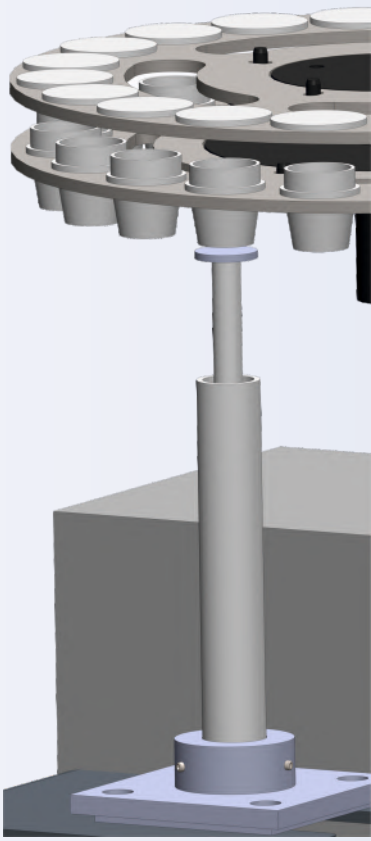
Thermogravimetric Analysers TGA et500

The TGA et250 and TGA et500 are essentially the same in terms of features, except that the TGA et500 comes with a dual carousel configuration, differing in their operating mechanisms. The TGA et500 features two carousels for placing crucibles and their lids.

Elite Thermal's TGA et500 is a dual carousel thermogravimetric analyser, distinguished by its unique capability of controlling crucible lids. During typical analysis, the lower carousel is used for placing crucibles, while the upper carousel is used for placing crucible lids. The TGA et500 Instrument utilises a pneumatic carousel mechanism for accurate crucible placement. The movement of the carousel from one crucible position to another is motorised, and the up and down mechanism of the carousel is controlled pneumatically. The carousel is made of special materials that are not susceptible to warping under high-temperature stress.

TGA et500 key features

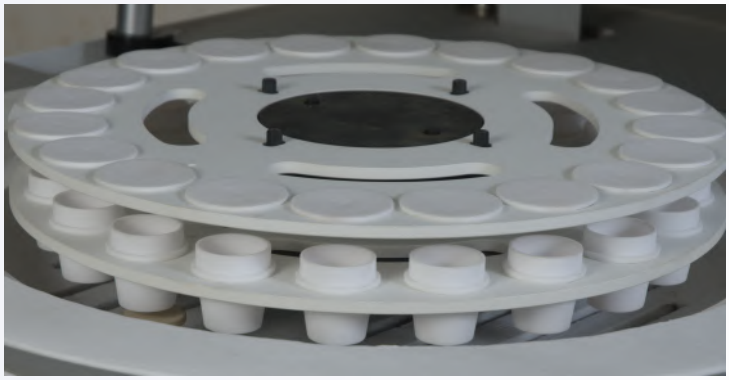
- Dual Carousel design
- Simultaneous multi-sample analysis
- Flexible carousel options for diverse sample matrices
- Integrated high-resolution balance
- Programmable furnace up to 1100 °C
- Compliance with ASTM, ISO, DIN, EN, AOAC standards
- Automatic placement & removal of crucible lids



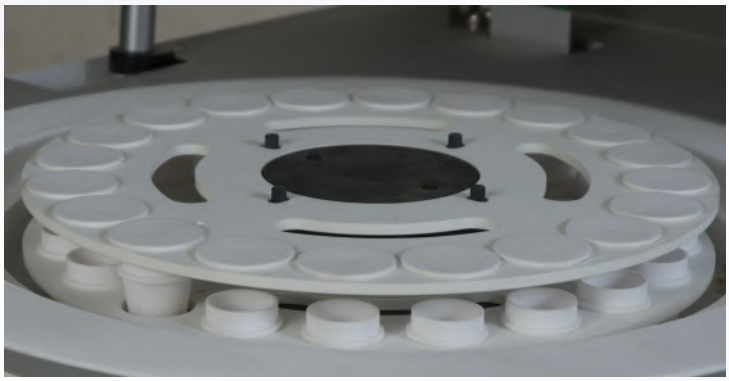
Precise Temperature Regulation

- Best-in-class temperature setpoint control is achieved through the use of four thermocouples
- The first thermocouple is used to detect the upper furnace temperature, while the second is used for lower furnace temperature detection. The third thermocouple is employed for real-time temperature measurement of the sample and, finally, the fourth thermocouple provides temperature cross-verification and temperature calibration functionality

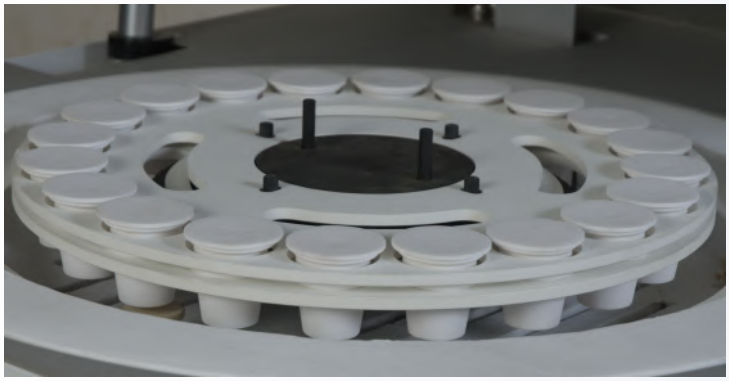
Efficient Crucible Management | TGA et500



Crucible lids open



Weighing with crucible lids open



Crucible lids closed

Weighing with crucible lids closed

- TGA et500 employs two carousels, each built with high strength and corrosion-resistant materials. One carousel is designated for crucibles, while the other is designated for crucible lids
- The carousels are constructed using a unique material that exhibits exceptional resistance to warping when exposed to elevated levels of thermal stress
- The second carousel enables the automated placement and removal of crucible lids within the furnace, eliminating the need to open the furnace lid
- The dual carousel design offers enhanced precision in the measurement of volatile matter along with automated functionality, thereby preventing any potential sample oxidation
- Automatic crucible management removes the risk of potential burns to the operator when exposed to elevated temperatures, and removes the possibility of the operator inadvertently dropping the crucible lids into the furnace

Carousel Architecture & Automation

Dual Carousel Design

- Bi-directional rotation
- Automatic skipping of empty positions
- Pneumatic vertical movement for precise positioning
- Smooth, vibration-free operation

Carousel Materials

- The carousel is available in metal or ceramic material grades. Carousel MOC must specify while placing the order

20-Position Carousel – Optimised for General Purpose Applications

The 20-position carousel is a versatile configuration for routine analysis, offering an optimal balance between sample throughput and crucible capacity. It ensures consistent geometry, controlled surface area, and uniform thermal exposure in compliance with ASTM, ISO, DIN, and EN fuel testing standards.

TGA et500 With 20 Positions

Key Advantages

- Dual carousel with automatic placement and removal of crucible lids
- Balanced sample capacity for routine laboratory workflows
- Uniform crucible geometry for reproducible heating conditions
- Efficient gas–sample interaction under inert and oxidising atmospheres
- High repeatability and reproducibility across multiple fuel samples
- Suitable for continuous quality control and compliance testing

Typical Applications

- Coal and coke
- Biomass and alternative fuels
- Solid recovered fuels (SRF/RDF)
- Petroleum coke and carbonaceous fuels
- Mixed fuel matrices in power and process industries

24-Position Carousel - Optimised for Dense and Homogeneous Samples

The 24-position carousel utilises small-volume crucibles to provide maximum throughput with excellent repeatability.

Key Advantages

- High sample throughput
- Uniform crucible geometry and surface exposure
- Ideal for routine, repetitive testing
- Reduced analysis cycle cost per sample

Typical Applications

- Minerals and ores
- Cement, clinker, raw meal
- Inorganic chemicals
- Graphite and carbon materials
- Fine powders and homogeneous solids

TGA et500 With 24 Positions

Crucibles with various volumes

et100-142
8cc volume

et100-146
11cc volume

et100-147
14cc volume

et100-148
42cc volume

et100-149
45cc volume

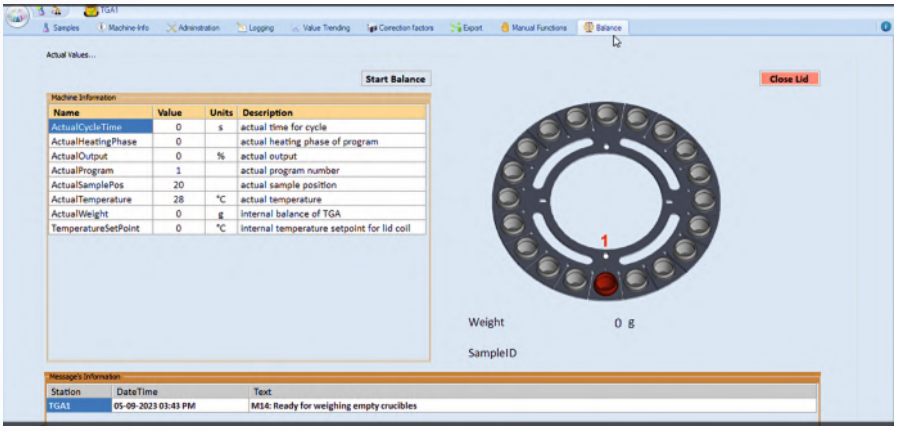
Software Features

- The user-friendly software enables complete control of the analyser through a graphical interface. It provides visual representations of temperature versus weight loss measurements, as well as real-time displays of parameters such as furnace temperature, sample status, and remaining time

- The software provides flexible method settings, including temperature ramps, set points, programmable gas flows, and options for placing or removing crucible lids, as well as criteria for maintaining mass constancy. These settings cater to various customer applications such as moisture determination, volatile matter determination, Loss on Ignition (LOI) determination, and ash determination

- TGA et250 & TGA et500 come pre-programmed with 10 in-built standard methods for analysing coal samples in accordance with ASTM and ISO standards. Additionally, the software enables users to configure up to 16 custom methods based on their specific requirements

- The software offers a versatile sample login and loading procedure, accompanied by real-time graphical representations of analysis data



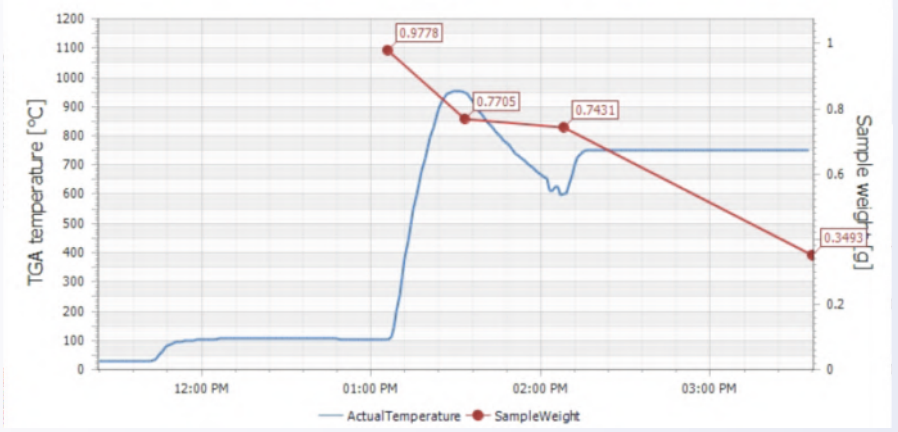
Turntable position: 5 Sample: 5

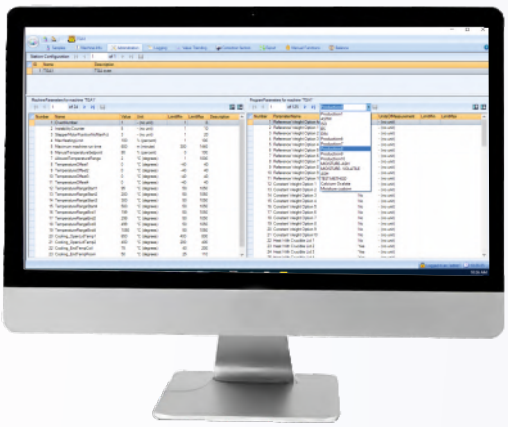
Moisture	Volatile	Volatile Dry	Ash	Ash Dry	Empty Crucible	Lid	Sample IN
2.513	20.668	21.201	34.826	35.723	19.1090 g	21.2468 g	1.0030 g

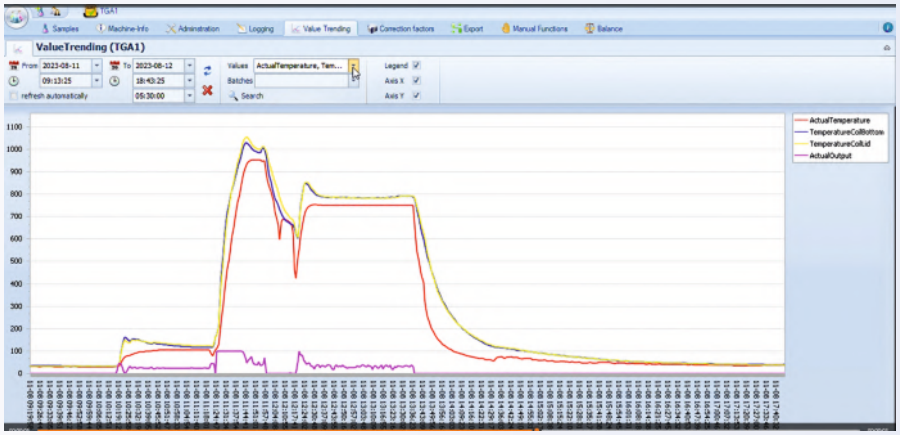
Fixed Carbon	Fixed Carbon Dry	LOI200	LOI450	LOI850	LOI750	LOI950
41.994	43.076					

Heating phase:

No	Temperature	Duration	Lid	Weight OUT (raw)	CF	Sample OUT (corrected)
1	105	3600	0	20.0879 g	-0.0011 g	0.9778 g
2	950	180	1	41.1402 g	-0.0139 g	0.7705 g
3	600	60	1	41.1052 g	-0.0063 g	0.7431 g
4	750	3600	0	19.4634 g	-0.0051 g	0.3493 g







Test Methods

Elite Thermal's TGA et250 & TGA et500 complies with the following test methods.

Coal & Coke

Mineral Ores

Gypsum & Hydrated lime

Soil & Fertiliser

Cement & Building Materials

Food & Feed

Standard	Title of the standard
ASTM D7582-15	Standard Test Methods for Proximate Analysis of Coal and Coke by Macro Thermo Gravimetric Analysis.
ASTM D5142	Standard Test Methods for Proximate Analysis of the Analysis Sample of Coal and Coke by Instrumental Procedures.
ISO 562	Hard Coal and Coke - Determination of volatile matter.
ASTM D7348	Standard Test Methods for Loss on Ignition (LOI) of Solid Combustion Residues.
DIN 51718	Testing of solid fuels - Determination of the water content and the moisture of analysis sample.
ASTM E1755	Standard Test Method for Ash in Biomass.
DIN 51719	Determination of ash in solid mineral fuels.
ISO11722	Solid mineral fuels - Hard coal - Determination of moisture in the general analysis test sample by drying in nitrogen.
ISO1171	Solid mineral fuels - Determination of Ash.
EN 15148	Solid biofuels - Determination of the content of volatile matter.
ISO/TR 18230	Determination of Loss on Ignition - Non oxidized ores.
ASTM C114	Determination of Loss on Ignition of Hydraulic Cement.
ISO 806	Aluminum Oxide Primarily used for the product of aluminium - Determination of loss of mass at 300°C and 1000°C.
EN 14775	Solid biofuels - Determination of Ash content.
AS1038	Proximate analysis & Testing.
BS1016	Proximate analysis.

Technical Specifications

Specifications	TGA et250	TGA et500
Temperature Range	Programmable from ambient to 1100°C	Programmable from ambient to 1100°C
Temperature Control Precision	±2 deg C (or) ±2% of set point temperature	±2 deg C (or) ±2% of set point temperature
Temperature Stability	±2 deg C (or) ±2% of set point temperature	±2 deg C (or) ±2% of set point temperature
Ramp Rate	Programmable from 10°C /minute to 50°C /minute	Programmable from 10°C /minute to 50°C /minute
Balance	Integrated Balance	Integrated Balance
Balance Resolution	0.0001g (0.1mg)	0.0001g (0.1mg)
Balance Readability	0.0001g (0.1mg)	0.0001g (0.1mg)
Weight Loss	0 to 100%	0 to 100%
Sample Size	up to 10 grams based on the sample type and its characteristics	up to 10 grams based on the sample type and its characteristics
Number of Samples	19 sample + 1 reference (by using 20-position carousel) 11 sample + 1 reference (by using 12-position carousel) 23 samples + 1 reference (by using 24-position carousel)	19 sample + 1 reference (by using 20-position carousel) 23 samples + 1 reference (by using 24-position carousel)
Number of Carousels	One for crucibles and crucible lids	Two (one for crucibles and the other for crucible lids)
Carousel Material	Metal or Ceramic	Metal or Ceramic
Weighing Precision	0.02% RSD (on inert samples)	0.02% RSD (on inert samples)
Electrical Power Requirements	230V (± 10%) / single phase / 50/60Hz / 32A	230V (± 10%) / single phase / 50/60Hz / 32A
Computer	230V (± 10%) / single phase / 50/60Hz / 2A	230V (± 10%) / single phase / 50/60Hz / 2A

For more details, please check TGA et250 & TGA et500 technical data sheets.

Ordering Information

Item Name	Part Number
TGA et500 Thermogravimetric Analyser, Dual Carousel, Metal, 20 Position	TGA et500-100-20
TGA et500 Thermogravimetric Analyser, Dual Carousel, Ceramic, 20 Position	TGA et500-200-20
TGA et500 Thermogravimetric Analyser, Dual Carousel, Metal, 24 Position	TGA et500-100-24
TGA et500 Thermogravimetric Analyser, Dual Carousel, Ceramic, 24 Position	TGA et500-200-24
TGA et500D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Metal, 40 samples	TGA et500D-100-20
TGA et500D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Ceramic, 40 samples	TGA et500D-200-20
TGA et500D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Metal, 48 samples	TGA et500D-100-24
TGA et500D Dual TGA system, Two Thermogravimetric Analysers with single PC control, Ceramic, 48 samples	TGA et500D-200-24
Ceramic Crucible 11cc for 20 pos. carousel, pack of one	et100-146
Ceramic Crucible lid for 11cc Crucible(et100-146), pack of one	et100-046
Ceramic Crucible 14cc for 20 pos. carousel, pack of one	et100-147
Ceramic Crucible lid for 14cc Crucible (et100-147), pack of one	et100-047
Ceramic Crucible 42cc for 20 pos. carousel, pack of one	et100-148
Ceramic Crucible 8cc for 24 pos. carousel, pack of one	et100-142
Ceramic carousel for crucible – 20 Positions	et107-321SH
Ceramic carousel for crucible lids, 20 positions	et107-321
Metal Carousel for Crucibles – 20 Positions	et112-255
Metal carousel for crucible lids, 20 positions	et112-254
Ceramic Plate Alti for Crucibles – 20 Positions	et111-426
Metal Carousel, for crucible – 24 positions	et112-265
Metal Carousel, for crucible lid – 24 positions	et112-264
Ceramic Carousel, for crucible – 24 positions	et112-272
Ceramic Carousel, for crucible lid – 24 positions	et112-270
External Blower, TGA - 1Number	et101-244

Ash Fusion Determinator

- a step towards an improved Ash Fusibility Analysis

When any fuel is burned, an incombustible waste material is produced, commonly known as ash.

As the burning process progresses, the temperature of the combustion environment reaches a point where the ash particles start to melt.

This melting occurs because the heat energy breaks down the chemical bonds holding the ash particles together, causing them to transition from a solid state to a liquid state. Once the ash has melted, it begins to undergo a cooling process. As the melted ash cools down, it solidifies and forms clinkers.

Clinkers are hard, stony residues composed of the solidified ash particles, which frequently stick to the inner surfaces of the combustion chamber.

Clinker build-up poses challenges for large coal furnaces, often requiring furnace closure for maintenance. Understanding the fusibility properties of coal ash facilitates temperature management to mitigate clinker formation.

The Ash Fusion Temperature serves as an indicator of the point at which the ash undergoes a transition from a solid to a liquid state through melting. This temperature is a crucial parameter in the planning and execution of gasification systems.

Ash Fusion Determinator — EATC16 Series

Elite Thermal's EATC16 Series Ash Fusion Determinator for four critical temperatures:

- Initial Deformation Temperature (IDT)
- Softening Temperature (ST)
- Hemisphere Temperature (HT)
- Fluid Temperature (FT)

EATC16

EATC16 Series key features

- Bench-mounted Ash Fusion Determinators
- Maximum Furnace Temperature: 1600°C
- Types of samples: Coal ash, coke ash, biomass ash, refuse-derived (RDF) ash, and solid biofuel ash
- Analysis parameters: Fusion points (IDT, ST, HT, and FT) of ash samples
- Type of analysis: Manual in EATC16 Manual Model
  Automatic in EATC16 & EATC16*plus*
- Precisely controlled high-temperature horizontal resistance furnace
- Furnace is capable of operating in both oxidising and reducing atmospheres
- Programmable temperature ramp rates
- Up to 6 samples can be analysed simultaneously for each batch
- Capture images of the samples at every 1°C increase temperature in EATC16 & EATC16*plus*
- Grid feature for accurate comparison of sample height and width in EATC16 & EATC16*plus*
- Quick cooling facilitated by low thermal mass insulation allows for the completion of multiple tests within a day
- Automatic gas switching between oxidizing and reducing gases based on selected test conditions (Available in EATC16*plus*)

EATC16 Manual

- EATC16 Manual Ash Fusion Determinator with Manual interpretation software, with 2 flow meters
- The operator must manually interpret the fusion points of each sample
- Gas inlets for reducing, oxidising & purge gases
- Alarms are fitted to indicate when supply gas pressures are running low
- The furnace has three gas connections on the rear of the furnace: Individual ports for CO_2, H_2, and one for Purge gas
- Pressure switches are fitted to all three gas lines, purge gas, CO_2 gas and H_2 gas

EATC16 Manual

EATC16

EATC16

- EATC16 Ash Fusion Determinator with automatic interpretation software
- Up to 6 samples can be analysed simultaneously for each batch
- Automatic and continuous recording of images
- Capture images of the samples at every 1°C increase in temperature
- The furnace has three gas connections on the rear side of the furnace: Induvidual ports for CO_2, H_2, and one for Purge gas
- EATC16 Ash Fusion Determinator used 2 flow meters for oxidising, reducing and purge gases
- A grid overlay feature is provided within the software for each sample
- The grids are positioned to identify the samples for automatic analysis or are used to assist manual analysis
- They ensure accurate comparison of the height and width of the sample melt points
- The position and scale of each grid is easily adjustable

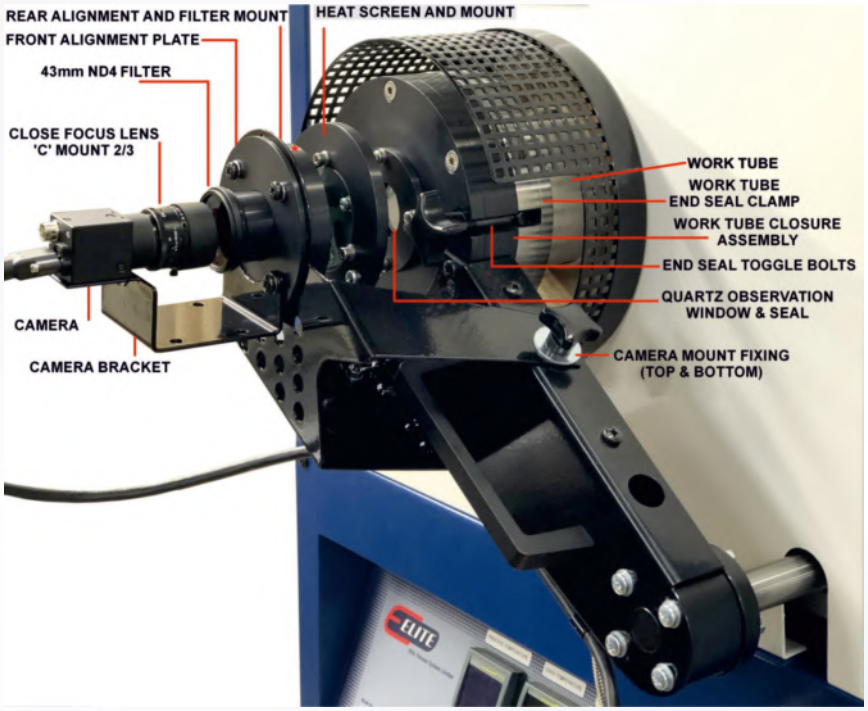
EATC16*plus*

- Similar to EATC16, EATC16*plus* uses the same software
- The furnace has five gas connections on the rear side of the furnace: Individual ports for CO, CO_2, H_2, and Air and one for Purge gas
- A significant advantage of the EATC16*plus* is its four flow meters, which allow automatic switching between oxidising and reducing gases in response to selected test conditions
- EATC16*plus* includes separate gas inlets for CO, CO_2, H_2, N_2 and Air

EATC16*plus*

High-Resolution Integrated Camera System

The high-resolution integrated camera system is designed for the EATC16 series to enhance the precision and efficiency of sample analysis during testing. It features a manually adjustable lens mounted on a suitable arm, allowing for optimal positioning and flexibility to ensure accurate and reliable observations throughout the testing process.



Camera Features

- A high-resolution camera with a manually adjustable lens mounted on a suitable arm is used to view the samples being tested
- This setup allows for easy movement away from the furnace to access the work tube
- The video image is sent to a high-end computer system where it is recorded and displayed in a specially created logging program
- Accepts specimen shapes in accordance with ASTM, ISO, and DIN standards, including cylinder, pyramid, upright pyramid, and truncated pyramid
- The camera in EATC16 and EATC16*plus* allows viewing a complete video of the analysis
- Adjustable grid scale for each test specimen (EATC16 & EATC16*plus*)
- Grid overlay feature for accurate comparison of sample height and width (EATC16 & EATC16*plus*)
- Accepts specimen shapes as per standards
- Direct specimen capturing without using mirrors for accurate and precise fusion temperature measurements
- Continuous recording of sample images
- Real time monitoring of the samples and test process
- Auto identification of fusion temperatures (IDT, ST, HT & FT) (only for EATC16 & EATC16*plus*)

Biomass Ash | RDF Ash | Fly Ash | Petroleum Coke Ash | Coal Ash | Low ash metallurgical coke

Ash Fusion Determinator | EATC16 Series

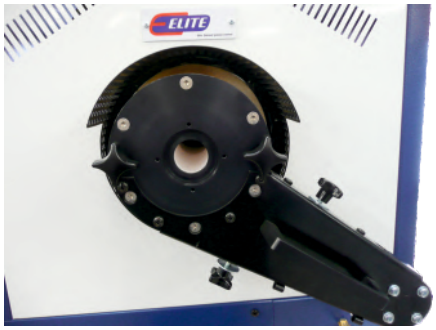
General Specifications	EATC16*plus*	EATC16	EATC16 Manual
Ash Fusibility Determination	Automatic	Automatic	Manual
Fusion Points	IDT (Initial deformation Temperature), ST (Softening/Sphere Temperature), HT (Hemisphere Temperature) & FT (Fluid/Flow Temperature)		
Test Method	ASTM D 1857; ASTM E953; BS ISO 540; BS ISO 21404, CEN/TS 15370-1; CEN/TR 15404:2010. DIN 51730; ISO 540; ISO 21404		
Capable to Analyse	Cube/Cylinder, Pyramids/Cone, Upright cone/Upright Pyramid and Truncated cone/Truncated Pyramid.		
Sample shape identification	Automatic - Cube/Cylinder, Pyramids/Cone, Upright cone/Upright Pyramid and Truncated cone/Truncated Pyramid.		Manual - Cube/Cylinder, Pyramids/Cone, Upright cone/ Upright Pyramid and Truncated cone / Truncated Pyramid.
Analysis atmosphere	Oxidizing Atmosphere/Reducing atmosphere		
Furnace Specifications			
Temperature range	up to 1600°C		
Temperature Ramp Rate	programmable 1°C to 12°C per minute		
Temperature precision	±5°C as per standard test methods at 1064°C (99.98% pure gold wire sample melting point)		
Number of heating elements	6 nos - High temperature resistance type heating elements		
Working tube dimensions	90 x 76 x 675mm		
Material of construction of working tube	High grade RCA Alumina work tube		
Analysis Time	4 hours typical cycle time (depending ramp rate and temperature range)		
Stand by Temperature			
Stand by Temperature	Room Temperature	Room Temperature	815°C
Ventilation			
Ventilation	Forced air ventilation		
Exhaust	Pipe to be vented into a separate fume hood		
CO Monitor (Optional on request)	Integrated CO monitor with auditory alarm, Gas flow shut off on alarm. This is factory installed option. Need to order along with main EATC16 Instrument.		NOT AVAILABLE
Gas requirements			
Gas requirements	Integrated **four gas** flow meters to enable **automatic** switching of the gases based on the selected test conditions, such as oxidation or reduction.	Integrated **two gas** flow meters to enable **automatic** switching of the gases based on the selected test conditions, such as oxidation or reduction.	Integrated **two gas** flow meters for **manual** switching of the gases based on the selected test conditions, such as oxidation or reduction.
		Note: At the time of ordering, the user must specify the required gases for their analysis, choosing either CO_2/H_2 or CO/CO_2 for the reduction mode.	
Electrical requirements			
	380 – 415 V, 50/60 Hz two phase 25 A		
Environmental Conditions			
Operating Condition	15°C to 35°C		
Relative Humidity	20% to 80%, non-condensing.		
EATC16 External Dimensions			
Dimensions- H x W x D in mm	770mm x 660mm x 1010mm	700mm x 505mm x 970mm	700mm x 505mm x 970mm
Weight in kg	Approx. 160kgs	Approx. 95kgs	Approx. 90kgs
PC specifications			
Required PC Specifications	Processor: i3 or i5, RAM: Minimum 8GB, Memory: 512GB HDD or SSD, PCIe slots: PCIe 2.1 x 4, RS232 Ports: 1, OS: Windows 10 or higher		Processor: i3 or i5, RAM: Minimum 8GB, Memory: 512GB HDD or SSD PCIe slots: Minimum 1, RS232 Ports: 1, OS: Windows 10 or higher

For more details, please check EATC16 series technical data sheets.

Ash Fusion Determinator (High Temperature Model) EATC17

Elite Thermal's Ash Fusion Determinator, EATC17 is the high-temperature floor-mount model, which works similarly to the EATC16*plus*, but for samples which fuse at higher temperatures. A maximum temperature of 1700°C can be achieved using heating elements consisting of molybdenum disilicide. The results obtained are similar for both EATC17 and EATC16*plus* analysers.

EATC17



Front view of camera arm without camera

Camera arrangement

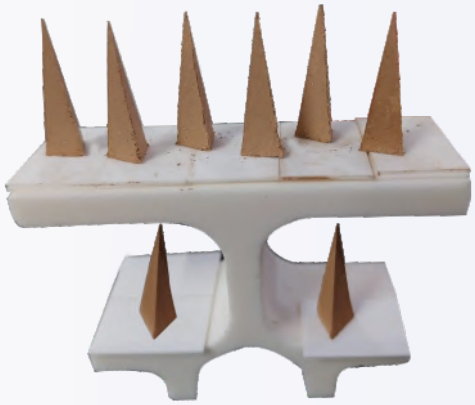
Control panel

Ordering Information

Item Name	Part Number
EATC16 Manual, Ash Fusion Determinator	EATC16 Manual
EATC16, Ash fusion determinator	EATC16
EATC16plus, Automatic Ash Fusion Determinator	EATC16plus
EATC17, Ash Fusion Determinator	EATC17
Gold Wire, 0.5mm Diameter15mm, Pack of 1	eatc16-509200
Nickel wire, 0.5mm diameter, 15mm, Pack of 1	eatc16-509220
Palladium Wire, 0.5mm Diameter, 15mm, Pack of 1	eatc16-509210
Sample Carrier / Holder, Ceramic, EATC16	eatc16-509305
Alumina Fusion Tray, 38x30x1.5mm, Pack of 100	eatc16-509115
Alumina Fusion Tray, 18x12x0.5mm, Pack of 100	eatc16-509120
Alumina Work Tube:1600 deg C, 76mm (ID) x 675mm length, OBE	a16-76-90-675
Thermocouple, EATC16	eatc16-509220
Ceramic Plug, Front, EATC16	eatc16-509320
Ceramic Plug, Rear, EATC16	eatc16-509321
Lamp, EATC16	eatc16-509420
Mold for Cylinder, EATC16	eatc16-509520
Mold for Pyramid, EATC16	eatc16-509620
Heating Elements, Pack of 6, EATC16	eatc16-509720
O-ring kit for EATC16 / EATC16plus	eatc16-509120

For more details, please check EATC17 technical data sheets.

Sample holder with Ash Samples



Test Standards

Ash Material	Test standard	Reducing Gas	Oxidizing Gas
Coal & Coke Ash	ASTM D 1857	CO-CO_2 Ratio: 60% CO - 40+5 % CO_2, N_2 for purging	Air
Coal & Coke Ash	BS ISO 540	CO-CO_2 Ratio: 55% to 65% CO - 35% to 45% CO_2, N_2 for purging H_2- CO_2 Ratio: 45% to 55% H_2- 45% to 55% CO_2, N_2 for purging	Air or CO_2
Fusibility Of Fuel Ash	DIN 51730	CO-CO_2 Ratio: 55% to 65% CO- 35% to 45% CO_2, N_2 for purging H_2- CO_2 Ratio: 45% to 55% H_2- 45% to 55% CO_2, N_2 for purging	Air
RDF Ash	ASTM E953	CO-CO_2 Ratio: 60% CO - 40+/-5 % CO_2, N_2 for purging	Air or O_2 or CO_2
Solid Recovered Fuels	CEN/TR 15404:2010	CO-CO_2 Ratio: 55% to 65% CO - 35% to 45% CO_2, N_2 for purging	Air or CO_2
Solid Biofuels	ISO 21404	CO-CO_2 Ratio: 55% to 65% CO- 35% to 45% CO_2, N_2 for purging H_2- CO_2 Ratio: 45% to 55% H_2- 45% to 55% CO_2, N_2 for purging	Air or CO_2

Technical Specifications

General Specifications	EATC17
Ash Fusibility Determination	Automatic
Fusion Points	IDT (Initial deformation Temperature), ST (Softening/Sphere Temperature), HT (Hemisphere Temperature) & FT (Fluid/Flow Temperature)
Test Method	ASTM D 1857; ASTM E953; BS ISO 540; BS ISO 21404, CEN/TS 15370-1; CEN/TR 15404:2010. DIN 51730; ISO 540; ISO 21404
Capable to Analyse	Cube/Cylinder, Pyramids/Cone, Upright cone/Upright Pyramid and Truncated cone/Truncated Pyramid.
Sample shape identification	Automatic - Cube/Cylinder, Pyramids/Cone, Upright cone/Upright Pyramid and Truncated cone/Truncated Pyramid.
Analysis atmosphere	Oxidizing Atmosphere/Reducing atmosphere
Furnace Specifications	
Temperature range	up to 1700°C
Temperature Ramp Rate	programmable 1°C to 12°C per minute
Temperature precision	±5°C as per standard test methods at 1064°C (99.98% pure gold wire sample melting point)
Number of heating elements	6 nos - High temperature resistance type heating elements
Working tube dimensions	86 x 76 x 675mm
Material of construction of working tube	High grade RCA Alumina work tube
Analysis Time	4 hours typical cycle time (depending ramp rate and temperature range)
Stand by Temperature	
Stand by Temperature	Room Temperature
Ventilation	
Ventilation	Forced air ventilation
Exhaust	Pipe to be vented into a separate fume hood
CO Monitor (Optional on request)	Integrated CO monitor with auditory alarm, Gas flow shut off on alarm. This is factory installed option. Need to order along with main EATC17 Instrument.
Gas requirements	
Gas requirements	Integrated **four gas** flow meters to enable **automatic** switching of the gases based on the selected test conditions, such as oxidation or reduction.
Electrical requirements	
	380 – 415 V, 50/60 Hz two phase 25 A
Environmental Conditions	
Operating Condition	15°C to 35°C
Relative Humidity	20% to 80%, non-condensing.
PC specifications	
Required PC Specifications	Processor: i3 or i5, RAM: Minimum 4GB, Memory: 512GB HDD or SSD PCI slots: Minimum 1, PCIe slots: Minimum 1, RS232 Ports: 2 OS: Windows 10 or higher

For more details, please check EATC17 technical data sheets.

Multi Tube/Pre Heat Furnace TMTH14

Multi Tube/Pre Heat Furnaces with multiple tubes are versatile, energy-efficient, and especially suitable for baking fluxes and crucibles. The baking process reduces contaminants and improves measurement accuracy and precision.

The baking process is simple and easy to implement and it can effectively remove impurities and moisture adsorbed by crucibles, samples and fluxes during storage, reducing the blank value and stabilizing the measured value, improving accuracy and precision of measurement.

For consistent and reliable results in various analytical applications, the design of TMTH14 series Multi Tube/Pre Heat Furnaces focuses on precise temperature control and uniform heating.

The TMTH14 series Multi Tube/Pre Heat Furnace offers greater efficiency because it allows the operator to burn off crucibles simultaneously in four combustion tubes, which increases productivity up to four times.

Standard Features

Maximum Furnace Temperature: 1400°C

Continuous Operating Temperature: 600°C to 1350°C

- This product is a stylish bench mounted furnace with integral controls mounted in its base, and is fitted with a shelf to store the crucibles
- Faster heating and cooling with high quality and high efficiency insulation
- Equipped with high-quality heating elements designed to achieve fast ramp rates
- Inner diameter of tube is 50mm for crucibles, samples and fluxes baking
- R type thermocouple for precise temperature measurement
- High end microprocessor PID temperature controller
- Easy to use temperature controller clearly displays set temperature or actual temperature
- This furnace design requires four separate work tubes, made from a grade suitable for the maximum temperature rating of 1400°C
- The combustion tubes are designed with both ends open, allowing for easy manual loading of crucibles from the front and unloading from the rear
- Work tubes are not included with the furnace and must be purchased separately, as they are essential accessories
- An independent over-temperature controller is fitted as standard
- Power Supply: 230V - 1 Phase -50Hz with N & E

TMTH14-4

Note: For all multi-tube/pre heat furnaces, Elite Thermal Systems manufactures custom-built solutions. Please contact us with your specific requirements.

Coal and Coke Products – Standards Summary

	MFSO-ISO	MFSO-ASTM	MFSU	VMF/ASTM	VMF / ISO	FSI	EATC	TGA	GKF
DIN									
DIN 51730:2007-09							○		
DIN 51719								○	
ASTM									
ASTM D1857/ D1857M-04 (2016)							○		
ASTM D2961-11									
ASTM D3173-11		○	○						
ASTM D3174-12									
ASTM D3175-11				○					
ASTM D5341/ D5341M-17									
ASTM D5142								○	
ASTM D720-15									
ASTM D7348								○	
ASTM E953							○		
ASTM E1755								○	
ASTM D7582-15								○	
BS ISO									
BS ISO 11722:2013	○		○						
BS ISO 18894:2006									
BS ISO 501:2012						○			
BS ISO 540:2008							○		
BS ISO 562:2010					○				
BS ISO 687:2010	○		○						
BS ISO 7215:2015									
BS ISO 7992:2015									
BS ISO 1016-104.2:1991	○		○						
BS 1016-107.2									○
BS ISO 502:2015									○
BS ISO 21404							○		
ISO									
ISO 501									
ISO 540							○		
ISO 562					○			○	
ISO 21404							○		
ISO 11722								○	
ISO 1171								○	
Other Standards									
DD CEN/TS 15370-1:2006							○		
PD CEN/TR 15404:2010									
CEN/TR 15404:2010.							○		
EN 15148								○	
EN 14775								○	
BS 1016								○	
AS 1038								○	
AS 1038.12.2									○
IS 1353									○

Other Elite Products

Elite Thermal Systems is a leading manufacturer, recognized for its outstanding quality and advanced heat technology, specialising in the design and production of laboratory and industrial ovens and furnaces.

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- CRI - CSR Test Systems

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