

## AAF – Standard Ashing Furnaces

The range of AAF ashing furnaces is designed specifically to provide optimum ashing conditions to ensure complete combustion of the sample.

The AAF 11/3 & AAF 11/7 ashing furnaces provide a continuous flow of preheated air through the chamber, and are designed to comply with ISO 1171:2010, ASTM D3174-04: 2010 and ASTM D4422.

### Standard features

- 1100°C maximum operating temperature
- Carbolite Gero 301 single ramp to setpoint & process timer
- Large floor area allows for large number of samples
- Ideal for ashing foods, plastics, coal & other hydrocarbon materials
- Designed to comply with ISO 1171:2010, ASTM D3174-04: 2010 and ASTM D4422
- Wire elements are protected from chemical & mechanical damage by a hard wearing alumina based liner
- 4 sided heating (2 sides, roof & hearth)
- Air inlet & tall chimney give airflow of 4 to 5 changes per minute
- Low chamber height holds airflow close to samples for optimum combustion
- Powerful elements with graded winding compensate for heat loss due to high airflow
- Preheating of air before it enters the chamber gives excellent uniformity
- Sample tray and loading handle

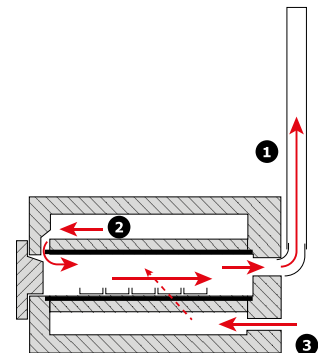


AAF 11/3 and AAF 11/7

### AAF 11/3 and AAF 11/7:

#### Airflow

- 1) A tall 50 mm diameter chimney (AAF 11/7), or 35 mm on AAF 11/3, pulls the air through the chamber
- 2) Preheated air enters the chamber after circulating around the outside of the chamber
- 3) Air inlet

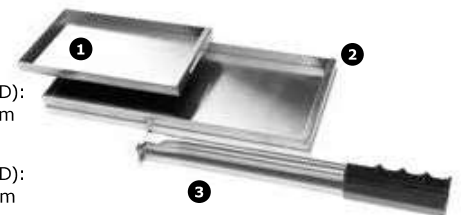


### Options (specify these at time of order)

- 2 phase electrical supply for AAF 11/7
- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 106 – 111)
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)

#### Accessories

- 1) Tray, dimensions inside (WxD):  
AAF 11/3: 133x210 mm
- 2) Tray, dimensions inside (WxD):  
AAF 11/7: 163x330 mm
- 3) Loading handle



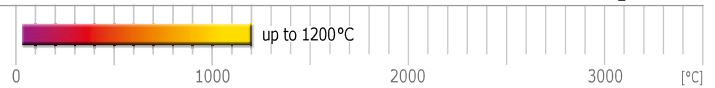
### NEW Catalytic converter option

The thermal catalytic oxidiser option is suitable for applications where the exhaust gases are the result of organic reactions. Preheated air flows around and through the AAF chamber fueling combustion of the sample. The resulting gases or fumes are carried out of the chamber into the catalytic converter. Additional fresh air is drawn into the catalytic converter over an integral heater where the catalyst causes a chemical reaction to reduce the amount of fumes and unburnt volatiles.



#### AAF furnace + catalytic converter

- External dimensions:  
AAF 11/3: 740 x 375 x 670 mm  
AAF 11/32: 1600 x 690 x 900 mm
- External dimensions with door open:  
AAF 11/3: 800 x 375 x 670 mm  
AAF 11/32: 1600 x 690 x 900 mm
- Catalytic converter power supply requirements:  
AAF 11/3: 250 W  
AAF 11/32: 600 W



## AAF – Standard Ashing Furnaces

The range of AAF ashing furnaces is designed specifically to provide optimum ashing conditions to ensure complete combustion of the sample.

For those laboratories where ashing is interspersed with other heat treatment work the AAF 12/18 provides all of the advantages of the AAF design, but with a higher maximum operating temperature of 1200°C.

### Standard features

- 1100°C & 1200°C maximum operating temperatures
- Carbolite Gero 301 single ramp to setpoint & process timer
- Two tier rack system doubling the sample capacity with sample trays and loading handle allows for large number of samples
- Ideal for ashing foods, plastics, coal & other hydrocarbon materials
- Preheating of air before it enters the chamber
- Protection of the elements from carbon build-up or corrosive atmosphere, using silicon carbide tiles
- 2 sided heating

### Options (specify these at time of order)

- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 106 – 111)
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)

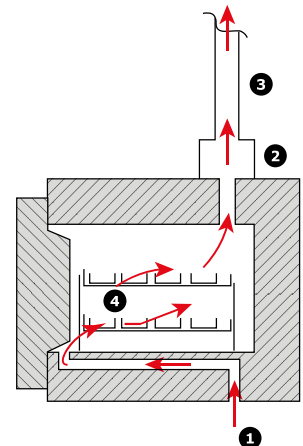


AAF 11/18

AAF 11/18, AAF 12/18,  
AAF 11/32, AAF 12/32:

#### Airflow

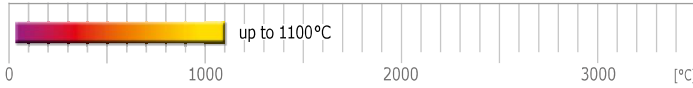
- 1) Air inlet – air is preheated before entering the chamber
- 2) Plenum – a small amount of air flows between the heating elements and SiC side walls, to clear any fumes away from the elements. This combines with the chamber exhaust in the plenum.
- 3) Chimney
- 4) Two tier rack and trays



#### Accessories

- 1) AAF 11/18 & AAF 12/18 two tier rack system
- 2) Perforated tray, dimensions inside (WxD):  
AAF \_\_/18: 163x330 mm  
AAF \_\_/32: 230x400 mm
- 3) Loading handle





## AAF-BAL - Ashing furnace with balance

The AAF-BAL furnace incorporates an integral balance. It can be used for loss on ignition applications where weight change of the sample must be monitored during the heating process.

The AAF-BAL ashing furnace is fitted with an integral balance and can be used for loss on ignition (LOI) applications. Weight change of the sample is monitored during the heating process and this is required, for example, in the determination of organic matter content in materials such as sediment, sludge, soil and waste. Inorganic materials such as cement, lime, calcinated bauxite and refractories can also be tested.



AAF-BAL 11/17

### Standard features

- Carbolite Gero 301 single ramp to setpoint & process timer
- Protection of the elements from carbon build-up or corrosive atmosphere, using silicon carbide tiles
- 2 sided heating
- Balance runs independently of the furnace control system
- Maximum capacity of balance is 3 kg with a resolution of 0.01 g (other capacities available)

### Options (specify these at time of order)

- Advanced version for 3508 to data-log both weight and temperature. It is also necessary to select the following options: 3508 instrument; either RS232, RS485 or Ethernet communication. Data logging is done via iTools software which must be purchased separately
- Advanced version for nanodac to data-log both weight and temperature. It is also necessary to select the following options: nanodac instrument. Data logging is done in the nanodac and can be downloaded into the 'Review Lite' software which is included with the nanodac
- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 106 – 111)
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)

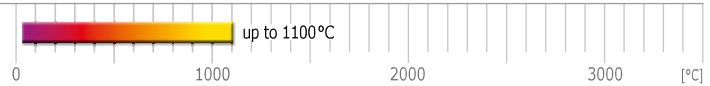
## Technical data

CGH	Max. temp. [°C]	Heat-up time [mins]	Max. continuous operating temp. [°C]	Dimensions: Usable chamber H x W x D [mm]	Dimensions: External H x W x D [mm]	Dimensions: External with door open H x W x D [mm]	Dimensions: Height to top chimney [mm]	Volume [litres]	Max. power [W]	Holding power [W]	Thermo-couple type	Weight [kg]
AAF 11/3	1100	155	1000	90 x 150 x 250	585 x 375 x 485	800 x 375 x 485	780	3	2100	1270	K	22
AAF 11/7	1100	155	1000	90 x 170 x 455	650 x 430 x 740	905 x 430 x 740	1060	7	4000	2624	K	63
AAF 11/18	1100	70	1000	235 x 196 x 400	705 x 505 x 675	990 x 505 x 675	990	18	7080	3500	K	70
NEW AAF 11/32	1100	-	1000	250 x 280 x 450	820 x 690 x 730	1050 x 690 x 730	1200	32	9000	-	K	100
AAF 12/18	1200	70	1100	235 x 196 x 400	705 x 505 x 675	990 x 505 x 675	990	18	7080	3500	R	70
NEW AAF 12/32	1200	-	1100	250 x 280 x 450	820 x 690 x 730	1050 x 690 x 730	1200	32	9000	-	R	100
AAF-BAL 11/17	1100	-	1000	215 x 196 x 400	705 x 505 x 675 (400 x 170 x 500)*	990 x 505 x 675 (400 x 170 x 500)*	990	17	7080	3500	K	70

**i Please note:**

- Holding power is measured at 500°C
- Heat up time is measured to 100°C below max, using an empty chamber

- Maximum power and heat up time based on a 240 V supply
- \*Dimensions of control box



## GSM – Specialist Ashing Furnace

Some analysis techniques may be affected by alumina or silica dust ( $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$ ) – the materials normally used to construct furnace chambers. To avoid this the GSM furnace chamber is constructed from a fused quartz material.

This design also offers superior containment of aggressive and corrosive vapours such as sulphuric, nitric and hydrochloric acids by keeping them away from the heating elements.

Additionally if an optional gas inlet is specified, the enclosed design minimises gas leakages from the chamber.

### Standard features

- 1100°C maximum operating temperature
- Carbolite Gero 301 single ramp to setpoint & process timer
- Fused quartz furnace chamber, ideal for analyses where  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  could contaminate test results
- Chamber lining offers superior containment of corrosive & aggressive vapours such as  $\text{H}_2\text{SO}_4$ ,  $\text{HNO}_3$ ,  $\text{HCl}$
- 4 sided heating (2 sides, roof & hearth)
- Moulded ceramic fibre door plug

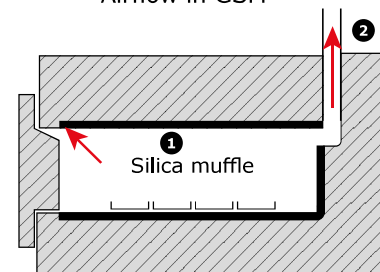


GSM 11/8

### Options (specify these at time of order)

- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 106 – 111)
- Over-temperature protection (recommended to protect valuable contents and for unattended operation)
- Gas inlet for modified atmospheres (the fused quartz liner provides improved containment)
- Sample trays & racks

Airflow in GSM



- 1) Quartz silica muffle protects the heating elements
- 2) Chimney vents fumes from the chamber

## Technical data

Model	Max. temp. [°C]	Heat-up time [mins]	Max. continuous operating temperature [°C]	Dimensions: Usable chamber H x W x D [mm]	Dimensions: External H x W x D [mm]	Dimensions: External with door open H x W x D [mm]	Dimensions: Height to top chimney [mm]	Volume [litres]	Max. power [W]	Holding power [W]	Thermocouple type	Weight [kg]
<b>GSM 11/8</b>	1100	70	1000	120 x 175 x 345	655 x 435 x 750	895 x 435 x 750	1060	8	2950	1700	K	57

### **i** Please note:

- Heat up time is measured to 100°C below max, using an empty chamber
- Holding power is measured at continuous operating temperature

- Maximum power and heat up time based on a 240 V supply
- The maximum depth to accommodate the door opening arc is 810 mm



## ABF – Afterburner Ashing Furnace

The ABF afterburner ashing furnace is particularly suitable for ashing larger samples or materials such as biomass, which are likely to generate substantial amounts of smoke.

The furnace comprises a large main combustion chamber equipped as standard with a two tier set of sample baskets. The exhaust from the main chamber passes through a high temperature afterburner designed to further process fumes and smoke.

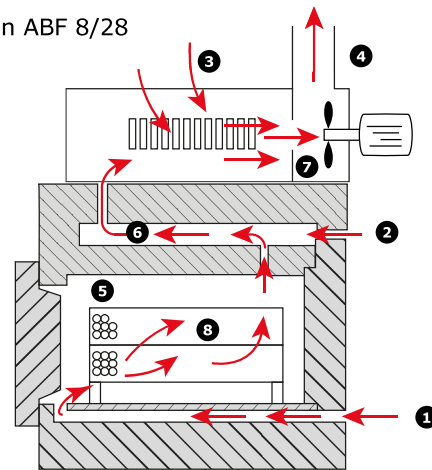
### Standard features

- 800 °C maximum operating temperature – ashing chamber
- 3216P1 programmable controller
- 28 litre chamber volume
- Afterburner rated for up to 40 g carbon per ashing load
- Two tier baskets with loading tray and handle
- Independent control of afterburner temperature up to 950 °C
- Silicon carbide shielded wire wound elements
- Supplied with 3-phase supply as standard



ABF 8/28

Airflow in ABF 8/28



- 1) Air inlet – air is preheated before entering the chamber
- 2) Air inlet into afterburner to ensure complete combustion
- 3) Air inlet into plenum to cool the gases before entering the extraction fan
- 4) Chimney
- 5) Furnace chamber
- 6) Afterburner
- 7) Extraction fan
- 8) Two tier perforated basket system

### Options (specify these at time of order)

- A range of sophisticated digital controllers, multi-segment programmers and data loggers is available. These can be fitted with RS232, RS485 or Ethernet communications (see pages 106 – 111)
- Over-temperature protection (recommended to protect valuable contents & for unattended operation)
- Optional floor stand

## Technical data

CGH Model	Max. temp. [°C]	Max. continuous operating temperature [°C]	Dimensions: Usable chamber H x W x D [mm]	Dimensions: External H x W x D [mm]	Dimensions: Height to top chimney [mm]	Volume [litres]	Max. power [W]	Holding power [W]	Thermocouple type	Weight [kg]
ABF 8/28	800	700	210 x 290 x 445	980 x 600 x 750 (Bench-top or optional stand)	1150	28	8000	3828	K	120

- i Please note:**
- Holding power is measured at 500 °C
  - Heat up time is measured to 100 °C below max, using an empty chamber
  - External dimensions with door closed