

## Thermal Analysis



## Preparation Checklist

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## TGA 8000: Site Readiness Instructions

## Order Overview

Please review the Customer Sales Order. Record any discrepancies on the PerkinElmer order, along with any agreements or commitments made by your PerkinElmer Sales Representative that are NOT listed on the order.

## Site Requirements:

## Bench Space

Instrument	Dimensions			
	Width	Depth	Height	Weight
TGA 8000	18 in (45.8 cm)	18 in (45.8 cm)	19 in (48.3 cm)	57 lbs. (26 kg)
Computer (approx.)	7 in (17.5 cm)	17 in (44.0 in)	15.8 in (40.2 cm)	24 lbs. (11.1 kg)

A bench top having the minimum dimensions above will accommodate a TGA 8000™ system with no accessories. The bench must be stable and free of vibrations. Vibrations will result in increased noise in the TGA curve. Additional bench space will be required for the optional accessories (Hyphenation, circulating water chiller, printer etc.).

*NOTE: Consideration must be given for location of the water circulator relative to the TGA 8000 and its furnace tube.*

## Peripherals and Accessories:

Accessories	Dimensions			
	Width	Depth	Height	Weight
Water Circulator	8.5 in (21 cm)	15.75 in (40 cm)	22.5 in (57.1 cm)	70 in (32 kg)

## Electrical Requirements:

Power Consumption	
TGA 8000	250 Watts Maximum
Computer	Not Available
Circulator	1440 Watts Maximum

Power Specifications	
TGA 8000	100-240 VAC, 6.3 Amps, 50/60 Hz
Computer	Not Available
Circulator	120 VAC, 12 Amps or 240 VAC, 7 Amps

This equipment is designed to operate within 10% of the selected line voltage. The supply must be smooth, clean and free of transient voltages over 40 volts.

Earth grounding: less than one ohm resistance between the grounds of any two components of the system.

Power Outlets	
TGA 8000	1 Standard Outlet
Additional Accessories	1 Separate Outlet each

## Gas Requirements:

Minimally, the TGA 8000 requires a "System Purge" gas, also known as the balance purge. This gas must be clean and dry. System gas is controlled by a mass flow controller located in the analyzer. Pressure of 2.5 bar is applied at the connector at the rear of the analyzer labeled "System Gas". Typically this is an inert, non-reactive gas i.e. N<sub>2</sub>, Ar, or He. Gasses such as Air or O<sub>2</sub> can also be used.

A "Sample Purge" gas is not a requirement to operate the TGA 8000, however if used it is recommended. Two separate inputs are available, A and B. The sample gases are also controlled by a separate mass flow controller, allowing for gas switching experiments. Typically, "Sample Gas A" is the same gas that is purging the "System" (Balance) and "Sample Gas B" would be Air or O<sub>2</sub>. Switching gases at elevated temperatures facilitates the burning of the sample and aids in the cleaning of the furnace and sample pans.

*Note: All gases (System, Sample and Reactive) must be clean and dry. If needed, filter dryers are available from PerkinElmer and can be ordered through your service representative.*

For additional reactive gases needed there are two connections available. One is at the back of the instrument – labeled Reactive Gas. This is used only for the non-corrosive gases. The other port is located at the Balance mounting plate. This port is to be used for all corrosive gases.

*Note: The pressure to the input will be controlled by an outside flow controller. (Please contact your Local PerkinElmer Service Representative for further help. A regulator install kit Part Number N519-0462 is available.)*

If the instrument is to be purged, all gasses, regulators and filter dryers MUST be supplied by customer and on site before scheduling an installation.

Supplied with the instrument are a 1/8" Swagelok connectors (instrument end), Teflon tubing and fittings.

Gas	Pressure	Flow	Purity (Minimum)
<b>System Gas:</b> Argon, nitrogen, helium, air or oxygen	36.26 psi (2.5 bar)	1-200 cc/min	99.95%
<b>Sample Gas:</b> Argon, nitrogen, helium, air or oxygen	29-43 psi (2-3 bar)	1-200 cc/min	99.95%
<b>Reactive Gas:</b> Non corrosive gas: Argon, Nitrogen, Helium, Air or Oxygen (connection of rear of instrument)	Outside Flow Control – determined by customer	1-200 cc/min controlled with customer supplied flow controller at the source gas)	99.95%
<b>Corrosive Gas:</b> (connection at balance mounting plate)			

## Cooling:

Forced air cooling is provided with a built in blower, allowing experiments to begin at or around ambient temperature.

An optional Cooling Kit (N5370553) is available which contains all the required parts to connect a circulating water bath to the furnace tube. Control of the flow and temperature are critical for best analytical performance. Recommended are N5270220 (Circulator Accy-120V) or N5370221 (Circulator Accy-240V).

## Cooling Accessory specifications required:

Temperature control: ≤ 0.25 °C

Flow rate 0.5-3 l/min

## Environmental Requirements:

The TGA 8000 is adversely affected by static electricity and vibrations. It is designed to function properly in an environment having the following specifications:

### Laboratory Environment:

For optimal performance: 15 °C to 35 °C ambient.  
Recommended is 10 °C to 40 °C.

Storage and shipment: -20 °C to 60 °C.

Humidity (storage and operation): 20% RH to 80% RH non-condensing

Altitude: -400 to 2,000 meters

Clean and dust-free environment needed.

As the TGA 8000 incorporates a very sensitive ultra-microbalance, a vibration-free bench is recommended. It is designed for indoor use only on a level work surface, located away from doorways, other heavy traffic areas and drafts.

It is the responsibility of the customer to provide adequate ventilation of the exhaust products of decomposition.

Water Circulator (if applicable) requires adequate air flow. A minimum of 6" is required between the unit and the surrounding area.

If static electricity is expected to be an environmental issue an optional "Static Discharge Kit" (N5370185) should be ordered.

## Safety Requirements:

### Gas Cylinders and Gas Delivery Lines:

Lock down straps should be present on all gas cylinders.

### Ventilation:

Do not operate the Thermogravimetric Analyzer in an enclosed environment without adequate ventilation. An exhaust vent located near the exhaust at the rear of the analyzer is recommended.

## PC Configuration:

Due to numerous differences in PC hardware, PerkinElmer cannot guarantee that our software will run on a customer-supplied computer.

PerkinElmer installation of a customer-supplied computer is available for an additional fee.

PerkinElmer is not responsible for problems caused by unspecified system components, software, and/or accessories. A maximum of one hour is allowed for installation of a computer and software of a non-PerkinElmer supplied computer. The additional time it takes to verify this type of problem is billable at the current service rate. It is advisable the customer's IT support be available as needed.

## Software Requirements:

Compatible Operating Systems are Win7 Enterprise 32/64

## Included with the instrument:

A USB 2.0 cable for the communication between computer and TGA 8000. A CD with the Calibration and Data files for the TGA 8000.

*NOTE: For Hyphenation, the FT-IR TimeBase Software requires Win7 32.*

## Installation Overview:

On receipt of the equipment, the customer is to inspect the packaging for physical damage. If damage is present the shipping container should be opened to verify no physical damage to the instrument has occurred and the customer must notify the shipper immediately.

*NOTE: Unpacking will only be performed by approved perkin elmer personnel and contents inventoried.*

### Physical Installation: (Instrument Only)

The physical installation will vary based on system configuration.

### Physical Installation: (Accessories)

as required.

### Installation Test Standards:

A PerkinElmer representative will test the instrument in order to ensure that its functionality is verified for temperature and weight measurements. Should further testing be required for an optional operation qualification, an IQOQ is available at an additional charge.

## Miscellaneous:

### Operation Near Ambient Temperature:

The TGA 8000 can be configured with a water circulator and cooling jacket furnace tube.

Using a cooling kit, the TGA 8000 can be cooled with a tap water or a water circulating system (i.e. PolyScience Chiller). Tap water configuration requires a drain. Both must be located conveniently near the TGA 8000.

### Operation with Hyphenated Techniques:

For more information on site readiness on these configurations, please contact your local PerkinElmer representative.

### Operation in Static Prone Labs:

An optional Static Discharge Kit (N5370185) is available.

### Analysis of Volatile Materials:

An optional AccuPik Accessory is available for use with the autosampler, where a sealed pan is punctured just prior to loading.

### Sample Preparation:

All reference materials required for installation functionality tests are shipped in the instrument start-up kit.

### If IQ/OQ Validation is Required for this Instrument:

Please contact your PerkinElmer Service Representative.

## Miscellaneous Accessories and Spares

Part Number	Description
N5321004	Furnace
N5320150	Sample Thermocouple
N5370459	Furnace Tube
03191628	Platinum Furnace Shield
N5376521	Spring for TGA Furnace Tube
N5320119	Quartz Furnace Tube Insert
N5376522	Plate for TGA Furnace Tube
N5370466	Magnet, Curie Point
N5370185	Static Discharge Kit For use where heavy static condition is expected. Includes Conductive Furnace Tube (N5370472), O-Ring (N5191555), and grease (09908777).
N5320131	Nichrome Hangdown Wire Kit Includes 5 hangers.
N5320140	Quartz Hangdown Wire Kit Includes 5 hangers.
N5376622	Hangdown Wire Alignment Tool
N5320102	Platinum Sample Pan Kit (2 pans) Includes 2 pans with hooks.
N5370562	Platinum Sample Pan Kit (5 pans) Includes 5 pans with hooks.
N5370195	Platinum Sample Pan Kit (25 pans) Includes 25 pans with hooks.-
N5320103	Ceramic Sample Pan Kit (5 Pans) Includes 5 pans with hooks.
N5370464	Ceramic Sample Pan Kit (10 Pans) Includes 10 pans with hooks.
N5320133	Aluminum Oxide Powder (1 oz.)
N5370492	Aluminum Liners for Ceramic Pans (400 Liners) Pkg. of 400.
N5370495	Stainless Steel Liners for Ceramic Pans (400 Liners) Pkg. of 400.
N5190788	Aluminum Vapor Pressure Pan Kit Includes 100 volatile pans and pierced covers (50 micron diameter hole centered in the cover).
N5370550	AccuPik Aluminum TGA Pans and Covers (400 pans and covers) Pkg. of 400.

## Balance Spares and Accessories

Part Number	Description
N5320128	Balance Tare Weight, Small
N5320129	Balance Tare Weight, Medium
N5320130	Balance Tare Weight, Large

## Sample Handling Accessories

Part Number	Description
N5321003	Autosampler Sample Tray 48 position removable sample tray for the TGA 8000 autosampler.
09908138	Forceps (Hooked, non-magnetic)
09908400	Forceps (Straight, non-magnetic)
02401286	Micro Spatula
02401296	Brush Pkg. of 12.

## Calibration Supplies

Part Number	Description
N5320201	Calibration Reference Materials Includes Alumel, Nickel, Perkalloy, Iron, and Cobalt.
N5320110	Alumel Reference Material Three 2 in. pieces. (154 °C)
N5320113	Nickel Reference Material Three 2 in. pieces. (354 °C)
N5320114	Perkalloy Reference Material Three 2 in. pieces. (596 °C)
N5320112	Iron Reference Material Three 2 in. pieces. (780 °C)
09988019	Hisat-50 Reference Material Fifty chips. (1000 °C)
N5320111	Cobalt Reference Material Three pieces. (1121 °C)
09200501	ISO 17025 Compliant Calibration Weight, 100 mg
N5370466	Magnet for Temperature Calibration White Teflon with 4 magnet inserts.

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