micromeritics®

TriStar® II Plus

Preinstallation Instructions and Checklist

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Overview

This document describes how to prepare your site for installation of the TriStar II Plus. The document is organized into two parts:

Part 1 - Preinstallation Instructions contain information that will help you analyze your site and answer the questions in the checklist.

Part 2 - Preinstallation Checklist contains questions about instrument location and your laboratory environment, equipment, and supplies. For each question, check **Yes** if the condition applies to your laboratory or **No** if it does not. When you have completed the checklist, return it to Micromeritics. Refer to **Commitment Statement/Signature**, page **9**.

Conventions

This manual uses the following icons to identify notes of importance and cautions.



Notes contain important information pertinent to the subject matter.



Cautions contain information to help prevent actions that may damage the analyzer or components.

Part 1. Preinstallation Instructions

Unpacking and Inspection

When the instrument is received, unpack and inspect the contents of the shipping carton(s). Use the packing list to verify that all products, accessories, software, and documentation are received intact and in the correct quantity. The shipping carton(s) and contents should be inspected within a couple of days of receipt in the event damage or loss has occurred. See **Shipping Damage** below.

Shipping Damage

If equipment is damaged or lost in transit, you are required to make note of the damage or loss on the freight bill. The freight carrier, not Micromeritics, is responsible for all damage or loss occurring during shipment. If you discover damage or loss of equipment during shipment, report the condition to the carrier immediately. Insurance claims **MUST** be made with the freight carrier, **NOT** Micromeritics.

DO:

- Keep all software, manuals, and accessories with the instrument.
- Keep all boxes and shipping cartons until the installation is complete.
- Report any shipping damage immediately to the carrier and follow their directions.
- Report missing or wrong parts to Micromeritics, in addition to any shipping damage, only after filing a claim with the Carrier.

DO NOT:

- Ask Micromeritics to file a claim for shipping damage.
- Discard shipping boxes and containers until installation is complete.

Instrument Space

An unobstructed lab work space that will accommodate the specifications below is needed for the TriStar II Plus system.



TriStar II Plus

Height: 74 cm (29 in.)
Width: 40 cm (16 in.)
Depth: 51 cm (20 in.)
Weight: 37 kg (82 lbs.)

Degas Unit
Width: Approx 50 cm (20 in.)
Depth: Approx 40 cm (16 in.)

Computer and Printer:
Width: Approx. 96.5 cm (38 in.)

Gas Supply
1 square foot (0.1 square meter) for each gas bottle needed for installation. For standard installation, the bottles must be within 6 ft. (1.8 m) of the instrument.

External Vacuum Pump

Height: Approx. 16.51 cm (6.5 in.)
Width: Approx. 15.25 cm (6 in.)
Length: Approx. 30.48 cm (12 in.)

Installation Configuration

Standard installation, included in the purchase of the instrument, requires the use of 1/8 in. (0.3175 cm) copper gas supply lines, located in the instrument accessories kit.

A nonstandard installation will be created if another gas supply line is used or if the gas bottles cannot be placed within 6 feet (1.83 cm) of the analyzer. There may be additional costs associated with a non-standard installation. Please contact the Service Manager to discuss a nonstandard installation.

Environmental Factors

Power

The TriStar II Plus is designed to operate with a universal input power supply (100 / 115 / 230 VAC) at 50 or 60 Hz. Noise-free power of the correct voltage and frequency, with a safety earth ground, should be available through a standard wall receptacle. The power outlet should be able to supply 15 amps @ 100 or 115 VAC ± 10% or 7.5 amps @ 230 VAC ±10%. These requirements can be checked by using a Circuit Analyzer (available at most hardware or electronic supply houses) or a multimeter. There should also be sufficient outlets for the computer, dry roughing pump, monitor, and printer and any other peripheral devices.

DO:

- Install the instrument and peripheral devices on their own, dedicated power line.

DO NOT:

- Place other devices on the same power line; for example, motors, generators, or ovens**.**

Temperature and Humidity

Temperature and humidity must be controlled to within the following:

Temperature: 15 to 35 °C operating; 0 to 50 °C non-operating

Humidity: 20 to 80% relative, non-condensing

DO NOT:

- Allow room temperature or humidity to exceed limits.
- Install the instrument where it is exposed to direct sunlight.
- Locate the instrument near air conditioning or heating vents.

Hazards & Precautions

Inform Micromeritics of any on-site conditions that may present hazards to Micromeritics employees or equipment. Advise Micromeritics of any precautions that need to be taken.

Safety Measures

Inform Micromeritics of any safety equipment, requirements, or procedures necessary for Micromeritics employees to enter and install the TriStar II Plus system at your facility.

Computer System

We recommend that you purchase the computer to be used with your analyzer from Micromeritics. We thoroughly test Microsoft Windows® operating systems with our application and offer technical support and maintenance for the computers we provide. For instruments not installed by Micromeritics, please observe the following notes.



The labor and expense costs associated with delays traceable to a computer system not purchased from Micromeritics are not part of a standard installation.



Micromeritics is not responsible for providing assistance for the connection to a company network or LIMMS.

The computer system to be used with the analyzer must meet the following *minimum* requirements:

- Windows 7 Professional or higher operating system *
- 10 Base T Ethernet port (if connecting multiple units) **
- CD-ROM drive

* Windows 7 Professional or higher is recommended for the best user experience.
** If the computer is to be connected to a network, two Ethernet ports are required.

An Ethernet switch will be needed if more than one Ethernet based instrument will be connected to the same computer.

During installation, Administrator rights will be required to make changes to Ethernet settings. If access cannot be granted to the Service Engineer, an IT representative must be readily available to make these changes.

Gas Supply

Gas Bottles and Gas Supply Lines

See **Gas Supply**, page **12** for the analytical gases needed during installation. Gas bottles must be placed within 6 feet (1.8 m) of the instrument's rear or left side.

Gas lines not supplied by Micromeritics will not be installed by Micromeritics Service Personnel.

DO:

- Ensure purity of gases.
- Use the 1/8 in. (0.3175 cm) x 6 ft. (1.8 m) copper gas lines supplied in the instrument accessories kit. Stainless steel gas lines are available from Micromeritics for use with gases that are not compatible

with copper. Copper or stainless steel gas lines are also available in 20 ft. (6 m) lengths from Micromeritics.

Gas supply lines made of materials other than copper or stainless steel may cause operational problems.

DO NOT:

- Use gas bottles with less than 200 psig (1378.9 kPag) pressure.
- Use any other gas lines to connect the gas supply to the instrument.
- Use gas purifiers; they can cause operational problems.

Gas Supply Hardware

We recommend that the gas regulators to be used with the TriStar II Plus analyzer from Micromeritics be purchased from Micromeritics. The regulators Micromeritics provides have been carefully evaluated and tested to provide superior performance.



If you choose to use regulators from a source other than Micromeritics, please keep in mind that many commercially available gas regulators lack key features which are required for gas adsorption measurements. These four vital criteria must be met:

- **Cleanliness**. Clean regulators designed specifically for high-vacuum service are required. Other regulators often contain elastomeric material or oils which can contaminate the gas.

- **High Stability**. Excess pressure at the gas inlet ports to the instrument can interfere with accurate gas dosing and flow rates. The combined change in the outlet pressure from the gas regulator, as the gas cylinder pressure decreases or as the flow rate stops, should not change more than 5 psig (34.4 kPag) from the selected setting. When the instrument is idle for an extended period of time, such as 8 to 10 hours, this same stability of gas delivery pressures should be achieved.

- **Range of Pressure.** The regulator output must operate from 0 to 30 psig (207 kPag).

- **Suitable Subassemblies**. The regulator must have a shut-off or outlet isolation valve compatible with 1/8 in. (0.3175 cm) or 1/4 in. (0.6 cm) Swagelok® compression fittings.



To purchase regulators from Micromeritics for your instrument, contact your local Micromeritics Sales Representative.

Regulator Expansion Kits

It is sometimes beneficial to attach more than one instrument, and/or accessory device, or different inlet ports to a single gas supply. Any time this is done, it is critically important that there be a means of isolating, or shutting-off, each device that is attached to the gas supply regulator. Micromeritics recommends the use of a vacuum rated shut-off/isolation valve for this purpose.

This shut-off/isolation valve is required in order to prevent problems when changing gas cylinders or servicing any of the devices attached to the gas supply.

If you anticipate the need to attach more than one inlet or one instrument and/or accessory device, you must acquire one or more of the following regulator expansion kits:

- 004/33601/00 – Regulator Expansion Kit (2 outlet, 1000 psi maximum) – This kit contains one "T fitting," two vacuum rated shut-off valves, and other necessary hardware. This expansion kit allows you to provide gas to two inlets.

- 004/33601/01 - Regulator Expansion Kit (3 outlet, 1000 psi maximum) – This kit contains one "Cross fitting," three vacuum rated shut-off valves, and other necessary hardware. This expansion kit allows you to provide gas to three inlets.

Laboratory Equipment and Supplies

Liquid Nitrogen

Ensure liquid nitrogen is available in sufficient quantities. There should be 3 to 10 liters as a minimum requirement for starting an analysis.

DO:

- Ensure an adequate supply of liquid nitrogen.

DO NOT:

- Use liquid nitrogen which is bluish (a sign of oxygen contamination) or is not clear.

Analysis Equipment and Supplies

Since the analysis results are expressed in units of surface area per gram of sample, the true mass of the sample must be known. This requires an analytical balance with the capacity of 100 grams measurement and 1 mg readability.

In order to obtain accurate analysis results, the sample tubes must be clean. The following items are suggested for cleaning sample tubes:

- Sink
- Small plastic tub for detergent solution
- Alconox or similar laboratory detergent
- Drying oven
- Ultrasonic bath
- Isopropyl Alcohol

Application Related Issues

To ensure a thorough installation, it will be helpful for Micromeritics to know which types of samples you will be testing. If possible, please list those types in the section **Application Related Issues**, page **13**.

Please advise us if your samples require any pretreatment. If required, do you have the proper equipment, such as a vacuum oven or furnace, to pretreat your samples?

Micromeritics offers application assistance through our materials analysis laboratory (Micromeritics Analytical Services at 770-662-3630).

Gases for Instrument Test

To verify proper instrument operation and to train your instrument users, Micromeritics representatives will analyze the reference material provided in the instrument accessories.

The gases listed below are required in order to analyze the reference materials. If these gases are not available, Micromeritics representatives will only be able to perform a limited number of instrument tests during installation and operator training.

(CGA 580)	N_2	99.999%
(CGA 580)	He	99.999%

Degas Unit

It is highly recommended that a degas unit be used to ensure that proper degassing of all sample types can be performed. Using a degas unit avoids moisture in the analyzer.

Personnel Security Clearance

If security clearances, insurance certificates, or any other special arrangements are required for Micromeritics employees to enter your facility, please explain in the section **Personnel Security Clearance**, page **14**. Please inform Micromeritics how much advance notice you require to obtain clearance.

Projected Installation Date

After reading the site preparation requirements in this document, enter a date your site will be prepared and a date for installation. Enter the date in the section **Projected Installation Date**, page **14**. After you return the checklist to Micromeritics, your Micromeritics representative will contact you to confirm an installation date.

Commitment Statement/Signature

Read this document carefully and complete the checklist. If you are unsure about any part of this document or the checklist, please contact the Micromeritics Service Department for clarification. When you have completed the Preinstallation Checklist, date it, and send it to Micromeritics as described below.

Within the United States:

FAX checklist to:

Service Operations Manager
(770) 662-3604

OR

Mail checklist to:

Micromeritics Corporation
4356 Communications Drive
Norcross, Georgia 30093
Attn: Service Operations Manager

Part 2. Preinstallation Checklist

Unpacking and Inspection

Unpacking and Inspection	Yes	No
Have the shipping cartons been unpacked and their contents inspected?	___	___
Was there any shipping damage? If **Yes**, has a claim been filed with the freight carrier?	___ ___	___ ___
Were all items listed on the packing list received? If **No**, has Micromeritics been notified?	___ ___	___ ___

Instrument Space

Instrument Space	Yes	No
Can the lab area where the instrument and computer will be placed accommodate the combined dimensions of the instrument, accessories, computer and printer?	___	___

Installation Configuration

Instrument Location	Yes	No
Will 1/8 in. (0.375 cm) copper gas supply lines (standard installation; supplied with the instrument) be used?	___	___
Will gas supply bottles be available within 6 feet (1.83 m) of the left side of the instrument (standard installation)?	___ ___	___ ___

Environmental Factors

Item	Yes	No
Is power available with the correct voltage and frequency, and a safety earth ground?	___	___
Are temperature and humidity controlled within specifications?	___	___
Are hazards present or precautions necessary in area of installation? If **Yes**, please explain_____ _____	___	___
Are safety measures required? If **Yes**, please explain_____ _____	___	___

Computer System

Instrument and Accessories	Yes	No
Was the computer purchased from Micromeritics? If **NO**, does the computer meet Micromeritics' minimum requirements?	___ ___	___ ___
Is the computer going to be connected to a network? If **Yes**, will an Ethernet switch be available during the installation?	___ ___	___ ___
Will other Ethernet based instruments be connected to this computer? If **Yes**, will an Ethernet switch be available during the installation?	___ ___	___ ___
Will Service Engineer have Administrator rights to the computer? If **No**, will an IT representative be readily available?	___ ___	___ ___

Gas Supply

Item	Yes	No
Are gas cylinders located within 6 feet (1.83 m) of the area where the instrument will be installed?	___ ___	___ ___
Were gas regulators purchased from Micromeritics? If **NO**, do your gas regulators meet Micromeritics' specifications?	___ ___	___ ___
Have you considered purchasing one or more Regulator Expansion Kits?	___ ___	___ ___
These gases are required. The installation will not be scheduled until these gases are available: (CGA 580) N_2 99.999% (CGA 580) He 99.999%	 ___ ___	 ___ ___

Degas Unit

Item	Yes	No
Which degas unit did you purchase? SmartPrep VacPrep FlowPrep	 ___ ___ ___	 ___ ___ ___

Laboratory Equipment and Supplies

Item	Yes	No
Are sufficient quantities of liquid nitrogen available?	___	___
Is isopropyl alcohol available in sufficient quantities?	___	___

Application Related Issues

Application Issue	Yes	No
What types of samples will you be testing? _____ _____ _____		
Will these samples require pretreatment?	___	___
Will you require any application assistance from Micromeritics Analytical Services?	___	___

Personnel Security Clearance

Security Clearance	Yes	No
Are there any special arrangements required concerning security clearance? If **Yes**, please explain in detail _____ _____ _____ _____	___	___

Projected Installation Date

When would installation be most convenient? Date: _____/_____/_____

(This is not a commitment for a specific installation date.)

Commitment Statement/Signature

I have read this document and understand my responsibilities regarding preparations for the installation of our instrumentation. I believe this site is ready for the TriStar II Plus Analyzer to be installed.

SIGNATURE: _____

NAME (Printed): _____

TITLE (Printed): _____

COMPANY: _____

CITY, STATE and ZIP: _____

PHONE NUMBER: _____

FAX NUMBER: _____

E-MAIL: _____

DATE: _____

INSTRUMENT MODEL: _____ SERIAL NUMBER:_____