Agilent

Agilent 6000 Series LC/MS

Safety Guide

This guide contains information about safety, conformity and standards for your Agilent 6000 Series LC/MS.

WARNING

Always wear appropriate protection, including eye protection, lab coat, and gloves, when working with solvents and chemicals or when working with unassembled parts.

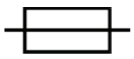
Safety

Symbols on Instruments

Electrical symbols

The following table describes the electrical symbols that can be displayed on the LC/MS instrument.

Table 1. Electrical symbols

Symbol	Description
	Indicates a protective earth terminal. *Indique une borne de terre de protection.*
	Circuit breaker. *Disjoncteur.*
	Alternating current *Courant alternatif*
	Fuse *Fusible*

Safety symbols

The following table describes the safety symbols that can be displayed on the LC/MS instrument. Each symbol appears by itself or with text that explains the relevant hazard. These safety symbols can also appear next to DANGER, WARNING, or CAUTION.

Table 2. Safety symbols

Symbol	Description
	The apparatus is marked with this symbol when the user should refer to the instruction manual in order to protect against harm to the operator and to protect the apparatus against damage. *L'appareil est marqué avec ce symbole lorsque l'utilisateur doit se référer au manuel d'instruction afin de protéger contre les atteintes à l'opérateur et pour protéger l'appareil contre les dommages.*
	Indicates dangerous voltages. *Indique des tensions dangereuses.*
	The apparatus is marked with this symbol when hot surfaces are accessible and the user should not touch them when heated up. *L'appareil est marqué avec ce symbole lorsque les surfaces chaudes sont accessibles et que l'utilisateur ne doit pas les toucher lorsqu'elles sont chaudes.*
	Electrostatic discharge (ESD) hazard to equipment. *Risque de décharge électrique à l'équipement*
	Explosion hazard. *Risque d'explosion*

Table 2. Safety symbols (continued)

Symbol	Description
	Do not operate the instrument in the presence of hydrogen or any other flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard. *Ne pas utiliser l'instrument en présence de gaz ou de vapeurs inflammables. L'utilisation de tout instrument électrique dans un tel environnement constitue un danger certain.*
	Do not discard this electrical/electronic product in domestic household waste. *Ne jetez pas ce produit électrique / électronique avec les ordures ménagères.*
	Disconnect main plug from electrical outlet prior to fuse replacement. *Débranchez la prise principale de la prise électrique avant de remplacer le fusible.*
	Two live circuits. Disconnect both power cords before maintenance. *Deux circuits sous tension. Débranchez les deux cordons d'alimentation avant l'entretien.*
	Biological risks *Dangers biologiques*

General Instrument Safety

WARNING **PHYSICAL INJURY HAZARD: Use the LC/MS instrument only as specified in the user instructions. Using the system in a manner not specified by Agilent Technologies can result in personal injury or damage to the instrument.**

Moving or lifting the system

WARNING **PHYSICAL INJURY HAZARD: The LC/MS instrument is heavy. The 6100 series LC/MS instruments require at least two people to lift the instrument. The 6200, 6400, and 6500 series LC/MS instrumentsK6460 mass spectrometer requires at least four people to lift. Check your local regulations for the maximum weight that each person can lift.**

Operating the instrument

Before you operate the instrument, make sure that you have:

- Been given instructions on general safety practices for laboratory and specific safety practices for the instrument.
- Read and understood all material safety data sheets (MSDS) for chemicals handled.

Physical Hazard Safety

Solvents

WARNING

PHYSICAL INJURY HAZARD: Always wear appropriate protection, including eye protection and gloves, when working with solvents and chemicals. Refer to the applicable MSDS for more information about the materials you are working with.

Electrical safety

WARNING

When the LC/MS instrument is plugged into a power source, even if the power switch is off, dangerous voltages can exist:

- **In the wiring between the LC/MS instrument power cord and the AC power supply.**
- **In the AC power supply**
- **In the wiring from the AC power supply to the power switch.**

WARNING

Never remove a cover unless specifically instructed to do so. With the power switch on, potentially dangerous voltages can exist:

- **On all electronics boards in the instrument.**
- **In the internal wires and cables connected to these boards.**
- **In the wires for any heater.**

CAUTION

The printed circuit (PC) boards in the LC/MS instrument can be damaged by electrostatic discharge. Do not touch any of the boards unless absolutely necessary. If you must handle the PC boards, wear a grounded wrist strap and take other anti-static precautions. Wear a grounded wrist strap any time you must remove the LC/MS instrument covers.

WARNING

Severe electrical shock can result from operating the LC/MS instrument without the correct Agilent power cords in place.

Grounding circuit continuity is required for the safe operation of equipment.

Use properly configured and approved line cords for the voltage supply in your facility. Refer to the Site Prep Guide for details.

WARNING If the power cord insulation is damaged, frayed, or worn, replace the cord. Contact your Agilent representative.

WARNING Plug the LC/MS instrument AC input power cords into properly grounded receptacles with adequate current capacity. The branch circuit over-current protection Circuit Breakers protecting the building receptacles must be rated no more than 20A.

WARNING Be sure that the LC/MS main supply cable is routed in such a way as to minimize the risk of a tripping hazard. Agilent Technologies recommends the use of mechanical protection, such as a rubberized cable guard on the floor to cover and protect the main supply cable.

WARNING Make sure that the point at which the detachable power cords are connected to the LC/MS instrument is clear from clutter and that it is accessible at all times.

WARNING Do not interrupt the protective conductor inside or outside the LC/MS system or disconnect the protective earth terminal. Such actions create a shock hazard for the operator and can damage the instrument.

WARNING The use of incorrect or makeshift fuses or the short-circuiting of fuse holders creates a shock hazard for the operator and can damage the instrument. Replace fuses only with fuses of identical current rating and type. Refer to the Maintenance Guide for more information.

WARNING Excessive fluctuations in the line voltage can create a shock hazard and can damage the instrument. This equipment must be installed in a Category II environment as defined in IEC 664.

For all instruments, the supply voltage must not fluctuate more that ±10%.

For any instrument with an Agilent Jet Stream source, the line voltage must not fluctuate more than +10/-5% from the rated voltage.

Temperature safety

WARNING

Some parts of the LC/MS instrument operate at temperatures high enough to cause serious burns. Always cool heated parts of the LC/MS down to room temperature before you work on them.

To cool the instrument faster, set the heated zone to room temperature. Turn the zone off after it has reached the set point.

If you must do maintenance work on a hot part, use a wrench and wear gloves.

Drying-out Process

WARNING

Certain types of ion sources contain cartridge heaters. After a long period of transport or storage in humid conditions, equipment could fail to meet the safety requirements of the IEC 61010-2-010 standard. If this is the case, the pumpdown process (typically 11 hours) specified in the Installation Guide also serves as the drying-out process. After the pumpdown process, the equipment will return to normal conditions. Please be aware that the equipment cannot be assumed to meet all of the safety requirements of this standard during the drying-out process.

General Chemical Safety

WARNING

CHEMICAL HAZARD: Before handling any chemicals, refer to the Material Safety Data Sheet (MSDS) provided by the manufacturer, and observe all relevant precautions.

To minimize the hazards of chemicals:

- Read and understand the MSDS provided by the manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If either of those occur, follow the cleanup procedures from the manufacturer, as recommended in the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Chemical Waste Safety

WARNING **CHEMICAL WASTE HAZARD: Wastes produced by the LC/MS System are potentially hazardous and can cause injury, illness, or death. Refer to Material Safety Data Sheets and local regulations for handling and disposal.**

WARNING **CHEMICAL WASTE HAZARD: The iFunnel pump, foreline pump, and source exhaust contain traces of the chemicals that you are analyzing. The exhaust products can be toxic. Vent the pump and source exhaust outside your laboratory or into a fume hood. Make sure to comply with all local environmental regulations.**

To minimize the hazards of chemical waste:

- Read and understand the MSDS provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Provide primary and secondary waste containers. Both containers must be compatible with the waste material and meet federal, state/provincial, and local requirements for container storage.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open.
- Handle chemical wastes in a fume hood.
- After emptying a waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state / provincial, or national environmental and health regulations.
- Ensure that the LC/MS instrument waste is stored, transferred, transported, and disposed of according to all local, state / provincial, and/or national regulations.

Biohazard Safety

WARNING

If pathogenic, toxic, or radioactive samples are intended to be used in this instrument, it is the responsibility of the user to ensure that all necessary safety regulations, guidelines, precautions and practices are adhered to accordingly. This includes also the handling of genetically modified organisms. Ask your laboratory safety officer to advise you about the level of containment required for your application and about proper decontamination or sterilization procedures to follow if fluids escape from containers.

To minimize hazards of biological material:

- Observe all cautionary information printed on the original solution containers prior to their use.
- Because leaks, spills, or loss of sample can generate aerosols, observe proper safety precautions.
- Spray chamber covers are not designed as bioseals for aerosol or liquid containment.
- Handle body fluids with care because they can transmit disease. No known test offers complete assurance that they are free of micro-organisms. Some of the most virulent - Hepatitis (B and C) and HIV (I-V) viruses, atypical mycobacteria, and certain systemic fungi - further emphasize the need for aerosol protection.
- Always follow local state and federal biohazard handling regulation when disposing of biohazardous waste material.
- Handle all infectious samples according to good laboratory procedures and methods to prevent spread of disease.
- Dispose of all waste solutions and products according to appropriate environmental health and safety guidelines.

Conformity and Standards

The Agilent 6000 Series LC/MS are assigned the following IEC (International Electro-technical Commission) classifications:

- Equipment Class: I (Laboratory Equipment)
- Installation Category: II
- Pollution Degree: 2

This unit has been designed and tested in accordance with recognized safety standards and is designed for use indoors. *If the instrument is used in a manner not specified by Agilent Technologies, the protections provided by the instrument may be impaired.*

Safety and Regulatory Certifications

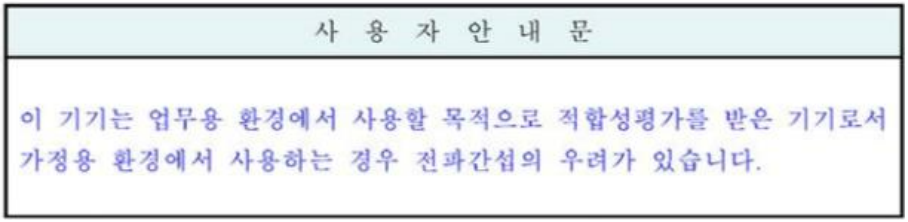
The Agilent 6000 Series LC/MS conforms to applicable editions and versions of the following safety standards:

- Canadian Standards Association (CSA): CAN/CSA–C22.2 No. 61010–1, CAN/CSA-C22.2 No. 61010-2-010, CAN/CSA-C22.2 No. 61010-2-101 (IVD devices only)
- CSA/Nationally Recognized Test Laboratory (NRTL): UL 61010–1:2005
- International Electrotechnical Commission (IEC): IEC61010–1, 61010-2-010, 61010-2-101 (IVD devices only)
- EuroNorm (EN): EN61010–1, 61010-2-010, 61010-2-101 (IVD devices only)

The Agilent 6000 Series LC/MS conforms to the following regulations on Electromagnetic Compatibility (EMC) and Radio Frequency Interference (RFI):

- CISPR 11/EN 55011: Group 1, Class A
- IEC/EN 61326-1, IEC/EN 61326-2-6 (IVD devices only)
- AUS/NZ CISPR 11
- Canada ICES-001(A) (Cet appareil ISM est conforme a la norme NMB—001(A) du Canada.)

- Class A EMC declaration South Korea: This equipment has been evaluated for its suitability for use in a commercial environment. When used in a domestic environment, there is a risk of radio interference.



The Agilent 6000 Series LC/MS is designed and manufactured under a quality system registered to ISO 900113485.

Electromagnetic Compatibility

Operation of the mass spectrometer is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

If the mass spectrometer does cause harmful interference to other equipment, which can be determined by turning the mass spectrometer off and on, try one or more of the following measures:

1. Relocate the susceptible equipment.
2. Move the mass spectrometer away from the susceptible equipment.
3. Plug the devices into different electrical outlets, so that the devices are on separate electrical circuits.
4. Make sure that all peripheral equipment connected to the mass spectrometer are also certified.
5. Make sure that appropriate cables are used to connect the mass spectrometer to peripheral equipment.
6. Consult your equipment dealer, Agilent Technologies, or an experienced technician for assistance.

Changes or modifications not expressly approved by Agilent Technologies could void the user's authority to operate the equipment.

Sound Emission Declaration

Sound pressure

Sound pressure Lp < 70 dB

Schalldruckpegel

Schalldruckpegel Lp < 70 dB

Environmental Conditions

Equipment Class	Class I Laboratory Equipment
Pollution Degree	2
Installation Category	II
Environment	Indoor Use
Altitude	For 6545XT only, not to exceed 2000 m For all other LC/MS models, not to exceed 3000 m
Electrical supply	200 - 240 V AC, 50/60 Hz, maximum 2850 VA
Mains supply voltage	Fluctuations not to exceed 10% of nominal supply voltage. For instruments with an Agilent Jet Stream source, fluctuations should not exceed +10/-5% from the rated voltage.
Operating Temperature	15 to 35°C (59 to 95°F)
Humidity	< 85% RH at 35°C

In This Guide

This guide contains safety and regulatory information for your Agilent 6000 Series LC/MS system.

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