

# Safety

# D

Anjali, Colin, Safety, Mark Sweeny, Compliance Engineering, Chemical Compliance and Risk Management, Environmental, Health and Safety, and R&D, Global Compliance Engineering (GCE) please review this chapter carefully. There are some outstanding issue resolutions or confirmations needed by you.

Please review the technical content for accuracy. Ignore text-formatting issues (pictures will be updated).

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# Instrumentation safety

## Symbols on instruments

### Electrical symbols on instruments

The following table describes the electrical symbols that may be displayed on Applied Biosystems instruments.

Symbol	Description
	Indicates the <b>On</b> position of the main power switch. <a href="#">Reviewers: Per Hitachi: used for BRAKER. Where can I get the text?</a>
	Indicates the <b>Off</b> position of the main power switch. <a href="#">Reviewers: Per Hitachi: used for BRAKER. Where can I get the text?</a>
	Indicates a standby switch by which the instrument is switched on to the <b>Standby</b> condition. Hazardous voltage may be present if this switch is on standby. <a href="#">Reviewers: Per Hitachi: this symbol does not exist. Should we remove it?</a>
	Indicates the <b>On/Off</b> position of a push-push main power switch. <a href="#">Reviewers: Per Hitachi, we need a new symbol. This is used for the MAIN SWITCH. Should we remove it? If so, who can provide the new symbol?</a>
	Indicates a terminal that may be connected to the signal ground reference of another instrument. This is not a protected ground terminal.
	Indicates a protective grounding terminal that must be connected to earth ground before any other electrical connections are made to the instrument.
	Indicates a terminal that can receive or supply alternating current or voltage. <a href="#">Reviewers: Per Hitachi: used for POWER SUPPLY. Where can I get the text?</a>
	Indicates a terminal that can receive or supply alternating or direct current or voltage. <a href="#">Reviewers: Per Hitachi, we do not use this symbol. Should we remove it?</a> <a href="#">Reviewers: Per Hitachi, we need AC SHIMADZU LASER CONTROLLER. Where can I get the text? Where can I get the symbol?</a> <a href="#">Reviewers: Per Hitachi, we need LIGHT SWITCH symbol. Where can I get the text? Where can I get the symbol?</a>

### Safety symbols


The following table describes the safety symbols that may be displayed on Applied Biosystems instruments. Each symbol may appear by itself or with text that explains the relevant hazard (see “[Safety labels on instruments](#)” on page 289). These safety symbols may also appear next to DANGERS, WARNINGS, and CAUTIONS that occur in the text of this and other product-support documents.



Symbol	Description
	Indicates that you should consult the manual for further information and to proceed with appropriate caution.
	Indicates the presence of an electrical shock hazard and to proceed with appropriate caution.
	Indicates the presence of a hot surface or other high-temperature hazard and to proceed with appropriate caution.
	Indicates the presence of a laser inside the instrument and to proceed with appropriate caution.
	Indicates the presence of moving parts and to proceed with appropriate caution.
	Indicates the presence of a biological hazard and to proceed with appropriate caution.
	Indicates the presence of a radiological hazard and to proceed with appropriate caution.
	Indicates the presence of a slipping hazard and to proceed with appropriate caution.
	Indicates the presence of an ultraviolet light (in the instrument?) and to proceed with appropriate caution.
	Indicates the presence of sharp object and piercing injury and to proceed with appropriate caution. <b><u><a href="#">SAFETY: Review the definition.</a></u></b>

## Environmental symbols on instruments

The following symbol applies to all Applied Biosystems electrical and electronic products placed on the European market after August 13, 2005.

Symbol	Description
	<p><b>Do not dispose of this product as unsorted municipal waste.</b> Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of waste electrical and electronic equipment (WEEE).</p> <p><b>European Union customers:</b> Call your local Applied Biosystems Customer Service office for equipment pick-up and recycling. See <a href="http://www.appliedbiosystems.com">www.appliedbiosystems.com</a> for a list of customer service offices in the European Union.</p>

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## Safety labels on instruments

The AB 3500/3500xL Genetic Analyzer contains warnings at the locations shown below:

### Locations of laser warnings

**Note to WRITER:** Insert necessary figures. Scott's

## General instrument safety



**WARNING! PHYSICAL INJURY HAZARD.** Use this product only as specified in this document. Using this instrument in a manner not specified by Applied Biosystems may result in personal injury or damage to the instrument.



**WARNING! PHYSICAL INJURY HAZARD.** Using the instrument in a manner not specified by Applied Biosystems may result in personal injury or damage to the instrument.

### Moving and lifting the instrument



**CAUTION! PHYSICAL INJURY HAZARD.** The instrument is to be moved and positioned only by the personnel or vendor specified in the applicable site preparation guide. If you decide to lift or move the instrument after it has been installed, do not attempt to lift or move the instrument without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques. Improper lifting can cause painful and permanent back injury. Depending on the weight, moving or lifting an instrument may require two or more persons.

### Moving and lifting stand-alone computers and monitors



**WARNING!** Do not attempt to lift or move the computer or the monitor without the assistance of others. Depending on the weight of the computer and/or the monitor, moving them may require two or more people.

### Things to consider before lifting the computer and/or the monitor:

- Make sure that you have a secure, comfortable grip on the computer or the monitor when lifting.
- Make sure that the path from where the object is to where it is being moved is clear of obstructions.
- Do not lift an object and twist your torso at the same time.
- Keep your spine in a good neutral position while lifting with your legs.
- Participants should coordinate lift and move intentions with each other before lifting and carrying.
- Instead of lifting the object from the packing box, carefully tilt the box on its side and hold it stationary while someone slides the contents out of the box.

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## Operating the instrument

Ensure that anyone who operates the instrument has:

- Received instructions in both general safety practices for laboratories and specific safety practices for the instrument.
- Read and understood all applicable Material Safety Data Sheets (MSDSs). See [“About MSDSs” on page 301](#).

## Cleaning or decontaminating the instrument



**CAUTION!** Before using a cleaning or decontamination method other than those recommended by the manufacturer, verify with the manufacturer that the proposed method will not damage the equipment.

## Physical hazard safety

[Reviewers: Per Hitachi, no Ultraviolet or Compressed gas.](#)

## Moving parts

[SAFETY: Review the definition of the first WARNING.](#)



**WARNING! PHYSICAL INJURY HAZARD.** Moving parts can pierce. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing the instrument.



**WARNING! PHYSICAL INJURY HAZARD.** Moving parts can crush and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing the instrument.



**WARNING! PHYSICAL INJURY HAZARD.** Do not operate the instrument without the arm shield in place. Keep hands out of the deck area when the instrument is spotting.

## Solvents and pressurized fluids



**WARNING! PHYSICAL INJURY HAZARD.** Always wear eye protection when working with solvents or any pressurized fluids.



**WARNING! PHYSICAL INJURY HAZARD.** To avoid hazards associated with high-pressure fluids in polymeric tubing:

- Be aware that PEEK™ tubing is a polymeric material. Use caution when working with any polymer tubing that is under pressure.
- Always wear eye protection when near pressurized polymer tubing.
- Extinguish all nearby flames if you use flammable solvents.
- Do not use PEEK tubing that has been severely stressed or kinked.
- Do not use PEEK tubing with tetrahydrofuran or nitric and sulfuric acids.
- Be aware that methylene chloride and dimethyl sulfoxide

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cause PEEK tubing to swell and greatly reduce the rupture pressure of the tubing.

- Be aware that high solvent flow rates (~40 mL/min) may cause a static charge to build up on the surface of the tubing. Electrical sparks may result.

## Electrical safety



**WARNING! ELECTRICAL SHOCK HAZARD.** Severe electrical shock can result from operating the AB 3500/3500xL Genetic Analyzer without its instrument panels in place. Do not remove instrument panels. High-voltage contacts are exposed when instrument panels are removed from the instrument.

### Fuses

Jimmy: Does the instrument provides access to fuses that are external on the instrument and intended for user access. I saw a removable panel at the back of the instrument.



**WARNING! FIRE HAZARD.** Improper fuses or high-voltage supply can damage the instrument wiring system and cause a fire. Before turning on the instrument, verify that the fuses are properly installed and that the instrument voltage matches the power supply in your laboratory.



**WARNING! FIRE HAZARD.** For continued protection against the risk of fire, replace fuses only with fuses of the type and rating specified for the instrument.

### Power



**WARNING! ELECTRICAL HAZARD.** Grounding circuit continuity is required for the safe operation of equipment. Never operate equipment with the grounding conductor disconnected.



**WARNING! ELECTRICAL HAZARD.** Use properly configured and approved line cords for the voltage supply in your facility.



**WARNING! ELECTRICAL HAZARD.** Plug the system into a properly grounded receptacle with adequate current capacity.

### Overvoltage rating

Reviewers (Compliance Engineering): We need the classifications applicable to the instrument.

The AB 3500/3500xL Genetic Analyzer system has an installation (overvoltage) category of II, and is classified as portable equipment.

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## Laser safety

### Laser classification

The AB 3500/3500xL Genetic Analyzer uses a solid state laser. The laser specifications are Wave length 505nm, Output power 20mW. The LED specifications are Emitting color Natural White, Luminous Intensity 250 Cd. Under normal operating conditions, the instrument is categorized as a Class I laser product. When safety interlocks are disabled during certain servicing procedures, the laser can cause permanent eye damage, and, therefore, is classified under those conditions as a Class 3B laser.

### Laser safety requirements

To ensure safe laser operation:

- The system must be installed and maintained by an Applied Biosystems Technical Representative.
- All instrument panels must be in place on the instrument while the instrument is operating. When all panels are installed, there is no detectable radiation present. If any panel is removed when the laser is operating (during service with safety interlocks disabled), you may be exposed to laser emissions in excess of the Class Class 3B rating.
- Do not remove safety labels or disable safety interlocks.

### Additional laser safety information

Refer to the user documentation provided with the laser for additional information on government and industry safety regulations.

Also, note the laser warnings provided in [“Safety labels on instruments” on page 289](#).



**WARNING! LASER HAZARD.** Lasers can burn the retina, causing permanent blind spots. Never look directly into the laser beam. Remove jewelry and other items that can reflect the beam into your eyes. Do not remove the instrument top or front panels. Wear proper eye protection and post a laser warning sign at the entrance to the laboratory if the top or front panels are removed for service.



**WARNING! LASER BURN HAZARD.** An overheated laser can cause severe burns if it comes in contact with the skin. DO NOT operate the laser when it cannot be cooled by its cooling fan. Always wear appropriate laser safety goggles.

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## Bar code scanner laser safety

Jimmy: You mentioned that we have instruments both with or without scanner. Please advise.

### Laser classification

The bar code scanner included with the AB 3500/3500xL Genetic Analyzer is categorized as a Class 2 (II) laser.

### Laser safety requirements

Class 2 (II) lasers are low-power, visible-light lasers that can damage the eyes. Never look directly into the laser beam. The scanner is designed to prevent human access to harmful levels of laser light during normal operation, user maintenance, or during prescribed service operations.



**WARNING! LASER HAZARD.** Class 2 (II) lasers can cause damage to eyes. Avoid looking into a Class 2 (II) laser beam or pointing a Class 2 (II) laser beam into another person's eyes.

## Workstation safety

Correct ergonomic configuration of your workstation can reduce or prevent effects such as fatigue, pain, and strain. Minimize or eliminate these effects by configuring your workstation to promote neutral or relaxed working positions.



**CAUTION! MUSCULOSKELETAL AND REPETITIVE MOTION HAZARD.** These hazards are caused by potential risk factors that include but are not limited to repetitive motion, awkward posture, forceful exertion, holding static unhealthy positions, contact pressure, and other workstation environmental factors.

To minimize musculoskeletal and repetitive motion risks:

- Use equipment that comfortably supports you in neutral working positions and allows adequate accessibility to the keyboard, monitor, and mouse.
- Position the keyboard, mouse, and monitor to promote relaxed body and head postures.



## Safety and electromagnetic compatibility (EMC) standards

This section provides information on:

- U.S. and Canadian safety standards
- Canadian EMC standard
- European safety and EMC standards
- Australian EMC Standards

### U.S. and Canadian safety standards



The AB 3500/3500xL Genetic Analyzer has been tested to and complies with standard:

UL 61010-1/CSA C22.2 No. 61010-1, “Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements.”

UL 61010-2-010, “Particular Requirements for Laboratory Equipment for the Heating of Materials.”

The AB 3500/3500xL Genetic Analyzer has been tested to and complies with the “21 CFR, 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No.50, dated June 24, 2007, as applicable.”

**For the Reader/Writer unit in the Applied Biosystems 3500/3500xL Genetic Analyzer**

### FCC WARNING

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of this device.

Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

### NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Canadian EMC standard

This instrument has been tested to and complies with ICES-001, Issue 3: “Industrial, Scientific, and Medical Radio Frequency Generators.” Cet appareil numérique de la classe B est conforme à la norme NMB-001 du Canada.

### Canadian Department of Communications Industry Canada (IC) Notice

This device complies with RSS-Gen of IC Rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of this device.

## European safety and EMC standards



### Safety

This instrument meets European requirements for safety (Low Voltage Directive 2006/95/EC). This instrument has been tested to and complies with standards EN 61010-1:2001, “Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, Part 1: General Requirements.”

EN 61010-2-010, “Particular Requirements for Laboratory Equipment for the Heating of Materials.”

EN 61010-2-081, “Particular Requirements for Automatic and Semi-Automatic Laboratory Equipment for Analysis and Other Purposes.”

EN 60825-1, “Radiation Safety of Laser Products, Equipment Classification, Requirements, and User’s Guide.

### EMC

The Applied Biosystems 3500/3500xL Genetic Analyzer meets European requirements for emission and immunity (EMC Directive 2004/108/EC).

EN 61326-1:2006 “Electrical equipment for measurement, control and laboratory use- Part 1 General EMC requirements.” (Group 1, Class B)

The Applied Biosystems 3500/3500xL Genetic Analyzer has been tested to and complies with standard EN 61326-2-6, “Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements. Particular requirements, In vitro diagnostic (IVD) medical equipment.”

**For the Reader/Writer unit in the Applied Biosystems 3500/3500xL Genetic Analyzer**

### CE Notice (European Union)

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Marking by the symbol indicates compliance of this ASI4000-98-BS1 RFID R/W Module to the Electromagnetic Compatibility Directive and the Low Voltage Directive of the European Union. Such making is indicative that this RFID R/W Module meets the following technical standards:

- EN 300330 – “Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD).”
- EN 301489 – “Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services.”
- EN 60950 – “Safety of Information Technology Equipment.”

**Europe – CE  
declaration of  
conformity  
(Reader/Writer)**

EN 300 330-1 V1.5.1 (2006-04), EN 300 330-2 V1.3.1 (2006-04), EN 301 489-3 V1.4.1 (2002-08), EN 301 489-1 V1.6.1 (2005-09), EN 60950-1:2006

English Hereby, ART Technology Co., Ltd. declares that this ASI4000-98-BS1 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

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Français

[French]

Par la présente ART Technology Co., Ltd. déclare que l'appareil ASI4000-98-BS1 est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Deutsch

[German]

Hiermit erklärt ART Technology Co., Ltd. dass sich das Gerät ASI4000-98-BS1 in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.

Italiano

[Italian]

Con la presente ART Technology Co., Ltd. dichiara che questo ASI4000-98-BS1 è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Español

[Spanish]

Por medio de la presente ART Technology Co., Ltd. declara que el ASI4000-98-BS1 cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Português

[Portuguese]

ART Technology Co., Ltd. declara que este ASI4000-98-BS1 está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Suomi

[Finnish]

ART Technology Co., Ltd. Vakuuttaa täten että ASI4000-98-BS1 tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Nederlands

[Dutch]

Hierbij verklaart ART Technology Co., Ltd. dat het toestel ASI4000-98-BS1 in overeenstemming is met de essentiële eisen en de andere relevante

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Česky

[Czech]

ART Technology Co., Ltd. tímto prohlašuje, že tento ASI4000-98-BS1 je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

Dansk

[Danish]

Undertegnede ART Technology Co., Ltd. erklærer herved, at følgende udstyr ASI4000-98-BS1 overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Eesti

[Estonian]

Käesolevaga kinnitab ART Technology Co., Ltd. seadme ASI4000-98-BS1 vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Ελληνική

[Greek]

ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ ART Technology Co., Ltd. ΔΗΛΩΝΕΙ ΟΤΙ ASI4000-98-BS1 ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Latviski

[Latvian]

Ar šo ART Technology Co., Ltd. deklarē, ka ASI4000-98-BS1 atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.

Lietuvių

[Lithuanian]

Šiuo ART Technology Co., Ltd. deklaruojama, kad šis ASI4000-98-BS1 atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Malti

[Maltese]

Hawnhekk, ART Technology Co., Ltd. jiddikjara li dan ASI4000-98-BS1 jikkonforma mal-fid-Direttiva 1999/5/EC.

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Magyar

[Hungarian]

Alulírott, ART Technology Co., Ltd. nyilatkozom, hogy a ASI4000-98-BS1 megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.

Polski

[Polish]

Niniejszym ART Technology Co., Ltd. oświadcza, że ASI4000-98-BS1 jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.

Slovensko

[Slovenian]

ART Technology Co., Ltd. izjavlja, da je ta ASI4000-98-BS1 v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

Slovensky

[Slovak]

ART Technology Co., Ltd. týmto vyhlasuje, že ASI4000-98-BS1 spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

Svenska

[Swedish]

Härmed intygar ART Technology Co., Ltd. att denna ASI4000-98-BS1 står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Íslenska

[Icelandic]

Hér með lýsir ART Technology Co., Ltd. yfir því að ASI4000-98-BS1 er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.

Norsk

[Norwegian]

ART Technology Co., Ltd. erklærer herved at utstyret ASI4000-98-BS1 er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

## Australian EMC Standards



This instrument has been tested to and complies with standard AS/NZS 2064, “Limits and Methods Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radio-frequency Equipment.”



## Chemical safety

### General chemical safety

#### Chemical hazard warning



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



**WARNING! CHEMICAL HAZARD.** All chemicals in the instrument, including liquid in the lines, are potentially hazardous. Always determine what chemicals have been used in the instrument before changing reagents or instrument components. Wear appropriate eyewear, protective clothing, and gloves when working on the instrument.



**WARNING! CHEMICAL HAZARD.** Four-liter reagent and waste bottles can crack and leak. Each 4-liter bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.



**WARNING! CHEMICAL STORAGE HAZARD.** Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

#### Chemical safety guidelines

To minimize the hazards of chemicals:

- Read and understand the Material Safety Data Sheets (MSDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. (See [“About MSDSs” on page 301.](#))
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the MSDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer’s cleanup procedures as recommended in the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

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## MSDSs

**About MSDSs** Chemical manufacturers supply current Material Safety Data Sheets (MSDSs) with shipments of hazardous chemicals to new customers. They also provide MSDSs with the first shipment of a hazardous chemical to a customer after an MSDS has been updated. MSDSs provide the safety information you need to store, handle, transport, and dispose of the chemicals safely.

Each time you receive a new MSDS packaged with a hazardous chemical, be sure to replace the appropriate MSDS in your files.

**Obtaining MSDSs** The MSDS for any chemical supplied by Applied Biosystems is available to you free 24 hours a day. To obtain MSDSs:

1. Go to [www.appliedbiosystems.com](http://www.appliedbiosystems.com), click **Support**, then select **MSDS**.
2. In the Keyword Search field, enter the chemical name, product name, MSDS part number, or other information that appears in the MSDS of interest. Select the language of your choice, then click **Search**.
3. Find the document of interest, right-click the document title, then select any of the following:
  - **Open** – To view the document
  - **Print Target** – To print the document
  - **Save Target As** – To download a PDF version of the document to a destination that you choose

**Note:** For the MSDSs of chemicals not distributed by Applied Biosystems, contact the chemical manufacturer.



## Chemical waste safety

### Chemical waste hazards



**CAUTION! HAZARDOUS WASTE.** Refer to Material Safety Data Sheets and local regulations for handling and disposal.



**WARNING! CHEMICAL WASTE HAZARD.** Wastes produced by Applied Biosystems instruments are potentially hazardous and can cause injury, illness, or death.



**WARNING! CHEMICAL STORAGE HAZARD.** Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

### Chemical waste safety guidelines

To minimize the hazards of chemical waste:

- Read and understand the Material Safety Data Sheets (MSDSs) 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. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, 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). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the MSDS.
- 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.

### Waste disposal

If potentially hazardous waste is generated when you operate the instrument, you must:

- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.

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- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.

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**IMPORTANT!** Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

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## Biological hazard safety

### General biohazard



**WARNING! BIOHAZARD.** Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective equipment, which includes but is not limited to: protective eyewear, face shield, clothing/lab coat, and gloves. All work should be conducted in properly equipped facilities using the appropriate safety equipment (for example, physical containment devices). Individuals should be trained according to applicable regulatory and company/institution requirements before working with potentially infectious materials. Read and follow the applicable guidelines and/or regulatory requirements in the following:

- U.S. Department of Health and Human Services guidelines published in *Biosafety in Microbiological and Biomedical Laboratories* (stock no. 017-040-00547-4; [bmbi.od.nih.gov](http://bmbi.od.nih.gov))
- Occupational Safety and Health Standards, Bloodborne Pathogens (29 CFR§1910.1030; [www.access.gpo.gov/nara/cfr/waisidx\\_01/29cfr1910a\\_01.html](http://www.access.gpo.gov/nara/cfr/waisidx_01/29cfr1910a_01.html)).
- Your company's/institution's Biosafety Program protocols for working with/handling potentially infectious materials.

Additional information about biohazard guidelines is available at: [www.cdc.gov](http://www.cdc.gov)

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## Safety alerts

For the definitions of the alert words **IMPORTANT**, **CAUTION**, **WARNING**, and **DANGER**, see “[Safety alert words](#)” on page xii.

## Chemical alerts

For the definitions of the alert words **IMPORTANT**, **CAUTION**, **WARNING**, and **DANGER**, see “[Safety alert words](#)” on page xii.

### General alerts for all chemicals

**Note to WRITER:** Identify the common text from the specific **CHEMICAL** alerts below.  
**EXAMPLE:** Avoid contact with (skin, eyes, and/or clothing). Read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

### Specific chemical alerts



**WARNING!**

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## Instrumentation alerts

### General instrumentation alerts

Note to WRITER: Identify the common text from the specific INSTRUMENT alerts below.  
**EXAMPLE:** Avoid contact with (skin, eyes, and/or clothing). Read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

### Specific instrumentation alerts



#### WARNING!

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Note to WRITER: These are from HITACHI. See where they fit in this appendix.

Add the following: and get the picture from the old graphic folder;

Per Hitachi:

The instrument uses a Solid-state laser. Under normal operating conditions, the instrument is categorized as a Class I laser / LED product. When safety interlocks are disabled during certain servicing procedures, the laser can cause permanent eye damage, and, therefore, is classified under those conditions as a Class 3B laser.

The instrument has been tested to and complies with 21 CFR, 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No.50, dated June 24, 2007, as applicable.

The instrument has been tested and complies with standard EN60825-1: 2001, "Radiation Safety of Laser Products, Equipment Classification, Requirements, and User's Guide."

**CAUTION!** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Laser / LED Parameter

Laser : Wave length 505nm, Output power 20mW

LED : Emitting color Natural White, Luminous Intensity 250 Cd.

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