

ELECTRICAL SAFETY GUIDE

A. SUMMARY

The purpose of this Guide is to provide information to employees and students regarding relevant electrical safety-related work practices. This Guide is based upon Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910 Subpart S: *Electrical*.

B. SCOPE

This Guide applies to all employees and students who use or maintain electrically powered devices or equipment in an office, lab, classroom, or work area. This Guide also addresses safety issues regarding common electrical appliances used on a day to day basis, such as coffee makers, TVs, radios, etc.

C. RESPONSIBILITIES

Contact Facilities Management to coordinate and conduct any activities that require work with power sources, infrastructure power systems, building or space renovations, and new equipment installation (only qualified and licensed Facilities Management personnel may work on these systems).

D. TRAINING

Employees required to work with electrical equipment and energy sources as part of their job duties and at risk of electrical shock must be trained in conformance with OSHA 1910.332.

E. GENERAL ELECTRICAL SAFETY RULES

- Do not work on, maintain, and/or repair energized electrical equipment.
- Only qualified electricians who have been properly trained can work on, maintain, and repair energized electrical equipment.
- Energized equipment (such as circuit boards, computers, research equipment, and appliances) must be de-energized, properly shut down, and disconnected from the power source before beginning work.
- Do not perform housekeeping duties or use electrically conductive cleaning materials near energized parts where there is a possibility of contact, unless adequate safeguards (such as insulating equipment or barriers) are provided.
- Do not enter spaces containing exposed energized parts. Do not reach blindly into areas which may contain energized parts.
- Remove cords from receptacles by pulling on the plug, not the cord.
- Do not plug and unplug extension cords and other portable electric equipment with wet hands.
- Do not modify, cut, splice, or repair flexible power cords, to include the plugs and prongs.
- Do not alter, defeat, or remove plugs or prongs.
- Extension cords that are frayed, defective, damaged, or have exposed wires must not be used under any condition and should be replaced.
- Do not attempt to connect, disconnect, or use electrical equipment when wet or in wet conditions.

- Do not plug a power strip, multi-plug, or extension cord into another power strip, multi-plug, or extension cord; this may start a fire. Power strips, multi-plugs, and extension cords must be plugged directly into an outlet.
- Do not place extension cords or cords to power strips and electrical devices where they present a tripping hazard.

F. EXTENSION (FLEXIBLE) CORDS AND CABLES

- Do not fasten flexible cords with staples or hang in a way that can damage the outer jacket or insulation.
- Flexible power cords may not be routed through walls, windows, ceilings, floors, doorways, or similar openings; attached to building surfaces; or concealed behind building walls, ceilings, or floors, unless temporary (i.e., 8 hours or less).
- If temporary wiring is required longer than eight hours, it must be disconnected before leaving the work area at the end of the work day.
- Flexible cords and cables must be protected from accidental damage. Sharp corners and projections must be avoided. Where temporarily passing through doorways or other pinch points, flexible cords and cables must be protected to avoid any possible damage.
- Do not use extension cords on equipment with a 10 ampere rating or greater such as refrigerators, appliances and industrial equipment.

G. OUTLETS

- Do not use an outlet that is not equipped with a protective cover.
- A 15 amp outlet/receptacle has two parallel slots and may or may not have a round slot for the grounding pin. See image below.
- A 20 amp outlet/receptacle has one t-slot and one parallel slot on the top and a round slot underneath for the grounding pin. See image below.
- Ampere rating for equipment must be provided on all electrical devices. This information is typically found on the back, rear, or bottom of electrical equipment.
- Do not overload an outlet by plugging in devices that exceed the recommended ampere ratings. The total load on an outlet is calculated by adding the ampere rating for each device connected to the outlet. The ampere rating for equipment must be posted on the equipment. For example a computer (3 amps), a monitor (2.5 amps), and a stereo (1.5 amps) has a total ampere load of 7.
- Use ground-fault circuit interrupters (GFCIs) receptacles should be supplied in environments subject to moisture, liquids, and spills such as bathrooms and kitchenettes.

H. POWER STRIPS AND MULTI-PLUGS

- All power strips and multi-plugs must be equipped with a fuse.
- Power strips are designed for use with a number of low-powered loads, such as computers, peripherals, or audio/video components.
- Do not overload a circuit by plugging in too many devices or by exceeding the manufacturer's recommended ampere rating found on power strips or multi-plugs. The current will heat the wires to a very high temperature and can cause a fire.
- Power strips and multi-plugs must also meet the requirements listed in the extension cords and cables section this Guide.
- Do not plug more than one power strip or multi-plug into one two receptacle outlet.
- The cord of a power strip should be no longer than six (6) feet.

I. USE OF ELECTRICAL EQUIPMENT

This section applies to common electrical appliances, office devices, and research equipment.

- Only use approved power electrical devices that meet all Underwriters Laboratories (UL) standards.
- Do not use electrical devices designed for “household use” in the workplace. An electrical device designed for household use will be identified as such on the UL label. See image below.
- Do not use electrical equipment and power tools capable of causing ignition where flammable or ignitable materials are present.
- All electrical devices must:
 - Be inspected for external defects and possible internal damage before use. Any equipment with frayed cords, missing ground prongs, cracked casings, or other deficiencies, or damages must be removed from service and tagged “**Out of Service, Do Not Use**” until repaired.
 - Not be operated when wet.
 - Have a three-wire cord with ground and be plugged into a grounded receptacle, or
 - Be double insulated, or
 - Be powered by a low-voltage isolation transformer.
- Any device that draws over 10 amperes should be plugged directly into the wall and not a power strip or multi-plug.
- Do not plug electrical appliances or devices that heat up (i.e., toaster, coffee pots) into a power strip or multi-plug.