

Extension Cords and Surge Protectors

Extension Cords

Introduction

Extension cords are very useful in many applications on campus and in the field, but they do have limitations. Misused and damaged extension cords (see photos 1-6 below) have caused painful injuries, fires, equipment damage, and regulatory citations and penalties. Take the time to choose the proper extension cord for the equipment being used.



Photo 1 - Gouged



Photo 2 - Worn



Photo 3 - Burned



Photo 4 - Split

Damaged extension cord insulation. DO NOT USE.



Photo 5



Photo 6

Damage may not be visible at first glance.

Use and Care

Extension cords are designed for temporary use only and should not be attached to the structure of a building nor be run through wall openings, windows, or doors (see photo 7-8 below).

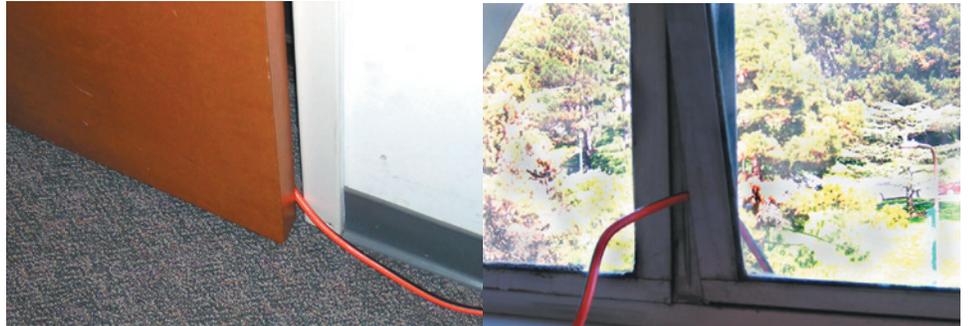


Photo 7

Photo 8

Don't run extension cords through doors or windows.

Extension cords must be plugged directly into wall outlets. Do not “daisy chain,” that is, plug extension cords into surge protectors or other extension cords (see photo 9 below). If additional wall outlets or temporary electrical service locations are required, contact Physical Plant-Campus Services (642-1032). Do not use adaptors to attach a grounded extension cord to ungrounded power sources or a grounded electrically powered item to an ungrounded extension cord.

It is very important to protect extension cords from physical damage. Don't put extension cords under carpets or rugs, avoid pinching extension cords between or under heavy items or driving over them (see photo 10 below), don't hang them over abrasive or sharp edges, and never use them as rope to tie or lift objects. Inspect extension cords prior to each use for missing grounding pins, pinched sections, damaged insulation, insulation that has pulled away from the plug ends, and other damage. Damaged extension cords should be repaired to meet the manufacturer's original standards or be discarded. Never use a damaged extension cord. Store all extension cords indoors, free of kinks and twists.



Photo 9 - Don't “daisy chain” surge protectors.

Photo 10 - Don't run extension cords in the path of vehicle traffic.

Cords exclusively designed for indoor use are lightweight and intended for low amperage use. Check the manufacturer's limits of indoor extension cords against the amperage of the item requiring power. Do not use indoor-rated cords outdoors.

Outdoor extension cords are marked continuously along their length with several items of information. Most important is the marking that tells the size (gauge) of the wires in the cord; it is usually something like "16/3." This indicates a three-conductor (grounded) #16 American Wire Gauge (AWG) cord. Other markings tell the type or physical construction of the extension cord. The two most common types of construction are "S" (hard service) and "SJ" (light duty service). Additional letters indicate other performance characteristics. The following are some examples.

Letter	Indication
T	thermoplastic insulation (less flexible)
E	thermoplastic elastomer insulation (more flexible)
O	oil resistant
W	moisture and sunlight resistant

Look for the amp rating on the equipment being used. Determine the distance required. Using the chart below determine the proper gauge extension cord needed.

Maximum Distances	≤ 10 amps	≤ 15 amps
0'-25'	16 AWG	14 AWG
25'-50'	16 AWG	14 AWG
50'-75'	16 AWG	12 AWG
76'-100'	16 AWG	12 AWG

Surge Protectors

Surge protectors, also known as re-locatable power taps, multiple outlet strips, plug strips, surge suppression strips, etc., are devices consisting of up to six outlets with an On/Off power switch, a circuit breaker, and a cord. When listed by a nationally recognized testing laboratory (NRTL), surge protectors are designed to safely run computers, associated hardware components, and peripherals without having to install additional wall outlets.

While computers and associated equipment often require up to six outlets, they typically draw low total current (3 to 5 amperes). In addition, the NRTL listings recommend that no single load should exceed 600 watts or 5 amperes, and the total load should not exceed 1440 watts or 15 amperes. Thus, only surge protectors listed by an NRTL should be used and they should not be used to power higher current equipment. If an NRTL listing is not easily identified on a surge protector, replace it with a surge protector that is properly labeled and listed.

Commercially manufactured electrically powered equipment should identify the required amperage on a label affixed directly to them. Examples of items that typi-

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Use and Care



cally require currents greater than 600 watts or 5 amperes, and which should not be powered through a surge protector, are:

- portable space heaters
- copy machines
- coffee pots
- microwave ovens
- toasters and toaster ovens
- refrigerators
- hot plates
- drying furnaces

Plug surge protectors directly into wall outlets. Do not “daisy chain,” that is, plug surge protectors into extension cords or other surge protectors. This practice voids the NRTL listing and the manufacturer’s warranty. If additional wall outlets are required, contact Physical Plant-Campus Services (642-1032).

Nationally Recognized Testing Laboratories’ Labels



Applied Research Laboratory



Canadian Standards Association



Communication Certification Laboratory



FM Global Technologies, LLC



Intertek Testing Services NA, Inc.



MET Laboratories, Inc.



NSF International



National Technical Systems, Inc.



SGS US Testing Company, Inc.



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TUV America, Inc.



Underwriters Laboratories, Inc.

Please call EH&S at 642-3073 if you have further questions.

