ESAO
The EDUCATION SAFETY ASSOCIATION of ONTARIO

Safety Information

Using Power Bars / Multi-Outlets Strips

Power bars are found throughout our workplaces and in our homes. They are often selected as the first response to a shortage of outlets when new equipment is purchased and then used in areas which were never designed for the number of electronic devices which have become common in our lives.

Powerbars and similar devices must be considered to be part of the electrical distribution system of the room where they are being used. They, like all other components of the power distribution network, are covered by specific codes, regulations and should be used following practices which ensure a safe environment.

In Ontario, the Canadian Standards Association (CSA), document entitled "Canadian Electrical Code Part 1 C22.1-2002" as amended by the "Ontario Amendments" form the "Ontario Electrical Safety Code (OESC)".

The Electrical Safety Authority is responsible for ensuring compliance with the OESC.

Power Outlet Strips and The Law:

Most multi-plug power strip-outlet devices provide multiple grounded outlets and an on/off switch with a flexible power cord ending in a three prong plug supplied, and intended to be used, as one unit. Many of these devices have surge protection built in.

Some power bars have a supplementary device built in which is often identified as a circuit breaker. These devices are not true circuit breakers and do not provide branch circuit protection. In the event of a fault the contacts in these devices are legally permitted to weld shut, rather than opening and interrupting the source of power, with the result that the device will provide no protection. Another concern is that once these devices have been activated by an overload the only way to determine if they are functioning properly is to physically check them.

The user can provide better supplemental protection by using Arc Fault Circuit Interrupters (AFCI) for circuits where powerbars and similar devices are used or when additional protection is desired for any other reason.

The OESC does not specifically define plug-in power bars / multiple outlet strips as separate devices. However the code requires that all electrical equipment be approved for its intended use. There must be a label attached indicating the approvals from a recognized certification agency. For example the bar must have a CSA (or equivalent) approval for extended use.

The cords used as part of the power bar are the same or similar in design to extension cords. Under OESC power bars would be considered equivalent to "flexible cords" used as extension cords.

Defined in the OESC, flexible cords can only be *used "for household or similar use having a rating of under 15A"* and voltages under 250V *"which is intended to be:*

(i) Moved from place to place, and
(ii) Detachably connected according to a CSA Part II Standard"

Also, some limitations on the use of "flexible cords" are the following:

"Flexible cord shall not be used for the fixed wiring of structure and shall not be:
(i) Permanently secured to any structural member; or
(ii) Run through holes in walls, ceilings or floors; or
(iii) Run through doorways, windows or similar openings."

"Flexible or extension cords shall not be used in place of permanent wiring."

Further information:

1. Where flexible cables connected to outlets are intended for extended use, the wires from the outlets attached to the flexible cables are considered part of the permanent room wiring. They must be permanently wired into a proper electrical enclosure and inspected - not plugged into a receptacle.
2. Electrical receptacles are available which have built in ground fault protection and/or surge protection, suitable for most uses.
3. Extension cords, power bars and other temporary CSA (or equivalent) approved power sources may be used for experimental or developmental purposes, as a short-term power source solution, or for portable tools or equipment that must be moved frequently. Surge-protected power strips or voltage regulators which are CSA (or equivalent) approved for continuous use are acceptable for computer equipment and other electronic devices or lab equipment such as voltage regulators, timers, and some controllers when they are being used as intended by the manufacturer. All other electrical equipment must be plugged directly into a permanent receptacle as defined within the OESC.

Summary and Power Bar Safety:

Surge protectors / power strips can be used in place of extension cords under the following circumstances:

(i) When wall outlet availability is inadequate and electrical equipment/appliances are positioned, as much as practical, in close proximity to electrical wall outlets. This would only be for a short-term power source solution. When the number of wall outlets is inadequate more permanent circuits and wall outlets should be installed
(ii) Where approved surge or voltage protectors are required and being used for their intended purpose.

When multioutlet devices such as power bars are used for equipment:

(iii) They should only be used for computers, audio equipment, video equipment, and low amperage office equipment.
(iv) Power bars and other related devices must be CSA (or equivalent) approved.
(v) Ground pins on the plugs and the devices plugged into the receptacles must be intact.
(vi) Power bars should have an on/off switch.
(vii) Units must be free of cracks, splits, and damage as a result of general wear and tear.
(viii) Cords must not be coiled or looped when in use.
(ix) Multiple outlet units and their cords must not be covered by carpeting, clothing, furniture, or other objects.
(x) Each cord should be plugged directly into structurally mounted electrical receptacle. They should not be chained together or fed from another extension cord.
(xi) When exposed to potential harm; by being stepped on, hit or damaged by cleaning equipment, wheels or other objects; outlet strips and their cords should be off the floor and attached to either the desk or other work surfaces or provided with other forms of approved mechanical protection.

(xii) Do not run through doorways, windows or holes in the wall, floor or ceiling.

(xiii) If the multioutlet device experiences a fault, the device should be tested by qualified personal prior to placing the device back into service.

This document has been created as a Safety Information Sheet by *The* Education Safety Association *of* Ontario.
The contents have been reviewed by the Electrical Safety Authority of Ontario to ensure accuracy.
This document is current at the date indicated below but may become out-of-date or incomplete with the passage of time.

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