



- ① Drop-Down Receptacles for Prep ② Mixing/Grinding Appliances ③ Electric Oven/Pizza Oven ④ Dishwasher ⑤ Electric Range ⑥ Deep Fryer

A Recipe for Safety in Commercial Kitchens

How GFCIs Protect People From Electrical Hazards in Commercial Kitchens

Commercial kitchens can be a recipe for electrical tragedy. Stuffed to the brim with appliances that have higher ampere ratings, and wet areas around sinks and on the floor, their environment serves more than its fair portion of electrical hazards. These unique conditions are not so special ingredients that can cause something good to spoil.

Restaurants also use about [five to seven times more energy per square foot than other commercial buildings](#). Where there is increased energy use, is an increased cause for concern. Though any restaurant owner who has made the switch from gas to electric appliances knows the myriad of benefits they bring, it is also important to understand that although electric is safer than gas appliances, there are still some hazards to be aware of.

Data on electrical incidents, the NEC says, reveals the many electrical hazards within commercial kitchens, including poorly maintained electrical equipment, damaged cords and wet floors. The installation of ground-fault circuit interrupters (GFCIs) in these locations protects personnel who might be exposed to electrical shock.

The code has evolved over the past several editions to require ground-fault circuit interrupters for both single- and three-phase circuits. More specifically, NEC 210.8(B), which is for applications other than dwelling units, says:

All 125-volt through 250-volt receptacles supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, and all receptacles supplied by three-phase branch circuits rated 150 volts or less to ground, 100 amperes or less, installed in the locations specified in 210.8(B)(1) through (B)(12) shall have ground-fault circuit-interrupter protection for personnel.

GFCIs are required for all single-phase and three-phase receptacles in commercial kitchens and food preparation areas that have a sink, regardless of whether the receptacle serves a countertop area.

The requirements under NEC 210.8(B)(2) apply to all kitchens (or areas with a sink and permanent provisions for food preparation or cooking) found in restaurants, hotels, schools, churches, dining halls, and similar facilities.

In 2017, the NEC began to require GFCI protection for circuits up to 100 A. For commercial kitchens, this posed a challenge because large appliances, such as a 60-ampere 208-volt fryer, require GFCIs that are rated for at least 60 A. Traditional GFCIs, however, were not yet available in this range.

A GFCI is required by code for cord-connected equipment. While hard-wiring equipment means the equipment is not required to be connected to a GFCI, it poses a challenge for meeting health and sanitation codes because the workers cannot efficiently (if at all) access the areas they must clean.

The [Shock Block SB6100-021-0](#), was the first commercially available UL-Listed Class-A GFCI on the market that could handle circuits up to 100 A. The [Shock Block SB5060-021-0](#) Class-A GFCI is rated for circuits up to 60 A. These two GFCIs enable kitchens to meet NEC's requirement while also meeting health and sanitation codes with ease.

FOR COMMERCIAL KITCHENS, THIS POSED A CHALLENGE BECAUSE LARGE APPLIANCES, SUCH AS A 60-AMPERE 208-VOLT FRYER, REQUIRE GFCIs THAT ARE RATED FOR AT LEAST 60 A.

It is important to understand that residual-current devices and ground-fault relays are different from GFCIs. In North American codes and standards, the term GFCI is synonymous with personnel level protection from electric shock, and since those other devices are not listed to UL943 or UL943C (the standards for GFCIs and special-purpose GFCIs), they should only be considered for equipment level protection.

To contact a Littelfuse expert:

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Not all Products Marketed as 'GFCIs' are Actually GFCIs

Most people associate the acronym "GFCI" with a device that is designed to keep people safe from electrical shock. However, use of the acronym GFCI is not regulated, so anyone can call anything a "GFCI" regardless of whether the device meets the applicable GFCI standards for shock protection.

Some of the devices currently sold as "GFCIs" do not meet the necessary tests for providing electrical shock protection. Despite non-compliance with industry standards for personnel protection, some of these products reference "GFCI" and the UL 943 standard in their marketing materials, implying that the device meets life safety requirements even though it does not.

For personnel level protection, look for the UL 943 label on the product nameplate or the manufacturer's documentation.

