



# Electrical Wiring and Equipment

## Considerations for flood immersed products

*Flooding caused by hurricanes and storms can create significant electrical safety hazards. Considerations for safely mitigating these hazards are included below.*

Flooding forces home and business owners to ask many difficult questions about water-damaged electrical equipment in their homes and businesses, such as:

- Can I use appliances after they dry out?
- Are circuit breakers and fuses safe to use?
- Will I need to replace electrical wiring?

Floodwater contaminants can create serious fire hazards if electrical wiring and equipment have been submerged in water. Even with professional cleaning and drying, sediments and toxins are difficult to remove.

As communities begin to clean up after a flood, there may be hidden electrical hazards. Dealing with these hazards is not a do-it-yourself project! Before energizing any electrical equipment have a qualified electrician or electrical inspector check it thoroughly, assess the extent of the damage, and proceed with repair or replacement work.

It is important to follow these important safety tips:

- Do not flip on a switch or plug in an appliance until an electrician tells you it is safe.
- Do not touch a circuit breaker or replace a fuse with wet hands or while standing on a wet surface. Use a dry plastic- or rubber-insulated tool to reset breakers and use only one hand.
- Do not allow power cord connections to become wet. Do not remove or bypass the ground pin on a three-prong plug.
- Use portable ground-fault circuit-interrupters (GFCIs) to help prevent electrical shock injuries.
- If electrical devices such as circuit breakers, receptacles and switches have been submerged, discard and replace them.
- When using a wet-dry vacuum cleaner or pressure washer, follow the manufacturer's instructions to avoid electric shock.

### Replace or recondition?

Some electrical equipment and other products may be reconditioned, while others will need to be replaced. Corrosion and insulation damage can occur when water and silt get inside electrical products. Water can also damage motors in electrical appliances. Therefore, you should be prepared to replace:

- Circuit breakers and fuses
- All electrical wiring systems
- Light switches, thermostats, outlets, light fixtures, electric heaters and ceiling fans
- Furnace burner and blower motors, ignition transformers, elements, and relays for furnaces and hot water tanks
- Hot water heaters
- Washing machines, furnaces, heat pumps, refrigerators, and similar appliances
- Electronic equipment, including computers and home entertainment systems

### Field evaluations

Qualified safety certification organizations such as UL can help building owners and code authorities determine if flood damaged and/or reconditioned equipment complies with appropriate product safety standards. Field evaluations are solutions that allow businesses to safely operate this equipment and assist jurisdictions to enforce their adopted regulations.

When it comes to field evaluations UL is fast, thorough and trustworthy, addresses all the questions and concerns of the local jurisdictional authority with technical competence, open communications and complete integrity.

For more information, visit: [www.ul.com/stormsafety](http://www.ul.com/stormsafety)



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UL's Field Evaluation staff responds quickly to inquiries and requests for service. We're able to meet tight schedules and we are very cost competitive. Our staff is tuned in to your local business conditions while being part of North America's largest and most respected family of product safety professionals. We have access to the world's most extensive database of product standards and certified components, and we bring all this to your doorstep.

For more information on UL Field Evaluation Services, please visit [UL.com/field](http://UL.com/field) or contact us at (877) 854.3577, #2 or at [field@UL.com](mailto:field@UL.com).

### Water-immersed Type NM cable

Type NM-B nonmetallic-sheathed cable (commonly called "Romex®" in the industry) is Certified (Listed) by UL for use in normally dry locations in accordance with the National Electrical Code®. Decades ago, the outer jacket of this cable (Type NM) changed from an impregnated, braided covering to polyvinyl chloride (PVC).

The older, braided jacketed version of this cable has less resistance to water ingress than the newer, PVC-jacketed version, and if subject to immersion, such as from flooding, the suitability for continued use is unknown. Any cable of this type that has been subjected to flooding should be replaced without question.

In general, cables with PVC insulation and jacket can withstand immersion in clean water for a short period of time without being damaged as long as the ends are not immersed. If the ends of the cable are immersed for any period of time, however, the internal paper wrapping around the bare equipment-grounding conductor will absorb and transfer the water into the cable assembly. The water may then start degrading the insulation or possibly corrode the conductors. If the cable comes into contact with contaminated water, the contaminants may also act on the insulation or conductors. Over time, failures can occur.

The safest approach is to replace any nonmetallic-sheathed cable that was immersed in water for any period of time during the flooding.

The devastation of a flood is enormous. As the contaminated waters recede, there may be even more threats to your personal health and safety. By taking basic precautions, you can help prevent many injuries. UL urges you to always put the safety of your family or employees first.

### About UL

UL helps create a better world by applying science to solve safety, security and sustainability challenges. We empower trust by enabling the safe adoption of innovative new products and technologies. Everyone at UL shares a passion to make the world a safer place. All of our work, from independent research and standards development, to testing and certification, to providing analytical and digital solutions helps improve global well-being. Businesses, industries, governments, regulatory authorities and the public put their trust in us so they can make smarter decisions.

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