

Ask an Expert – Safe Charging: How to Prevent Battery-Related Fires

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Most of us rely on rechargeable devices multiple times a day – from phones and tablets to power tools, e-bikes, and lawn equipment. Plugging something in is part of our daily routine. However, this convenience comes with a growing fire risk that concerns safety experts and firefighters.

Lithium-ion batteries are tightly packed energy stores designed to release power slowly and safely. But when something goes wrong, such as if the battery is damaged, overcharged, exposed to extreme temperatures, or paired with a low-quality or mismatched charger, that energy can be released all at once. When a lithium-ion battery overheats, it can burn at temperatures hotter than gasoline.

Once a lithium battery fire starts, it becomes a complex chemical reaction that cannot be extinguished with traditional methods like water or smothering, and it can even reignite hours later. Some incidents have been traced to batteries quietly charging overnight or left unattended during the day. According to the Consumer Product Safety Commission, there are an estimated 5,000 lithium-ion battery fires annually in the U.S., and that number is rising. This is especially concerning, since many of us plug electronics in and forget about them until we need them again.

Simple precautions can help prevent battery-related fires. Consider these tips.

- Do not charge or store devices in extreme temperatures, as it can trigger a thermal event.
- Never leave a phone or any battery-powered device in an extremely hot or cold vehicle.
- Charge devices on a flat, dry, uncluttered surface away from exit routes so a fire would not block your escape if it became necessary.

- Avoid charging under a pillow or blanket, as this can trap heat.
- Charge devices only when you can monitor them, and unplug them once they are fully charged. Charging overnight or while you are away from home can increase risks.
- Use only the charger designed for your device. Overcharging with a mismatched charger is a common cause of battery overheating. Mismatched chargers and counterfeit or off-brand batteries are common causes of overheating.
- Look for proper UL certification when purchasing batteries. This verification confirms that the product has met specific, rigorous safety standards.
- Store batteries in a cool, dry place out of direct sunlight. Garages can often get too hot or too cold, which can be a hazard.
- Store spare batteries separately, ideally in a fire-resistant bag or protective case, to prevent metal objects from accidentally touching the terminals.
- Recycle batteries properly. If you throw them in the trash, they could spark a fire in the landfill or trash collection truck. Batteries can be taken to a designated drop-off location, such as a home improvement store or local household hazardous waste program.
- Be sure to have a working smoke alarm near your charging area and prepare an evacuation plan. Keep a lithium-ion-rated fire extinguisher on hand if you charge larger devices like power tools or e-bikes.
- When travelling, be aware of [TSA guidelines for lithium-ion batteries](#). In 2025, the TSA tightened battery rules after an increase in incidents aboard aircraft. All spare lithium-ion batteries, power banks, and charging cases are no longer allowed in checked bags and must be in carry-on luggage only. Additional restrictions apply to battery size and damaged or recalled batteries.

We live in a world powered by rechargeable energy. As helpful as these batteries are, they demand respect. Handle them carefully and with intention to help prevent fire risk.

Additional resources:

1. <https://www.nfpa.org/education-and-research/home-fire-safety/lithium-ion-batteries>
2. <https://www.nfpa.org/events/fire-prevention-week#toolkits>
3. <https://sparkyschoolhouse.org/wp-content/uploads/2025/08/ChargeIntoFire-SafetyTipSheet.pdf>
4. <https://www.usfa.fema.gov/prevention/home-fires/prevent-fires/batteries/>

5. <https://www.osha.gov/sites/default/files/publications/OSHA4480.pdf>

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