

Q Are electric cars a fire risk?

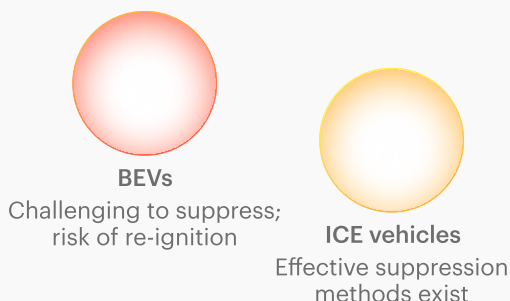
As electric vehicle (EV) uptake accelerates, questions about battery safety – particularly fire risks – are receiving increasing public attention. Importantly, EV fires differ from those of internal combustion engine vehicles (ICEVs). While ICEV fires can be suppressed by cutting off the oxygen supply using typical fire extinguisher technologies, this is often not possible for EV batteries. Mechanical damage – such as that caused by a collision – can lead to short circuits and rapid increases in battery temperature. This can trigger thermal runaway, a self-accelerating reaction producing heat, flammable gases and oxygen. Because the battery provides both fuel and oxygen, fire extinction is considerably more challenging. In addition, if the battery is not fully consumed during the initial fire, it may also reignite hours or even days later.

Lithium-ion batteries are less likely to ignite when discharged, such as during shipment, than when charged, but they still retain enough energy to pose fire risks in the case of serious manufacturing defects – a challenge for large EV carriers, as well as for recyclers and waste handling facilities. Some sodium-ion battery chemistries have been reported to reach a near-zero energy state, which could reduce fire risks.

FIRE RISK



FIRE SUPPRESSION



Despite these challenges, evidence indicates that EVs are less prone to fires than ICEVs. In Norway – the country with the world’s highest share of electric cars (over 35% of stock) – petrol and diesel cars were reported to catch fire four to five times more often than battery electric vehicles (BEVs) in 2023. In Sweden (over 15% of stock), only 0.01% of BEVs experienced fire incidents in 2024, over five times less than the average across all powertrains. Even larger differences have been highlighted by EV FireSafe, a private company funded by Australia’s Department of Defence, and the US-based National Fire Protection Association.

Data on EV fire rates remain limited, and comparisons are complicated by the fact that EVs are, on average, much newer than ICEVs. Nonetheless, the evidence available today indicates that BEVs are significantly less likely to catch fire than conventional cars. Battery safety and technologies have also improved markedly in recent years and continue to advance. For example, the latest EV batteries are reported to be able to withstand thermal-runaway events and remain operational for over one hour without igniting or exploding – providing sufficient time to move a vehicle to a secure location if an incident occurs. Similar safety characteristics will be mandated in China starting from July 2026 for new models, while previously approved vehicles will have until July 2027 to adapt.