

Fire safety risk guidance for electric vehicle (EV) paint repairs

The rise in electric vehicle (EV) adoption presents new safety challenges for automotive body shops, particularly during paint repair and curing processes.

Traditional high-temperature paint booths pose significant fire safety risks when used on EVs.

What are the risks and how can you mitigate them?

Understanding the risks

- Lithium-ion batteries are sensitive to excessive heat. Standard curing cycles $>50^{\circ}\text{C}$ (120°F) are unsafe for EVs and can cause long-term battery degradation, loss of capacity, and thermal runaway.
- Elevated temperatures can damage high-voltage electrical components, potentially causing electrical shorts, fires, or explosions.
- During repairs, high-voltage systems are typically disconnected for technician safety. This disables cooling, making batteries more susceptible to overheating during the paint curing process.

Always follow the manufacturer's guidance for each vehicle before it enters the oven.

Fire safety and risk mitigation

1. Temperature control and monitoring

- Use real-time dedicated temperature sensors that continuously monitor critical components, including the high-voltage battery and high-voltage systems.
- Maintain curing temperatures below original equipment manufacturer (OEM) limits; avoid exceeding 50°C (or as advised by the vehicle manufacturer).

2. Use appropriate curing technologies

- Short wave electric IR systems concentrate heat precisely on panels, heating from the inside out.
- Use low-temperature paints, UV-initiated coatings, or fast-drying products that need minimal heat exposure.
- Cover high-voltage components and batteries with fire-resistant shields.

3. Workplace safety measures

- Ensure technicians are trained and qualified in EV safety procedures, including high-voltage disconnection and grounding.
- Always wear appropriate PPE and use static grounding equipment.
- Confirm the high-voltage system is properly isolated before beginning paint work (follow OEM instructions for disconnecting or removing the battery).
- Maintain proper ventilation to prevent heat and fume buildup.

4. Controls

- Limit the duration of heat exposure during curing - adhere strictly to OEM time limits.
- Use the shortest effective curing cycles compatible with the paint system.
- Avoid high-temperature bake cycles by using alternative curing methods such as low-bake cycles or IR technology.



Get in touch

If you have any questions please get in touch with your usual AXA contact.

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