

SAFETY MEMO

October 17, 2022 – Electric Vehicle Safety



Did you know?

Electric Vehicles

Electric vehicles are becoming increasingly popular due to the low carbon dioxide emissions, cost of electricity compared to fuel and government incentives provided for zero-emission vehicles. There are a few safety considerations to be aware of with electric vehicles.

Safety Considerations

1. Lithium-Ion Batteries

Electric vehicles run on lithium-ion batteries which range from 200 to 800 Volts and therefore may pose a risk of electrocution during accidents. They are highly flammable and contain hazardous chemical compounds. "Short-circuiting, overloading, heat or external fire, shocks, punctures, or water ingress can start an irreversible thermal event in a lithium-ion battery known as thermal runaway."¹ It is important to note that from available data electric vehicles have the lowest likelihood of fires followed by gasoline powered cars in second place and hybrid electric vehicles being most likely to catch fire.^{2 3} While lithium-ion batteries are a hazard, it is less of a hazard than an internal combustion engine.

Many electric cars are charged at home overnight with level 2 chargers. It is important to be aware of the level of charge in the vehicle, especially for temperature fluctuations throughout the day (referenced in section 2) and allow for sufficient charging for trips planned for the following day.

2. Climate Conditions

The range of electric vehicles is dependant on climate. In warm temperatures extra energy is used to cool the vehicle and in cold temperatures extra energy is used to heat the vehicle. Both conditions reduce the maximum range. It is important to make allowances for this during long road trips. Ensure you have planned your road trip

well, so you know in advance where charging stations are located along the planned route. It is also advisable to have a well-prepared and stocked safety kit in the car. It can also be helpful to be a member of a roadside assistance service or simply to have the number of a roadside assistance company on hand during road trips.

3. Safety for Pedestrians and Cyclists

With the silent nature of these vehicles, it is increasingly common for accidents between electric vehicles and pedestrians to occur. In addition, in low-speed road areas, friction between the tires and the road is less, further reducing the level of noise emitted and accidents can occur as a result. The Government of Canada is proposing an amendment to the *Motor Vehicle Safety Regulations* which would require all new electric cars be fitted with electronic noise emitters, something that is already in place in Europe and the United States.⁴

In Summary

Whether a seasoned driver or someone looking for their first vehicle, the environmental and economic impact of a combustible engine is likely becoming a more prominent factor in vehicle purchasing decisions⁵. Governmental rebates do exist at the provincial/state level and the federal level. Be sure to do your research before purchasing an electrical vehicle to ensure it meets all your transportation needs.



Figure 1: courtesy of iStock via Getty Images

¹ WorkSafe BC. The Evolution of Electric Vehicle Safety. August 11, 2021. Retrieved from <https://www.worksafebc.com/en/about-us/news-events/campaigns/2021/August/the-evolution-of-electric-vehicle-safety>

² National Transportation Safety Board NTSB DATA REPORT Prevalence of Electric Vehicle Battery Fires. March 14, 2018. Retrieved from <https://data.ntsb.gov/Docket/Document/docBLOB?ID=10004432&FileExtension=pdf&FileName=2%20GTR%2020%20ECE-TRANS-180a20e%5B1%5D-Rel.pdf>

³ Hybrid-Electric, Plug-in Hybrid-Electric and Electric Vehicle Sales. June 21, 2022. Retrieved from

<https://www.bts.gov/content/gasoline-hybrid-and-electric-vehicle-sales>

⁴ Government of Canada. Minister of Transport proposes noise requirements for hybrid and electric vehicles to protect vulnerable road users. April 23, 2021. Retrieved from <https://www.canada.ca/en/transport-canada/news/2021/04/minister-of-transport-proposes-noise-requirements-for-hybrid-and-electric-vehicles-to-protect-vulnerable-road-users.html>

⁵ CanadaDrives. How to get your electric car rebate in 2022? April 25, 2022. Retrieved from <https://www.canadadrives.ca/blog/news/government-fuels-electric-vehicle-demand-with-electric-car-rebates-in-canada-and-top-affordable-electric-vehicles>

