

Do electric cars need engine oil?

Unlike internal combustion engines and hybrid cars, electric vehicles do not need engine oil. Electric motors generate much less friction than the other types of engines so engine oil is not necessary. But other fluids are. To better understand why electric cars do not need engine oil, it is necessary to look at the differences between combustion and electric engines.

■ Combustion engines

Combustion engines are deeply complex and consist of many metallic parts that keep on moving: crankshaft, valves, pistons, connecting rods, camshafts, etc. The role of these mechanical components is to turn the pistons' vertical movement, which is produced by the air/fuel explosion in the cylinder, into a rotational movement, which will be transferred to the wheels. The friction between these different parts causes a **loss** of energy efficiency, a heat release, and the development of deposit. In more simple terms, the engine **wears out**. The role of engine oil is precisely to reduce this friction, slow down the increase in temperature and the metal erosion, otherwise the engine could be seriously damaged after only a few kilometres.

■ Electric motors

Mechanically speaking, electric motors are far less complex than combustion ones since they generate a rotational movement, the rotor's circular movement which is produced by the magnetic field. Thus, electric motors can drive the wheels without relying on the various mechanical parts combustion engines need. That's why electric cars do not need engine oil. Yet, they require other fluids to work properly.

■ What fluids do electric cars need?

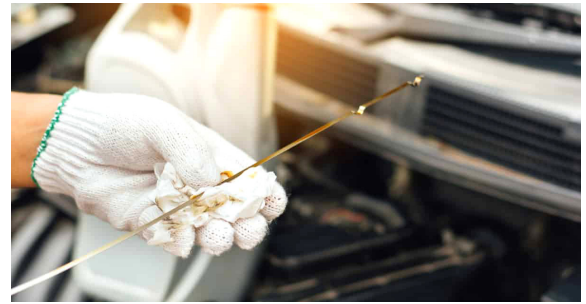
Electric cars need other types of lubricants to remain in good operating condition.

- **Transmission fluid:** electric cars are less complex than petrol/diesel-powered cars, but they still have some mechanical parts,

insulating: *termoisolante*

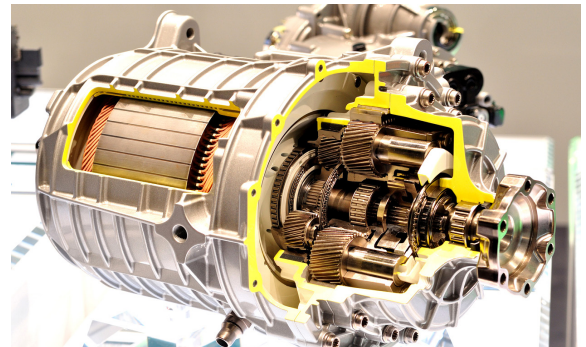
loss: *perdita*

to wear out: *usurare*



for example in the transmission block. To efficiently lubricate the components, it is necessary to use fully **insulating** fluids with thermal properties suitable for electric motors. Transmission fluids should be replaced rarely: once or twice during the vehicle's lifetime.

- **Motor coolant:** this fluid will reduce the risk of battery and inverter overheating. Ideally, the first replacement of the coolant should take place after the car has travelled approximately 75,000 km.



- **Brake fluid:** although regenerative braking plays a major role, brake fluid is also essential in electric cars. When the electric car has enough brake fluid, the brake pads and the disc brakes work properly and guarantee the passengers' safety. It should be replaced every two years or every 35,000 km.



1 Decide if the sentences are true or false, then correct the false ones.

- | | T | F |
|--|--------------------------|--------------------------|
| 1. Electric motors generate much more friction than the other types of engines. | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Engine oil is not necessary in an electric car. | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Combustion engines are very complex and consist of many metallic parts that keep on moving. | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. In combustion engines, the friction between the different mechanical parts causes lots of energy efficiency thanks to heat release. | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Mechanically speaking, electric motors are more complex than combustion ones. | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Electric cars do not need engine oil, but they require other fluids to work properly. | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. In electric cars, transmission fluids should be replaced every year. | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. In electric cars, brake fluid should be replaced every two years or every 35,000 km. | <input type="checkbox"/> | <input type="checkbox"/> |

2 Read the text and fill the gaps with the words given below.

adequate • cells • cooling • failure • glycol-based • health • manufacturer • pipes • radiator • temperature

The Importance of Cooling in Electric Vehicles

Electric vehicles also produce heat, but the main component that needs **1.** in an EV is the battery. Internal combustion engines produce a lot more heat than EVs do. But, due to the importance of keeping EV batteries operating at a safe **2.**, coolant is important for electric vehicles in order to keep their batteries from experiencing premature **3.**

The technique used to cool an EV's battery involves the use of cooling **4.** around the battery. The coolant flows through these pipes and helps to cool down the battery in much the same way as in a traditional car, where the coolant is eventually sent to a **5.** This is called indirect cooling in an EV.

Most electric vehicles, just like internal combustion cars, use **6.**

coolants. Liquid cooling systems are superior to air cooling systems in terms of heat transfer, but leaks may develop over time. If the coolant starts leaking into the battery's **7.**, and the liquid is highly conductive, this is a recipe for an absolute disaster. Therefore, it is absolutely important that you make sure that your EVs coolant is the correct one the **8.** intended because other types of coolant might not have the adequate conductivity protection required for cooling duties in electric vehicles. The proper electric vehicle coolant will ensure that your EV's battery is functioning at an **9.** temperature and is protected in the event of unforeseen leaks. Although some manufacturers say that the fluid should last the life of the vehicle, verifying the coolant's **10.** from time to time is a great idea.

Adapted from: <https://www.makeuseof.com/do-evs-use-coolant-do-you-need-to-change-it/>