



## BHARAT STAGE EMISSION STANDARDS

### Bharat Stage Emission Standards

Bharat Stage or BS Emission Standards are government-instituted emission standards that all motor vehicles have to comply with if they are to be sold and driven in India.

- Currently, all new vehicles sold and registered in India should be compliant with the BS-VI iteration of emission standards.
- The standards and timelines for their implementation are set by the Central Pollution Control Board (CPCB) under the Minister of Environment, Forests and Climate Change.
- The BS norms are based on the European Emission Standards (Euro norms) and were first set in 2000. Equivalent to the Euro-1, the first iteration was known as 'India 2000', and not BS-I.
- Subsequent emission standards were called BS-II, BS-III, and BS-IV.
- The government decided to jump directly from BS-IV to BS-VI skipping BS-V in view of the long time it took to move from BS-III to IV.
- With the implementation of the new norms, pollution levels are expected to reduce to a large extent as the particulate matter (PM) concentration should decrease. About one-third of the air pollution is caused by motor vehicles and cars.

### BS-VI Norms (and how it is different from BS-IV)

Emission norms are made further stringent with the introduction of the Bharat Stage VI. BS-VI is the highest vehicle emissions standard specification in the world currently.

- The volume of particulate matter 2.5 is between 20 to 40 micrograms per cubic metre in BS-VI fuel, whereas, in BS-IV, it was up to 120 micrograms per cubic metre.
- The sulphur content in the BS-VI compliant fuel is brought down five times when compared to the BS-IV version. (It is 10 ppm of sulphur as against the previous 50 ppm).
  - Sulphur in the fuel contributes to fine particulate matter emissions. High sulphur content in the fuel also leads to corrosion and wear of the automobile engine.
- Under the BS-VI fuel, for 1 KM, a car will emit 80% less PM and almost 70% less nitrogen oxide (in a diesel engine).

- In a petrol engine, the emission of nitrogen oxide would be less by 25%.
- BS-VI norms will lead to the reduction of the emission of certain hydrocarbons (that are produced because of the incomplete combustion of fuel).
- BS-VI fuel contains lesser air pollutants compared to BS-IV fuel.
- Car manufacturers will have to fix three new pieces of equipment for their vehicles to comply with BS-VI:
  - Diesel Particulate Filter (DPF)
  - Selective Catalytic Reduction (SCR) system
  - LNT (Lean NO<sub>x</sub> trap)
- Real Driving Emission (RDE) will be introduced in India for the first time.
  - This will measure a vehicle's emissions under real conditions as against factory conditions.
- Onboard Diagnostics (OD) has been made compulsory for all vehicles.