

An ethanol blend to fuel Europe's heavy-duty transport

ED95



What



ED95 is a fuel grade containing up to 95% ethanol that can be used in certain heavy-duty vehicles. It can deliver the energy efficiency of a diesel engine while reducing emissions of CO, NO_x and CO₂ over the full fuel lifecycle compared to fossil diesel.

Ethanol, an alcohol made from crops and agricultural residues, is a proven low-carbon solution that already delivers emissions reduction results in European cars could bring big benefits when used in trucks and buses

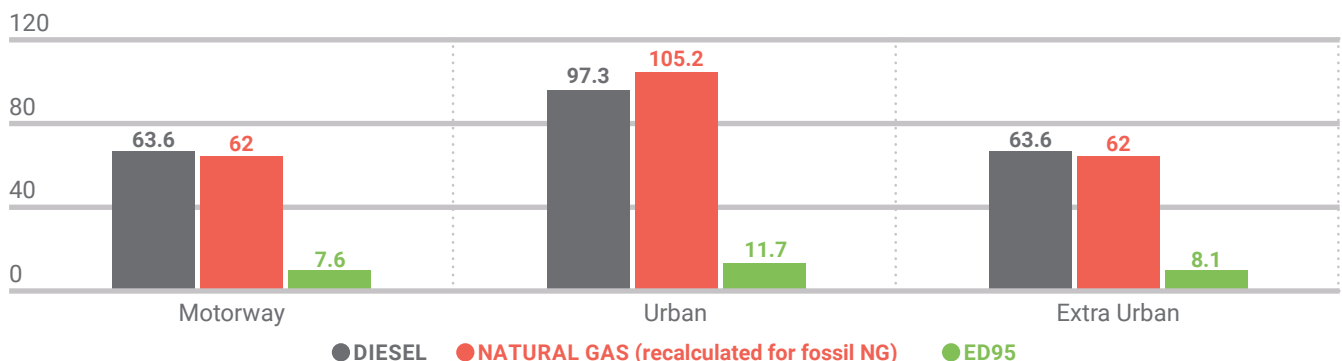
Why



The EU is struggling to reduce emissions from transport – and especially from trucks and buses. It needs to promote renewable-energy technologies that can make an important impact. Scaling up the use of renewable ethanol-based ED95 in trucks and buses could:

- Significantly reduce greenhouse-gas emissions from heavy-duty road transport, which is about a quarter of total EU transport emissions, according to the UNFCCC
- Help EU countries meet their renewables targets in transport
- Contribute to long-term EU emissions-reductions
- Improve air quality in cities

GHG emissions measured over the lifecycle of the fuel – Well-to-wheels (kgCO_{2eq}/100km)¹





How

ED95 can be used in heavy-duty vehicles equipped with a specially designed engine.

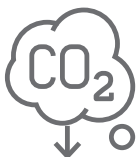
These vehicles can only run on ED95. Swedish manufacturer Scania is the pioneer in the field, having developed an ED95 engine that the company says achieves energy efficiency similar to that of a diesel engine but with reduced CO₂, NO_x and particulate emissions.

Proven performance

A study¹ conducted in 2018 found that using ED95 to fuel heavy-duty transport would bring benefits for GHG emissions reduction, air quality and energy efficiency.

GHG REDUCTION

ED95 reduces CO₂eq emissions by more than 87% in all driving zones (motorway, urban, exurban) compared to diesel in tests considering the entire fuel lifecycle (well-to-wheel) emissions, thanks to the lower environmental footprint⁴ of ethanol used to produce ED95. Even in a tank-to-wheel comparison, and without distinguishing between fossil and biogenic CO₂, ED95 reduces direct CO₂ emissions by 5.3% compared to diesel in urban environments and by 4% in exurban environments.



AIR QUALITY

In tests comparing it to diesel and natural-gas vehicles in real-life driving conditions², ED95 emitted significantly less pollutants. **Compared to diesel, ED95 reduced CO emissions by more than 77% and NO_x emissions by more than 55%.** ED95 achieves much lower emission levels than the EURO 6 standard³: 5.75 times lower NO_x emissions, 12 times lower HC emissions and 120 times lower CO emissions.



ENERGY EFFICIENCY

The study compared the energy required to travel 100 kilometres among the different fuel types – ED95, diesel and natural gas – and found that even if volumetric consumption increases, **ED95 reduces energy consumption by 3.3% compared to diesel and by 25.4% compared to natural gas engines.**



How much



The cost of a truck equipped with an ED95 engine is almost similar to that of diesel.

A 2017 study from France's Central d'Achat du Transport Public compared the cost of ownership of different engine types for buses and found that ED95 buses were only 10% higher cost than traditional diesel buses over a 15-year period and only 8% more expensive than NGV buses (considering a price of ethanol at 0.8€/L).⁵

When



The fight against climate change requires using all available solutions – especially when it comes to decarbonising heavy-duty road transport. To maximise its potential, the EU should:

- Encourage development and deployment of ED95 technology and distribution
- Tackle GHG emissions from the transport sector by capitalising on low-carbon liquid fuels as an alternative in internal combustion vehicles that will still represent the majority of the fleet in the coming decades

¹ French Agency for the Environment and Energy Management, www.ademe.fr/sites/default/files/assets/documents/norme-euro-6-ademe-scania.pdf ² Vehicle specifics: diesel and gas engines had 320hp, the ED95 engine had 280hp. Diesel and ED95 vehicles were equipped with automatic gearboxes, the natural gas vehicle with a semi-automatic transmission, which is favourable to the reduction of consumption ³ Taking into account the factor of 1.5 for the EURO pollutants limits ⁴ In this study, the ethanol used to make ED95 was certified as being 93% biogenic carbon ⁵ Calculation for vehicles 12m long, covering 40 000 km/year, not covering infrastructure costs, www.catp.fr/wp-content/uploads/2017/09/Etude-comparative-des-diff%C3%A9rentes-motorisations-de-bus-2017.pdf